



VOLUME 2:

Risk Factors

**Diabetes, Heart Disease
and Stroke in Oregon**

2013

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Health
Authority

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This volume summarizes data about common risk factors for diabetes, heart disease and stroke in Oregon. These risk factors include cigarette smoking, obesity, hypertension, high cholesterol, lack of physical activity, inadequate consumption of fruits and vegetables and excessive consumption of sodium. This volume reflects the most recent data available from a variety of sources with data tables and graphs depicting the prevalence of these risk factors in Oregon over time, across select demographics and among those with diabetes, heart disease and stroke.

The intent of this report is to highlight the burden of these common risk factors in Oregon. This report is also intended to assist stakeholders, policymakers and other interested parties in their efforts to reduce the burden of these risk factors for chronic disease and, consequently, reduce the death and disease associated with diabetes, heart disease and stroke. For more information on each dataset, see Appendix A.



What are some common risk factors for diabetes, heart disease and stroke?

- ▶ Cigarette smoking;
- ▶ Obesity;
- ▶ High blood pressure;
- ▶ High cholesterol;
- ▶ High sodium intake;
- ▶ Low consumption of fruits and vegetables;
- ▶ Lack of physical activity.



Who has these risk factors?

Cigarette smoking

- ▶ More than 589,000 adults in Oregon are current cigarette smokers.
- ▶ The percentage of Oregon adults who currently smoke cigarettes has decreased 13.5% during the past 15 years, from 23.7% in 1996 to 20.5% in 2011.
- ▶ In the past, fewer Oregon adults reported current cigarette smoking compared to the overall U.S. population; however, in recent years as tobacco prevention activities have become more consistent across states, this difference no longer exists.
- ▶ Oregon adults with less than a high school education are nearly five times more likely to report current cigarette smoking compared to Oregon adults with a college degree.

Obesity

- ▶ More than 800,000 adults in Oregon are considered obese.
- ▶ The percentage of Oregon adults who are obese more than doubled during the past 20 years, from 11% in 1990 to 27% in 2011.
- ▶ In 2009, the percentage of Oregon adults who were obese was lower than the overall adult population in the United States; Oregon adults were 11.2% less likely to be obese than U.S. adults.

- ▶ Obesity increased more than 50% for both eighth- and 11th-graders between 2001 and 2009.
- ▶ The prevalence of obesity among adults with less than a high school education is nearly double that of adults with a college degree.
- ▶ The prevalence of obesity among non-Latino American Indian and Alaska Native persons is 55.6% higher than non-Latino white persons.

High blood pressure

- ▶ More than 900,000 adults in Oregon have high blood pressure.
- ▶ The percentage of Oregon adults with high blood pressure increased 33% during the past 20 years, from 20.7% in 1990 to 27.6% in 2011.
- ▶ Fewer Oregon adults (27.6%) report high blood pressure compared with the overall U.S. population (30.2%), which has been consistent over time.
- ▶ The percentage of African American persons who report high blood pressure was nearly double that of white persons.

High cholesterol

- ▶ More than 1.1 million adults in Oregon have high cholesterol.
- ▶ The percentage of adults who have high cholesterol increased 27% during the past 20 years, from 25.8% in 1990 to 32.7% in 2011.

- ▶ Fewer Oregon adults (32.7%) currently report high cholesterol compared to the overall U.S. population (34.2%). However, the prevalence of high cholesterol among adults in Oregon and the United States has been fairly similar over time.
- ▶ Oregon adults with less than a high school education are 23.3% more likely to have high cholesterol and 23.6% less likely to have had a cholesterol screening in the past five years compared to Oregon adults with a college degree.

High sodium intake

- ▶ In 2011, an estimated 1.1 million Oregonians were reducing their salt intake, with an equal proportion of males and females.
- ▶ In 2011, 16.3% of Oregon adults (an estimated 487,570 people) were advised by their doctors to reduce sodium intake.
- ▶ This proportion increases among adults with chronic disease risk factors and chronic conditions: 36.6% of adults with high blood pressure, 21.9% who were obese, 40.4% who had had a stroke, 48.5% who had had a heart attack, 35.8% with heart disease and 44.9% with diabetes were advised by their doctors to reduce sodium intake.

Lack of physical activity

- ▶ Approximately 600,000 adults in Oregon lack physical activity outside of work.

- ▶ Adults with less than a high school education are 70% more likely to report a lack of physical activity compared to adults with a college degree.
- ▶ Lack of physical activity among adults with diabetes is approximately 60% higher compared to the general population.

Low consumption of fruits and vegetables

- ▶ Approximately one-in-three Oregon adults report consuming fruits less than one time daily and nearly one-in-six report consuming vegetables less than one time daily.¹
- ▶ Among Oregon eighth-graders, one-in-three report consuming fruits and vegetables less than one time daily on average.
- ▶ Data on the number of Oregon adults who meet CDC's fruit and vegetable consumption recommendations are unavailable at this time.

Trans fats consumption

- ▶ In a 2012 survey of adult Oregonians, nearly four-out-of-five respondents believed that consumption of trans fats is harmful to health.
- ▶ Only 55% of Oregon adults express concern about their own trans fats consumption.
- ▶ Although the majority of Oregon adults are able to correctly identify the most common dietary sources of trans fats, nearly one-in-three are unable to identify foods high in trans fats.



Sugary drink consumption

- ▶ In 2011, 13% of Oregon adults reported drinking an average of one or more sugar-sweetened sodas per day.
- ▶ Among Oregon eighth-graders, 11% report drinking an average of one or more sugar-sweetened sodas per day.

Risk factors among adults with diabetes and coronary heart disease

Among adults with diabetes:

- ▶ 26% are current cigarette smokers;
- ▶ 48% are considered obese;
- ▶ 68% have high blood pressure;
- ▶ 73.2% of those with high blood pressure are taking medication for high blood pressure;
- ▶ 64% have high cholesterol;
- ▶ 92.7% have had a cholesterol screening in the past five years;
- ▶ 33% are physically inactive.

Among adults with heart disease:

- ▶ 25% are current cigarette smokers;
- ▶ 55% are considered obese;
- ▶ 50% have high blood pressure;
- ▶ 66.1% of those with high blood pressure are taking medication for high blood pressure;

- ▶ 47% have high cholesterol;
- ▶ 66.4% have had a cholesterol screening in the past five years;
- ▶ 24% are physically inactive.

Risk factors among adults surviving a heart attack and stroke

Among adults surviving a heart attack:

- ▶ 22% are current cigarette smokers;
- ▶ 33% are considered obese;
- ▶ 50% have high blood pressure;
- ▶ 89% of those with high blood pressure are taking medication for high blood pressure;
- ▶ 72% have high cholesterol;
- ▶ 79% have had a cholesterol screening in the past five years;
- ▶ 27% are physically inactive.

Among adults surviving a stroke:

- ▶ 36% are current cigarette smokers;
- ▶ 35% are considered obese;
- ▶ 51% have high blood pressure;
- ▶ 60% of those with high blood pressure are taking medication for high blood pressure;
- ▶ 70% have high cholesterol;

- ▶ 70% have had a cholesterol screening in the past five years;
- ▶ 47% are physically inactive.

Ways to reduce the burden of shared risk factors for diabetes, heart disease and stroke in Oregon

The Oregon Public Health Division is committed to preventing heart disease, stroke and diabetes through a wide range of evidence-based practices. The Health Promotion and Chronic Disease Prevention Section of the Oregon Public Health Division is working with local and state partners to:

- ▶ Increase availability of healthy foods and beverages in child care facilities, schools, worksites and neighborhoods;
- ▶ Increase places where people can move more safely;
- ▶ Increase the number of environments that are tobacco-free;
- ▶ Increase referrals to self-management programs so that people with chronic disease can live well and take care of themselves;
- ▶ Improve delivery and use of quality health care services through the physician promotion of the ABCS — **A**1C checks, **B**lood pressure control, **C**holesterol control, and **S**moking cessation, and reduced **S**odium consumption.

This comprehensive, community-wide approach makes it easier for all Oregonians to eat better, move more and live tobacco-free wherever they live, work, play and learn.





Diabetes, Heart Disease and Stroke in OREGON

Combined, these diseases affect

1 in 7
Oregonians

and cost \$1.5 billion in hospitalizations in 2011.



Diabetes, heart disease and stroke cause more than a quarter of all deaths in Oregon annually.

78% of Oregon adults have at least one risk factor.

Common risk factors (below) contribute to the development of diabetes and heart disease, and increase the risk of future heart attack and stroke.

Among Oregon adults:

- 1 in 4** is obese.
- 1 in 5** smokes cigarettes.
- 1 in 3** has high cholesterol.
- 1 in 4** has high blood pressure.
- 1 in 5** is physically inactive.

Risk factors for **DIABETES, HEART DISEASE** and **STROKE** affect some communities more than others.

Compared to adults with a college degree, adults with less than a high school education are:

2x more likely to be obese.

3x more likely to smoke cigarettes.

Compared to non-Latino whites, American Indian and Alaska Native adults are:

2x more likely to be obese.

2x more likely to smoke cigarettes.

INTRODUCTION

Heart disease and stroke are the leading causes of death in Oregon and the United States, and diabetes is a significant cause of disability. There are several health behaviors that increase a person's risk for developing these chronic conditions. Focusing on preventing and managing these chronic disease risk factors is a key strategy for reducing the burden of chronic disease in Oregon.

What are the common risk factors for diabetes, heart disease and stroke?

Cigarette smoking

In Oregon, as in the United States, tobacco use is the leading cause of preventable death, which includes death from heart disease and stroke.² Damage to the cardiovascular system from tobacco smoke is immediate and occurs even with brief exposure. Breathing tobacco smoke damages the delicate cells that line blood vessels throughout the body, which impairs blood flow to and from the heart. In the short term, heart rate and blood pressure increase.³ Over time, the walls of blood vessels thicken and narrow, further affecting blood flow. People who smoke have double the risk of heart disease and stroke compared to those who do not smoke. Quitting cigarette smoking reduces the risk for cardiovascular disease and death. The risk for heart attack drops sharply just one year after cigarette smokers quit entirely.⁴ Even patients who have already had a heart attack cut their risk of having another one by a third to a half if they quit cigarette smoking. After two to five years the chance of stroke could fall to about the same level as someone who has never smoked.³ Tobacco use also increases the risk of developing diabetes.⁴ Tobacco use can increase blood sugar levels and lead to insulin resistance.³ And the more you smoke, the greater your risk of diabetes. Heavy cigarette smokers — those who smoke more than 20 cigarettes a day — almost double their risk of developing diabetes, when compared with nonsmokers.⁵





Obesity

Obesity describes a range of weight that is far greater than what is generally considered healthy for a given height. Having excess body weight causes the heart to work harder and increases the risk of high blood pressure and high cholesterol.⁶ People who are obese are also at much higher risk for developing diabetes, heart disease and stroke.⁶ Currently obesity is the number two preventable cause of death among Oregonians, after tobacco use, and it is expected to become more of a problem as today's youth carry the burden of obesity into adulthood.

Our social and physical environments are powerful influencers affecting what we eat, how we live and how healthy we are throughout our lifetimes. Today in Oregon, nutritious food and places to play and exercise are out of reach for many people. All Oregonians deserve convenient access to nutritious foods and activities that help them live better. Healthy options should be available to all Oregonians and not dependent on income, educational attainment, race or ethnicity.

High blood pressure

Having high blood pressure raises your risk for heart disease and stroke,⁷ which are the leading causes of death and disability in Oregon and nationally. Blood pressure is the force of blood against your artery walls as it circulates through your body. Blood pressure normally rises and falls throughout the day, but it can cause health problems if it stays high for a long time. High blood pressure is caused by a diet high in sodium, being overweight or obese, lack of physical activity that can

lead to weight gain, excessive alcohol use and tobacco use.⁸ Blood pressure also tends to increase with age and non-Latino African American persons are more likely to have high blood pressure than non-Latino white persons.⁹ Although some people can inherit genes that make them more likely to develop high blood pressure, the risk for this chronic disease risk factor can increase even more when heredity is combined with an unhealthy lifestyle.

Diabetes also increases a person's risk for developing high blood pressure.¹⁰ Diabetes affects the body's use of a hormone called insulin that tells the body to remove sugar from the blood. With diabetes, the body either doesn't make enough insulin, can't use its own insulin as well as it should, or both. This causes sugars to build up in the blood, which increases blood pressure.

High blood pressure is called the "silent killer" because many people don't realize they have it. High blood pressure often has no warning signs or symptoms. The only way to detect whether or not you have high blood pressure is to have your blood pressure measured by a doctor or health professional — it is quick and painless. Lowering blood pressure by changes in lifestyle — such as quitting cigarette smoking, exercising or taking medication — can lower the risk of heart disease and heart attack.

High cholesterol

Having high cholesterol puts you at risk for heart disease and stroke.¹¹ Too much cholesterol in the blood can build up on the walls of arteries and block blood flow to vital organs such



as the heart and brain, which can lead to heart disease and stroke. High cholesterol is also an indicator for diabetes, as elevated levels of cholesterol are seen in people with insulin resistance. Approximately one of every six adult Americans has high cholesterol.

High cholesterol tends to affect some more than others. Age and genetic predisposition are important factors that contribute to high cholesterol.¹² Poor nutrition, excessive intake of trans fats, lack of physical activity and cigarette smoking can also trigger high cholesterol or make treating high cholesterol more complicated.¹² There are no symptoms of high cholesterol. Many people have never had their cholesterol checked and are unaware that they are at risk for the associated chronic diseases. Cholesterol levels can be determined with a simple blood test. Preventing high cholesterol or lowering cholesterol levels if already high can be achieved through eating a healthy diet low in trans fats, maintaining a healthy weight, exercising regularly, not cigarette smoking and treating high cholesterol through medication.

High sodium intake

Eating a diet high in sodium increases a person's blood pressure, which results in an increased risk for heart disease and stroke.^{13,14,15} A modest reduction in salt intake reduces blood pressure and consequently decreases risk of stroke and fatal heart disease in adults.^{16,17,18,19} Limiting sodium intake is particularly important for people 51 and older, African American persons, and those who have high blood pressure,

chronic kidney disease or diabetes, as these vulnerable populations are all at an increased risk for heart disease and stroke.²⁰ Approximately nine in 10 persons consume more sodium than recommended by the 2010 *Dietary Guidelines for Americans*.²¹ Reducing population sodium intake to recommended levels is estimated to save 280,000 to 500,000 Americans from dying prematurely of chronic diseases such as heart disease and stroke in a decade, and also save \$18 billion in health care costs.^{22,23}

Lack of physical activity

Daily physical activity can provide significant health benefits. Paired with a healthy diet, physical activity can promote weight loss and reduce the risk of obesity. Physical activity can also prevent diabetes, heart disease and stroke. Even without a dramatic decrease in weight, physical activity can improve blood pressure, blood glucose control and overall well-being.²⁴ However, lack of physical activity can have the opposite effect.

Low fruits and vegetables consumption

Eating fruits and vegetables can help with weight management and lowers the risk of developing chronic diseases like heart disease, stroke and diabetes.²⁵ Increasing access to high quality and affordable fruits and vegetables is a key step to increasing the population's consumption of fruits and vegetables. Creating greater access to fresh and affordable fruits and vegetables relies on collaborative work among state leaders, health professionals, food retail owners, farmers, education staff and community members.¹



Currently, adults in the United States consume fruit approximately 1.1 times per day and vegetables approximately 1.6 times per day.¹ The *“Dietary Guidelines for Americans”* 2010 recommends that Americans eat more fruits and vegetables as part of a healthy diet.²⁵ Many states are attempting to increase fruits and vegetables consumption by improving access and establishing policies that make it easier to get fruits and vegetables in communities, schools and child care settings. Twenty-eight states now have a farm to school/preschool policy and 27 states have created state-level food policy councils comprised of private and public partners working together to improve access to healthy food.¹

Oregonians have been identified as having more access than the majority of other states’ residents to at least one store that offers a wide variety of affordable fruits and vegetables. Oregon is also a leader in the percentage of farmers markets that accept Supplemental Nutrition Assistance Program (SNAP) benefits.¹

Trans fats consumption

Artificial trans fats are not essential for human health.²⁰ The *Dietary Guidelines for Americans* 2010 and the Institute of Medicine recommend that individuals keep trans fat consumption as low as possible.^{20,26} There are two main sources of trans fats in the diet. Naturally occurring trans fat is found in small amounts in the fatty parts of meat and dairy products. Artificial trans fat comes from foods that contain partially hydrogenated oil. Often food manufacturers use

artificial trans fat in food products because it is inexpensive and it increases the food’s shelf life, stability and texture. Foods that may contain artificial trans fat include fried items, savory snacks (like microwave popcorn), frozen pizzas, baked goods, margarines and spreads, ready-to-use frosting and coffee creamers.²⁷

Trans fat intake has significantly decreased in the United States as a result of efforts to increase awareness of its health effects, Nutrition Facts label changes, industry efforts to voluntarily reformulate foods, and some state and local government restriction of its use in restaurants and other food service outlets.²⁸ However, an average American still consumes 1.3 grams of artificial trans fat each day. Consuming trans fat increases low-density lipoprotein (“bad”) cholesterol and may decrease high-density lipoprotein (“good”) cholesterol. This effect contributes to increased coronary heart disease and death. Further reducing trans fat consumption by avoiding artificial trans fat could prevent 10,000–20,000 heart attacks and 3,000–7,000 coronary heart disease deaths each year in the United States.^{28,29,30}

The increased risk of heart disease has led several jurisdictions to reduce or eliminate trans fats from use in restaurants and schools. The Food and Drug Administration (FDA) requires trans fat to be listed on food labels. The availability of substitute oils for cooking and food manufacturing permits the banning of trans fat without hardships for restaurant food manufacturers.

Sugary drinks

The rising consumption of sugary drinks, like regular soda or pop or sports drinks, is a significant contributor to the obesity epidemic.³¹ Sugary drinks contribute excess calories and sugar to the American diet; a typical 20-ounce soda contains 15 to 18 teaspoons of sugar and upwards of 240 calories.³² People who drink this “liquid candy” do not feel as full as if they had eaten the same calories from solid food and compensate by eating more.

Sugary drinks are the largest source of added sugars in the diet of U.S. youth.³³ Boys aged 12–19 years consume an average of 22.0 ounces of full-calorie soda drink per day — more than twice their daily intake of fluid milk (9.8 ounces), while girls consume an average of 14.3 ounces of full-calorie soda and 6.3 ounces of fluid milk per day.³⁴ Youth in particular should drink fewer sugar-sweetened beverages and more water and low-fat or fat-free milk, or limited amounts of 100% fruit juices. Families, schools and other institutions should work to provide healthy beverage choices.

Chronic disease risk factors are a public health priority

The number of Oregonians with common risk factors for diabetes, heart disease and stroke is steadily increasing over time. In 2011, 63% of Oregonians were either obese, had high blood pressure, or had high cholesterol, and 8% of Oregon adults had all three of these conditions. In addition, 20% of Oregon adults smoke cigarettes, and the same number are physically inactive. In order to prevent or delay the onset of diabetes, heart disease and stroke, the underlying risk factors of these diseases must be addressed. Due to the significant burden of chronic diseases in Oregon and nationally, the reduction of these risk factors has been identified as a key component in the Oregon Public Health Division Strategic Plan, 2012–2017,³⁵ as well as the Healthy People 2020 national health plan.

Oregon Public Health Division Strategic Plan, 2012–2017 outcomes:

- ▶ Reduce adult cigarette smoking prevalence to 15% or less.
- ▶ Reduce 11th-grade cigarette smoking prevalence to 7.5% or less and eighth-grade cigarette smoking prevalence to 5% or less.
- ▶ Adult obesity prevalence will be 30% or less.
- ▶ Eleventh-grade obesity prevalence will be 10% or less, and eighth-grade obesity prevalence will be 11% or less.
- ▶ Reduce the rate of heart attack hospitalization among Oregon adults aged 74 or younger by 12%.



Healthy People 2020 objectives:³⁶

- ▶ Reduce the proportion of adults with hypertension to 26.9%.
- ▶ Reduce the proportion of adults with high total cholesterol levels to 13.5%.
- ▶ Increase the proportion of adults who have had their cholesterol checked within the preceding five years to 82.1%.
- ▶ Reduce cigarette smoking by adults to 12.0%.
- ▶ Reduce use of cigarettes by adolescents to 16.0%.
- ▶ Increase the proportion of adults who meet current federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity to 20.1%.
- ▶ Increase the proportion of adolescents who meet current federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity to 20.2%.
- ▶ Reduce the proportion of children and adolescents who are obese to 14.5%.
- ▶ Reduce the proportion of adults who are obese to 30.5%.

The Oregon Diabetes, Heart Disease and Stroke Prevention programs are addressing these risk factors by:

- ▶ Increasing availability of healthy foods and beverages in child care facilities, schools, worksites and neighborhoods;
- ▶ Increasing places where people can move more safely;
- ▶ Increasing the number of environments that are tobacco-free;
- ▶ Increasing referrals to self-management programs so that people with chronic disease can live well and take care of themselves;
- ▶ Improving delivery and use of quality health care services through the physician promotion of the **ABCS** — **A**1C checks, **B**lood pressure control, **C**holesterol control, and **S**moking cessation, and reduced **S**odium consumption.

This comprehensive, community-wide approach makes it easier for all Oregonians wherever they live, work, play and learn to eat better and move more in a tobacco-free environment.

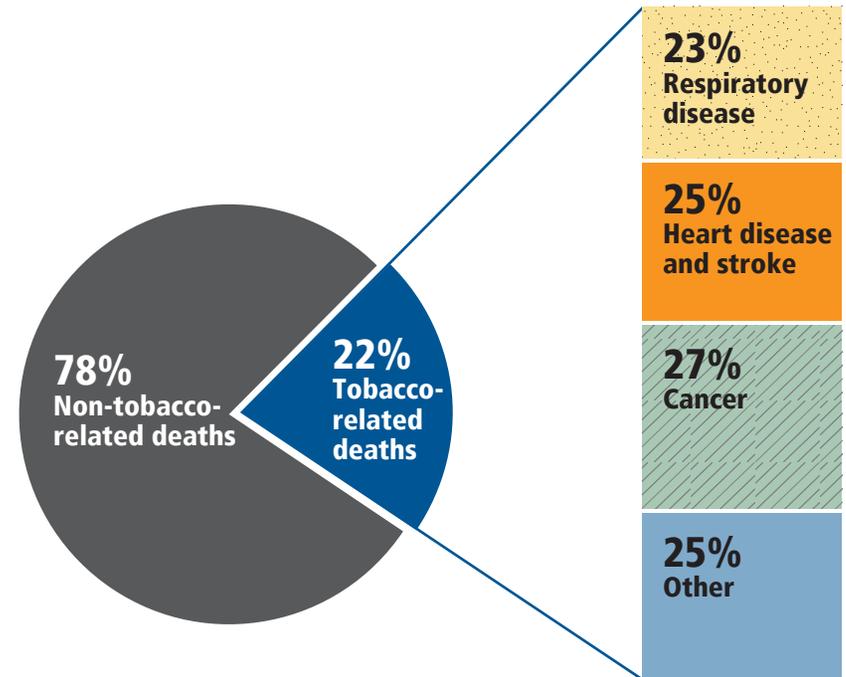
2.1 Who currently smokes?

Cigarette smoking and exposure to secondhand smoke is the number one preventable cause of chronic disease, including heart disease, stroke and diabetes. Early cardiovascular damage occurs among young cigarette smokers, which is concerning because 88% of adult cigarette smokers started smoking before turning 18 years of age.³⁷

- ▶ In 2011, it was estimated that more than half-a-million adults, 12% of 11th-grade students and 7% of eighth-grade students in Oregon were current cigarette smokers
- ▶ In the same year, there were 7,337 deaths among Oregon residents attributed to tobacco use. This represented nearly one-quarter (22.4%) of all deaths in Oregon that year.
- ▶ Of these tobacco-related deaths, more than one-quarter were from cardiovascular disease.

Cigarette smoking affects some Oregon communities disproportionately. The likelihood of being a current cigarette smoker is higher among Oregon adults with less education and a smaller annual household income. Cigarette smoking is also more likely among those enrolled in the Oregon Health Plan or with no health insurance. In addition, African American and American Indian/Alaska Native persons reported current cigarette smoking more often than other racial and ethnic groups. Oregon adults who identified as gay, lesbian or bisexual were also more likely to report current cigarette smoking compared to the heterosexual adult population.

FIGURE 2.1.1 TOBACCO-RELATED DEATHS, BY CAUSE, OREGON, 2011



Data source: Oregon death certificates

This section will describe the proportion of Oregonians who currently smoke and are at an increased risk for associated chronic diseases. The current cigarette smoking prevalence* will be discussed over time and by select demographics including gender, age, education, income, health insurance status, race and ethnicity, chronic disease risk factors, and chronic conditions.

Historically, fewer Oregon adults report current cigarette smoking compared to the overall U.S. population. However, in recent years as tobacco prevention activities have become more consistent across states, the difference no longer exists (Figure 2.1.2 and Table 2.1.1).

TABLE 2.1.1 CURRENT CIGARETTE SMOKING AMONG ADULTS, BY YEAR, OREGON AND THE UNITED STATES, 1996–2011

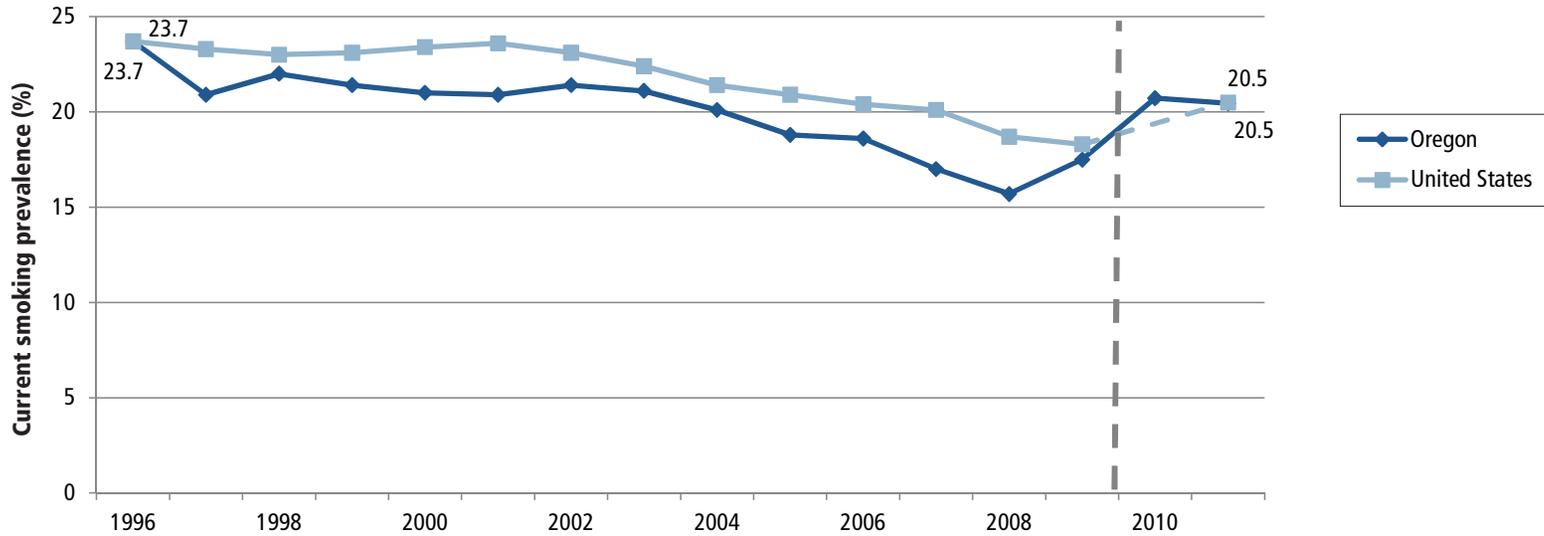
YEAR	OREGON	UNITED STATES
1996	23.7	23.7
1997	20.9	23.3
1998	22.0	23.0
1999	21.4	23.1
2000	21.0	23.4
2001	20.9	23.6
2002	21.4	23.1
2003	21.1	22.4
2004	20.1	21.4
2005	18.8	20.9
2006	18.6	20.4
2007	17.0	20.1
2008	15.7	18.7
2009	17.5	18.3
2010	20.7	N/A
2011	20.5	20.5

Data source: Oregon Behavioral Risk Factor Surveillance System; National data from the National Behavioral Risk Factor Surveillance System.

Note: National data were not included for 2010 because the method for weighting the data was different from the method used in Oregon. The national estimate excludes territories. Starting in 2010, estimates are not comparable to earlier years. Estimates are age-adjusted.

*For this report, current cigarette smoking prevalence for adults was determined by the percentage of adults who reported smoking at least 100 cigarettes in their lifetime and currently smoke every day or some days. For youth, current cigarette smoking was determined by the percentage of youth who reported smoking a cigarette in the past 30 days.

FIGURE 2.1.2 CURRENT CIGARETTE SMOKING AMONG ADULTS, BY YEAR, OREGON AND THE UNITED STATES, 1996–2011



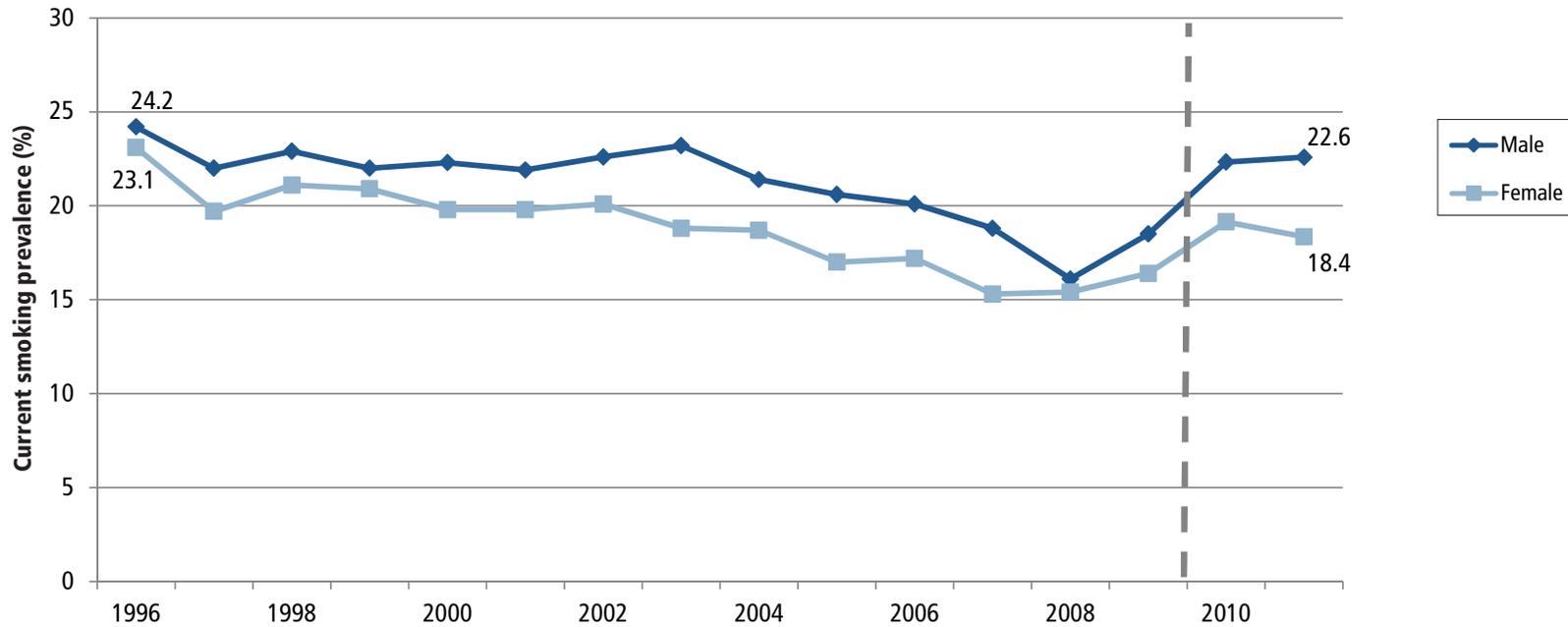
Data source: Oregon Behavioral Risk Factor Surveillance System; National data from the National Behavioral Risk Factor Surveillance System.

Note: National data were not included for 2010 because the method for weighting the data was different from the method used in Oregon. The national estimate excludes territories. The vertical dashed line denotes a different adjustment method and inclusion of cellular phones in the sample. Starting in 2010, estimates are not comparable to earlier years. Estimates are age-adjusted.

Since Oregon’s Tobacco Prevention and Education Program was established in 1996, the prevalence of cigarette smoking among the adult population decreased 13.5% by 2011 (Figure 2.1.2 and Table 2.1.1).

- ▶ The cigarette smoking prevalence among Oregon adults appears to have increased in recent years, but this is due to changes in survey methodology that account for those with cell phones.

FIGURE 2.1.3 CURRENT CIGARETTE SMOKING AMONG ADULTS, BY SEX AND YEAR, OREGON, 1996–2011

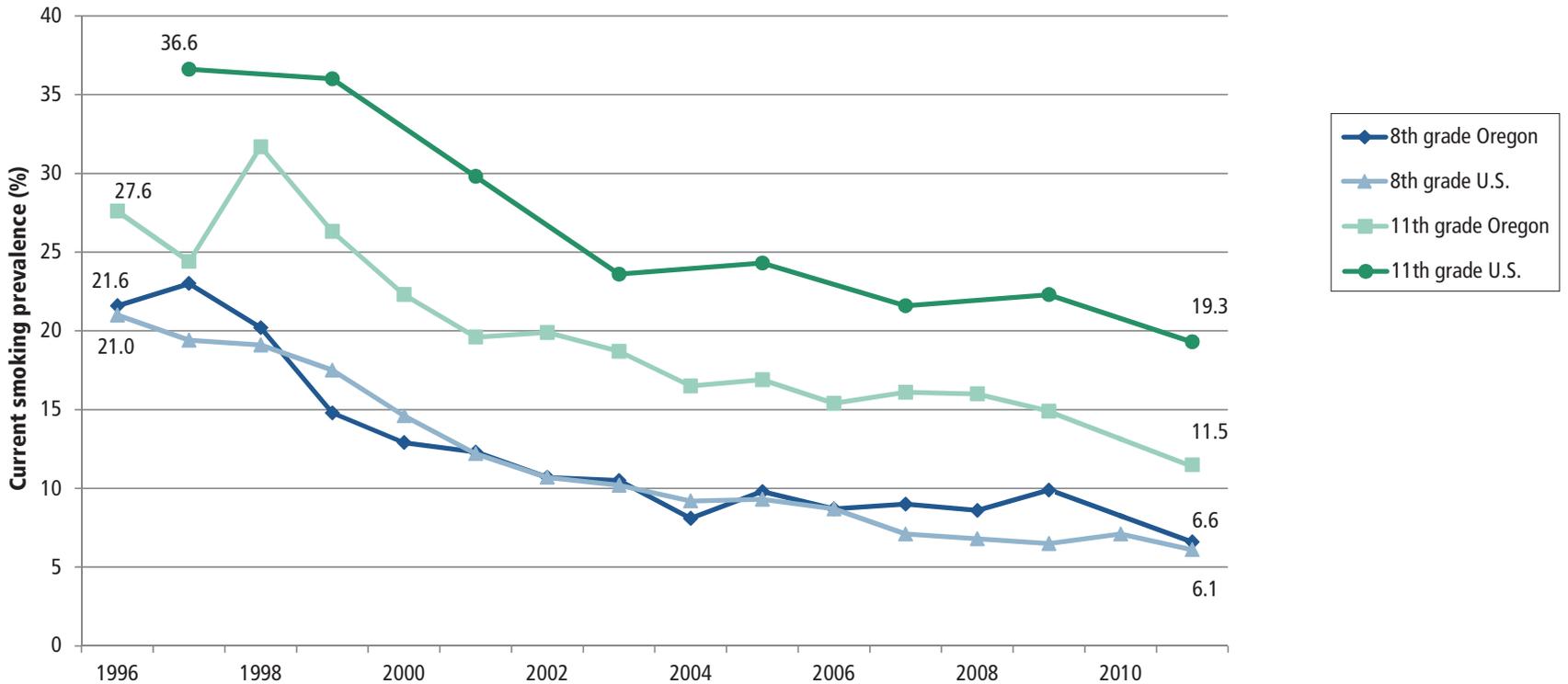


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The vertical dashed line denotes a different adjustment method and inclusion of cellular phones in the sample. Starting in 2010, estimates are not comparable to earlier years. Estimates are age-adjusted.

- ▶ This change in methodology includes more survey respondents who are younger in age and are therefore more likely to smoke cigarettes.
- ▶ In 2011, an estimated 589,272 Oregon adults were current cigarette smokers.
- ▶ Over time, a higher proportion of males in Oregon reported current cigarette smoking compared to females (Figure 2.1.3).
- ▶ In 2011, the percentage of adult males reporting current cigarette smoking was higher than females at 22.6% and 18.4%, respectively (Figure 2.1.3).

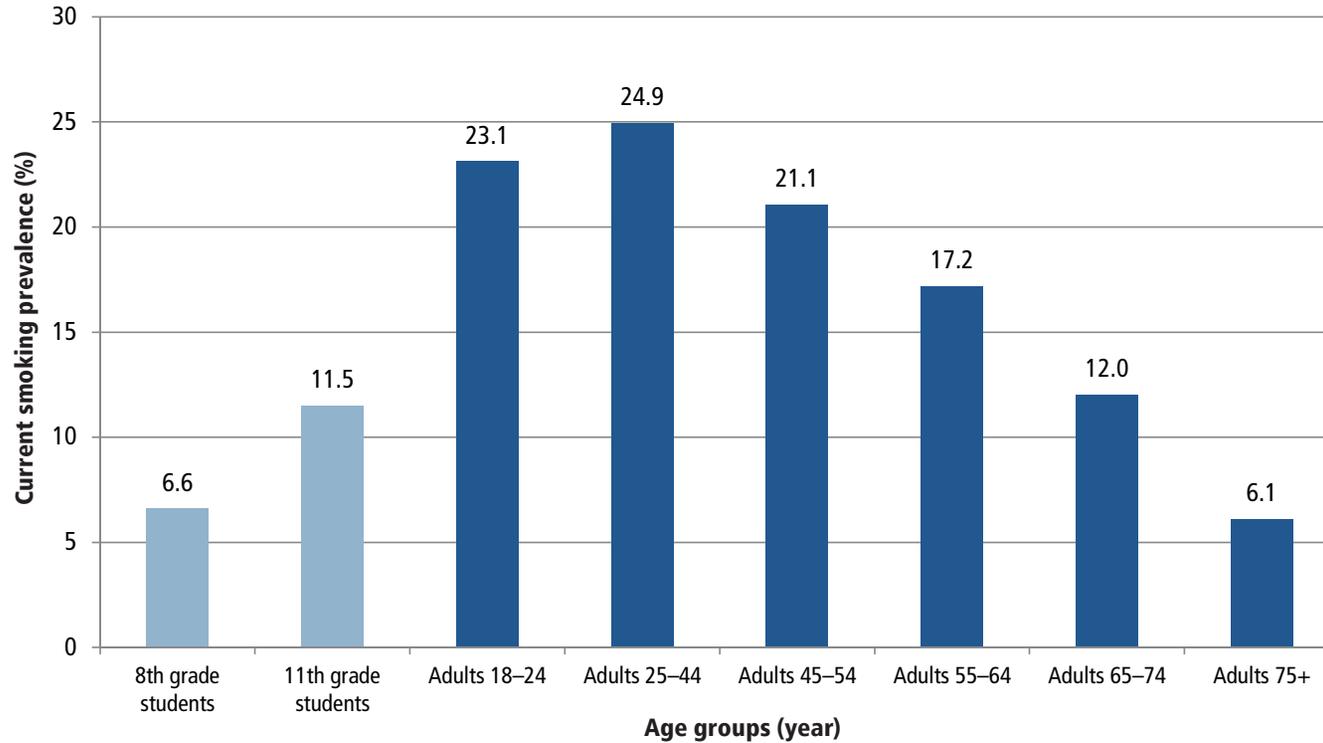
FIGURE 2.1.4 CURRENT CIGARETTE SMOKING AMONG YOUTH, BY YEAR, OREGON AND THE UNITED STATES, 1996–2011



Data source: Oregon Healthy Teens (OHT) Survey and Youth Risk Behavior Surveillance System (YRBSS)

- ▶ Over time, the proportion of both eighth- and 11th-grade students in Oregon who reported current cigarette smoking has declined in both Oregon and the United States (Figure 2.1.4).
- ▶ Historically, the proportion of eighth-grade students who report cigarette smoking has remained relatively consistent with the national trend; however, fewer 11th-grade students in Oregon reported cigarette smoking over time compared to the U.S. population of 11th-graders (Figure 2.1.4).
- ▶ From 1996 to 2011, the cigarette smoking prevalence among eighth- and 11th-grade students in Oregon decreased by 69.4% and 58.3%, respectively (Figure 2.1.4).
- ▶ In 2011, an estimated 7% of eighth-grade students and 12% of 11th-grade students were current cigarette smokers in Oregon.

FIGURE 2.1.5 CURRENT CIGARETTE SMOKING AMONG 8TH GRADERS, 11TH GRADERS AND ADULTS, BY AGE GROUP, OREGON, 2011

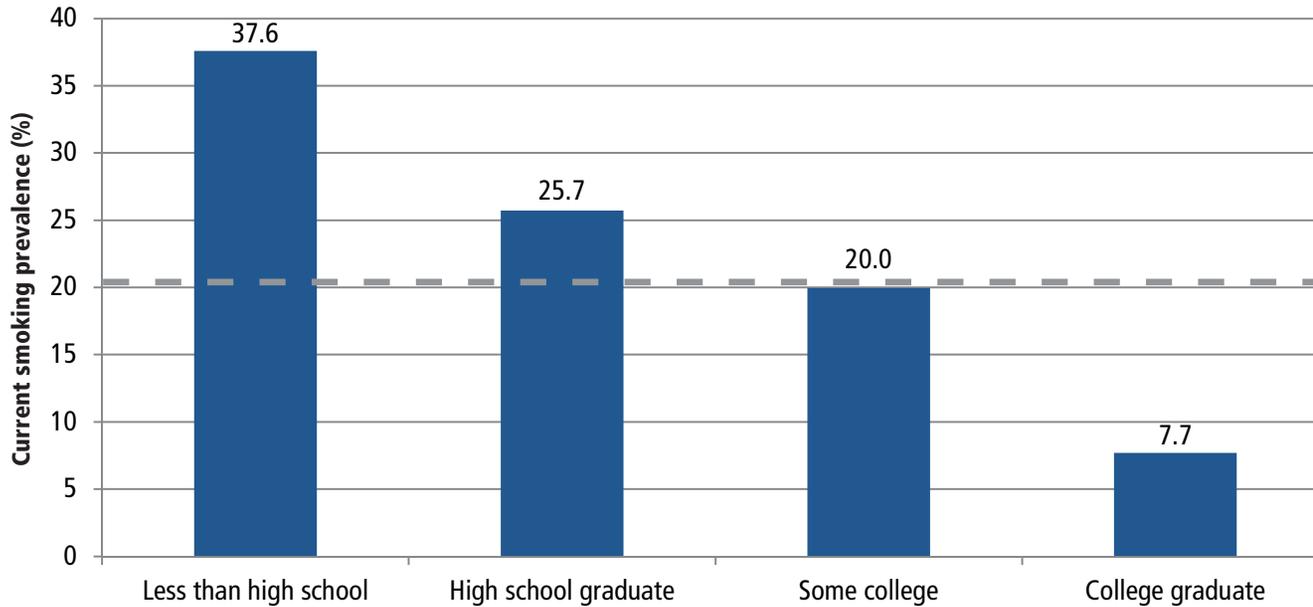


Data source: Oregon Behavioral Risk Factor Surveillance System and Oregon Healthy Teens Survey

Note: Estimates are not age-adjusted. Estimates for eighth- and 11th-grade students were derived from a different data source than adult estimates.

- ▶ Current cigarette smoking increases from adolescence through young adulthood, when the body is most susceptible to the harms of tobacco smoke, and begins to decline after middle age (Figure 2.1.5).
- ▶ Current cigarette smoking was highest in the age groups 18 to 24 (young adults) and 25 to 44, with nearly one-quarter of these populations reporting current cigarette smoking (Figure 2.1.5).

FIGURE 2.1.6 CURRENT CIGARETTE SMOKING AMONG ADULTS, BY EDUCATION, OREGON, 2011

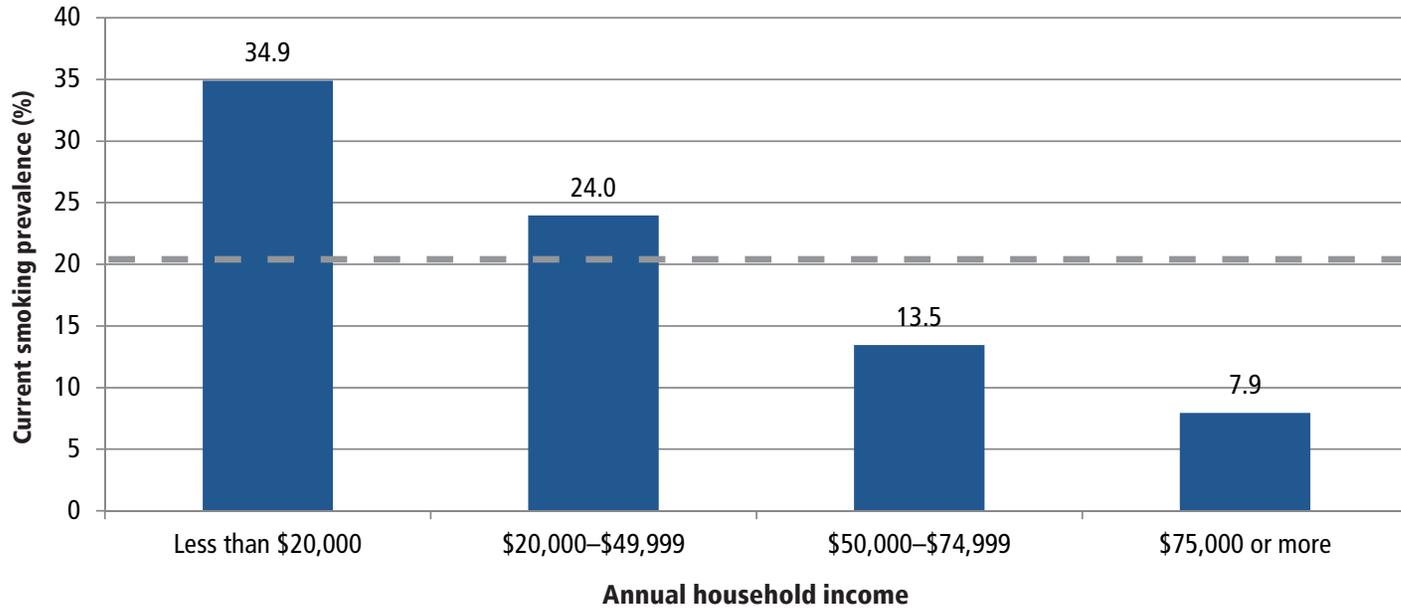


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who reported current cigarette smoking (20.5%). Estimates are age-adjusted.

- ▶ Oregon adults with less than a high school education were nearly five times more likely to report current cigarette smoking compared to Oregon adults with a college degree (Figure 2.1.6).

FIGURE 2.1.7 CURRENT CIGARETTE SMOKING AMONG ADULTS, BY ANNUAL HOUSEHOLD INCOME, OREGON, 2011

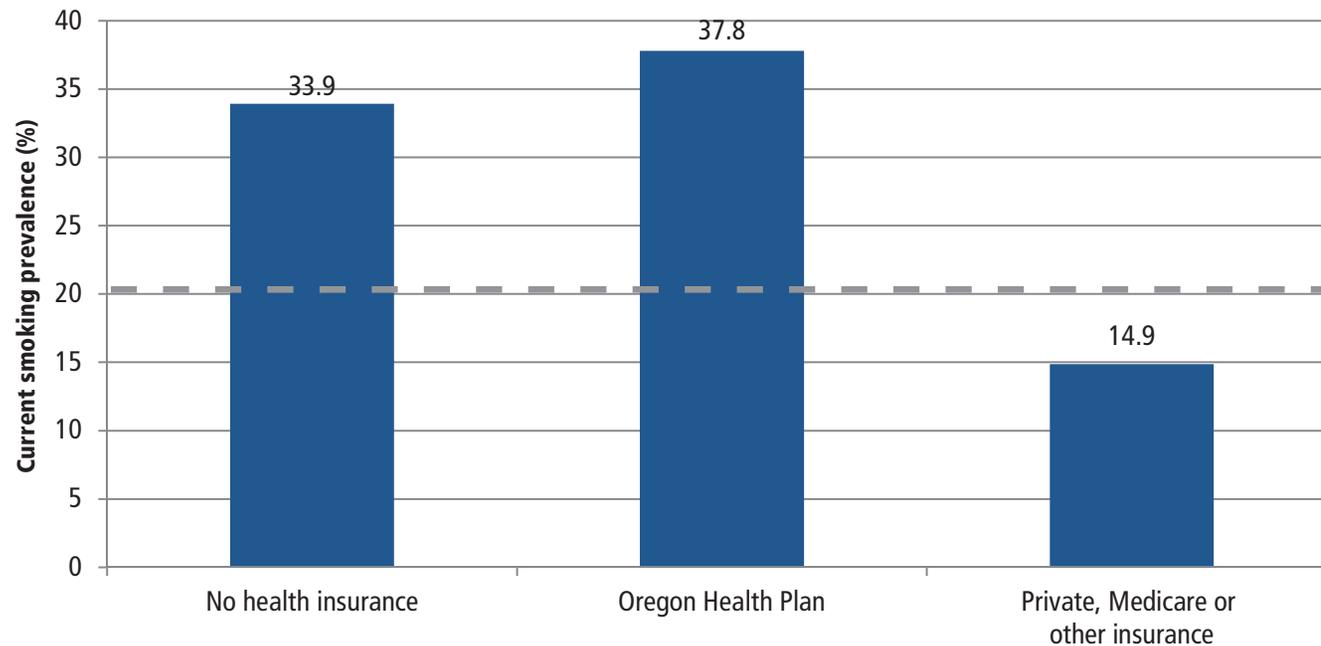


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who reported current cigarette smoking (20.5%). Estimates are age-adjusted.

- ▶ Oregon adults in households with an annual income of less than \$20,000 were more than four times more likely to report current cigarette smoking compared to Oregon adults in households with an annual income of \$50,000 or more (Figure 2.1.7).

FIGURE 2.1.8 CURRENT CIGARETTE SMOKING AMONG ADULTS, BY CURRENT TYPE OF HEALTH INSURANCE, OREGON, 2011

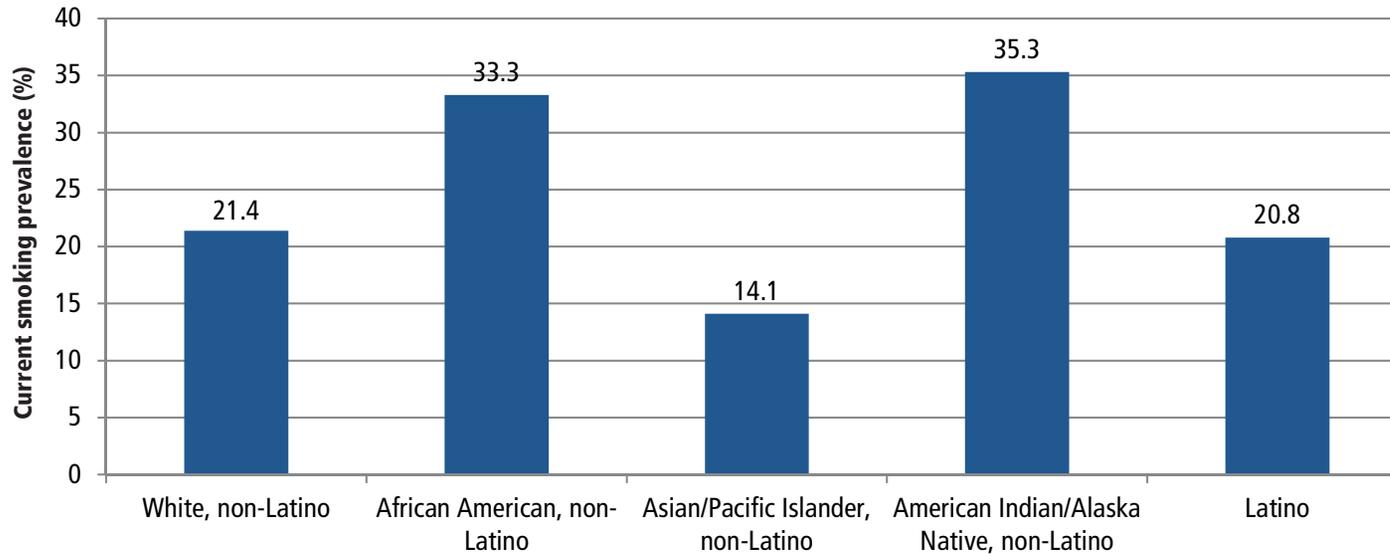


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who reported current cigarette smoking (20.5%). Estimates are age-adjusted.

- ▶ Oregon Health Plan (OHP) members and those with no health insurance were more than twice as likely to report current cigarette smoking compared to individuals enrolled in private, Medicare or other health insurance plans (Figure 2.1.8).
- ▶ The higher prevalence of current cigarette smoking observed among the adult population enrolled in OHP may be due to the demographic composition of this vulnerable population. Adult OHP members are low-income and include pregnant women, seniors and people with disabilities. OHP is intended to help ensure that medical care is affordable for those with a low income.³⁸ People with lower incomes are more likely to live in substandard housing and have higher disease morbidity.³⁹
- ▶ The higher prevalence of cigarette smoking among Oregon adults with no health insurance may be due to unstable employment, lower income and younger age, which increase the likelihood of cigarette smoking.

FIGURE 2.1.9 CURRENT CIGARETTE SMOKING AMONG ADULTS, BY RACE AND ETHNICITY, OREGON, 2010–2011

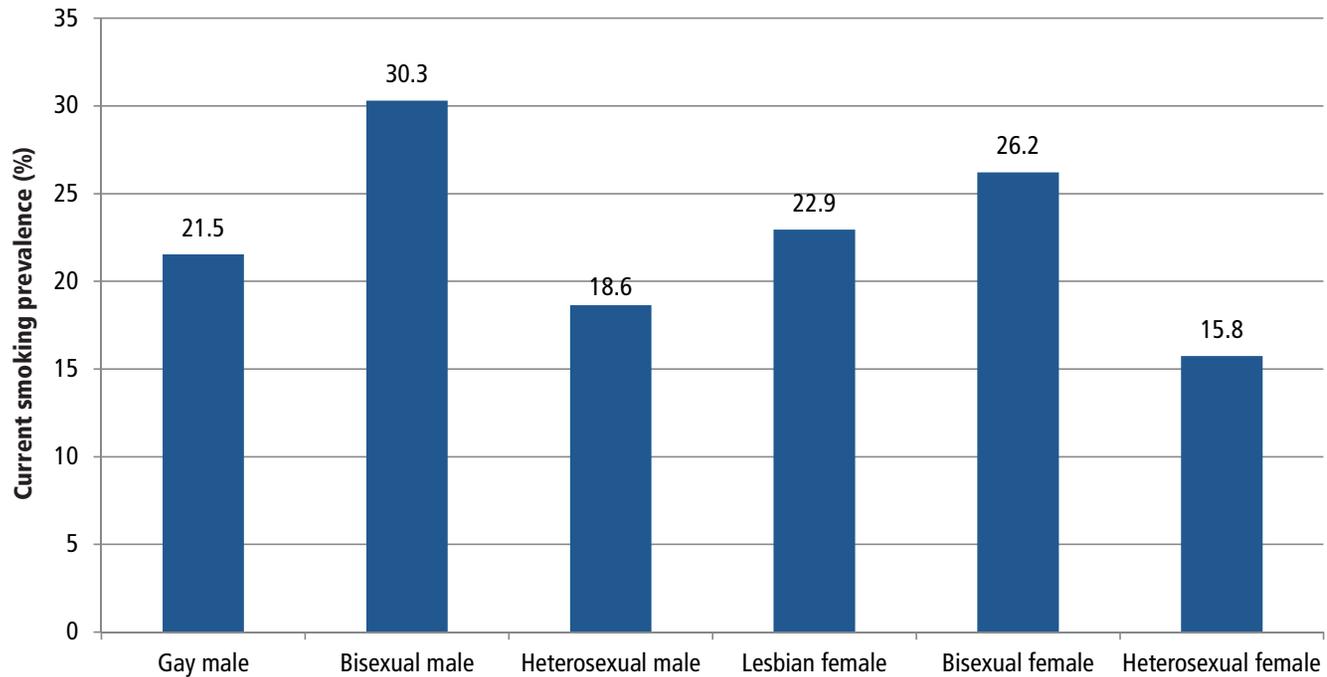


Data source: Oregon Behavioral Risk Factor Surveillance System Race Oversample, 2010–2011.

Note: Estimates are age-adjusted.

- ▶ More African American (33.3%) and American Indian/Alaska Native (35.3%) persons reported current cigarette smoking compared to other racial and ethnic groups (Figure 2.1.9).
- ▶ Compared to non-Latino white persons, African American and American Indian/Alaska Native persons were 55.6% and 64.9% more likely to report current cigarette smoking, respectively (Figure 2.1.9).

FIGURE 2.1.10 CURRENT CIGARETTE SMOKING AMONG ADULTS, BY SEXUAL ORIENTATION, OREGON, 2005–2008

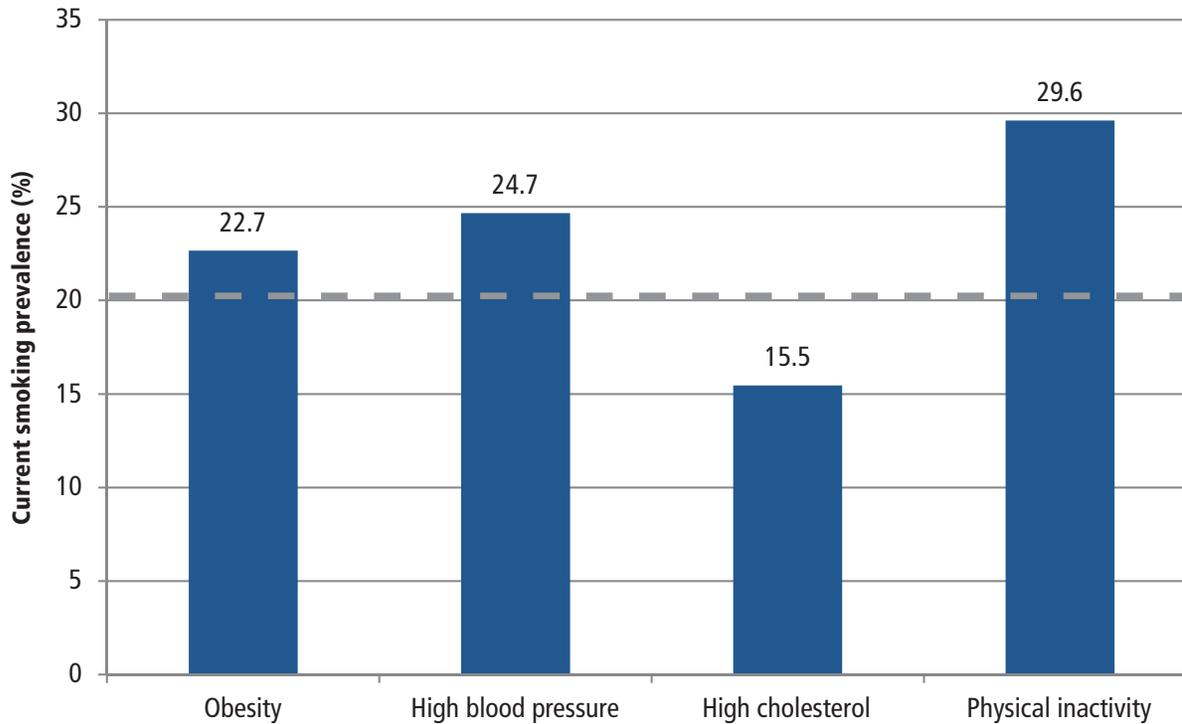


Data source: Oregon Behavioral Risk Factor Surveillance System, 2005–2008.

Note: Estimates are age-adjusted.

- ▶ Gay and bisexual males and lesbian and bisexual females were more likely to report current cigarette smoking than heterosexual men and women (Figure 2.1.10).
- ▶ Compared to their heterosexual counterparts, bisexual males and females were 62.9% and 65.8% more likely to report current cigarette smoking, respectively (Figure 2.1.10).

FIGURE 2.1.11 CURRENT CIGARETTE SMOKING AMONG ADULTS WITH SELECTED CHRONIC DISEASE RISK FACTORS, OREGON, 2011

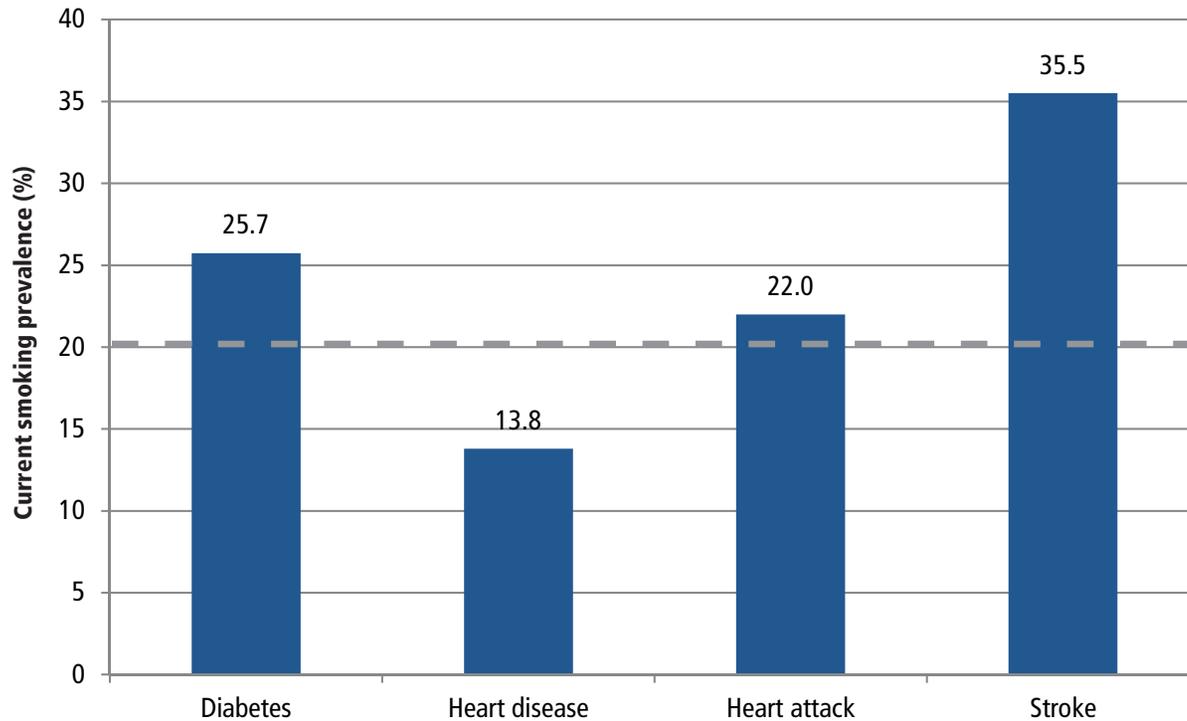


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who reported current cigarette smoking (20.5%). Estimates are age-adjusted.

- ▶ Adult Oregonians who were obese, had high blood pressure or were physically inactive report current cigarette smoking more often than the general population of Oregon adults (Figure 2.1.11).
- ▶ The percentage of Oregon adults who were current cigarette smokers was 20.5% higher among those who had high blood pressure compared to the general population (Figure 2.1.11).
- ▶ Oregon adults who report no physical activity were 44.4% more likely to report current cigarette smoking than the general population of Oregon adults (Figure 2.1.11).

FIGURE 2.1.12 CURRENT CIGARETTE SMOKING AMONG ADULTS WITH DIABETES AND CARDIOVASCULAR DISEASES, OREGON, 2011

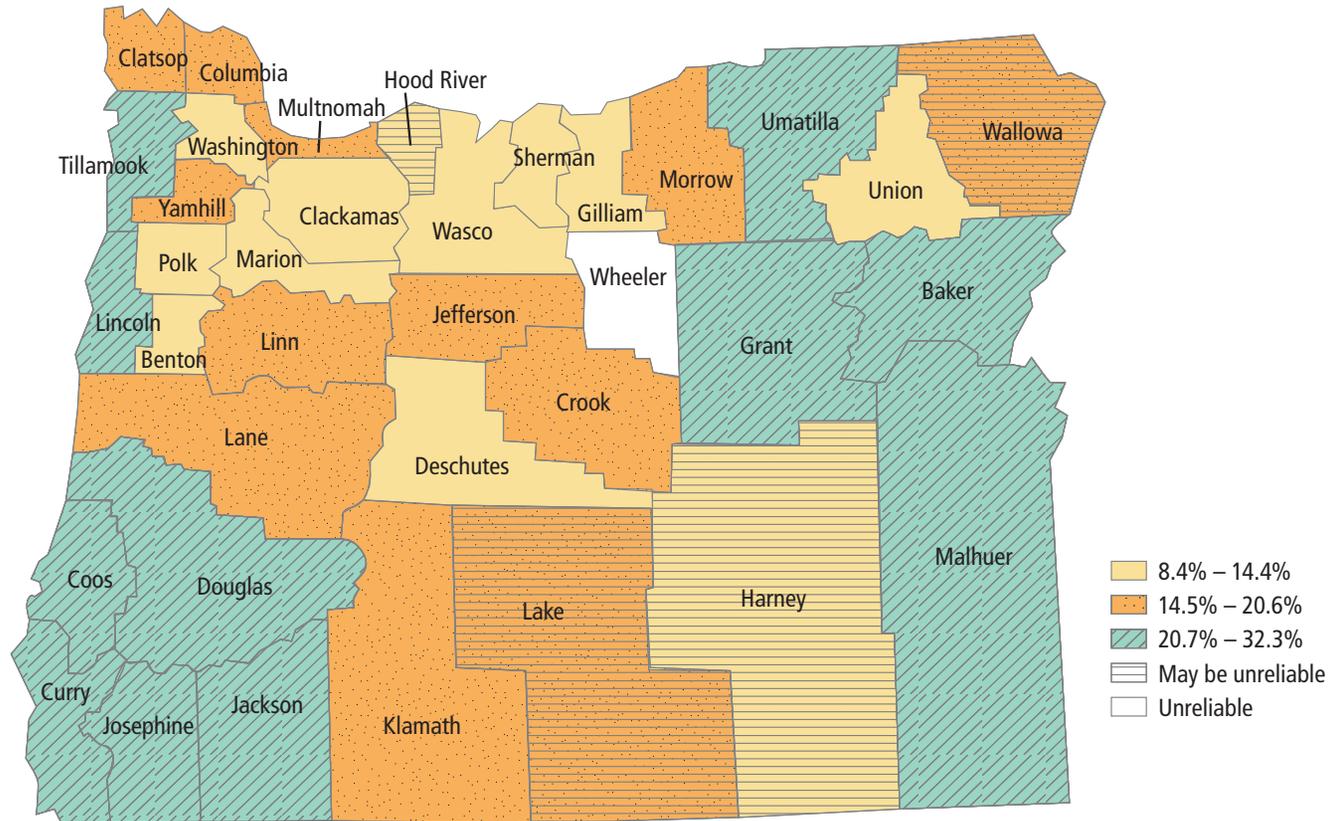


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who reported current cigarette smoking (20.5%). Estimates are age-adjusted.

- ▶ Oregon adults with diabetes had a prevalence of current cigarette smoking that was 25.4% higher than the general population (Figure 2.1.12).
- ▶ Current cigarette smoking was especially common among Oregon adults who reported having a stroke in their lifetimes. Oregon adults who reported having a stroke were 73% more likely to report current cigarette smoking than the general population (Figure 2.1.12).

FIGURE 2.1.13 CURRENT CIGARETTE SMOKING AMONG ADULTS, BY COUNTY, OREGON, 2008–2011



Data source: Oregon Behavioral Risk Factor Surveillance System County Combined File.

Note: Estimates are age-adjusted. The state cigarette smoking prevalence for 2008–2011 was 16.3%.

- ▶ During 2008–2011, the prevalence of cigarette smoking among Oregon counties ranged from 8.4% to 32.3%.
- ▶ Benton, Clackamas, Multnomah and Washington counties had significantly lower percentages of adults who smoked cigarettes compared to the rest of the state.
- ▶ Baker, Coos, Curry, Douglas, Jackson, Josephine, Lincoln and Umatilla counties had significantly higher percentages of adults who smoked cigarettes compared to the rest of the state. See Appendix A for detailed county estimates of current cigarette smoking.

Conclusions

Overall, the prevalence of current cigarette smoking among Oregon adults and youth has declined during the past 15 years. However, more than half-a-million Oregon adults, one-in-fifteen eighth-graders and one-in-ten 11th-graders are estimated to currently smoke cigarettes. This puts all ages of the Oregon population at an increased risk for death and disability due to chronic conditions, including heart disease, stroke and diabetes. Inequitable differences in current cigarette smoking were seen across demographic factors, both modifiable and non-modifiable. The likelihood of being a current cigarette smoker was higher among Oregon adults with less education, a smaller annual household income, and those enrolled in the Oregon Health Plan or with no health insurance. In addition, non-Latino African American and non-Latino American Indian/Alaska Native persons reported current cigarette smoking more often than other racial and ethnic groups. Oregon adults who identified as gay, lesbian or bisexual were also more likely to report current cigarette smoking compared to the heterosexual adult population. Those with chronic disease risk factors and comorbid chronic conditions also reported current cigarette smoking more often than the general population. Fortunately, the risk for heart attack drops sharply just one year after cigarette smokers quit entirely. Even patients who have already had a heart attack cut their risk of having another one by a third to a half if they quit smoking cigarettes. After two to five years, the chance of stroke could fall to about the same level as someone who has never smoked.³

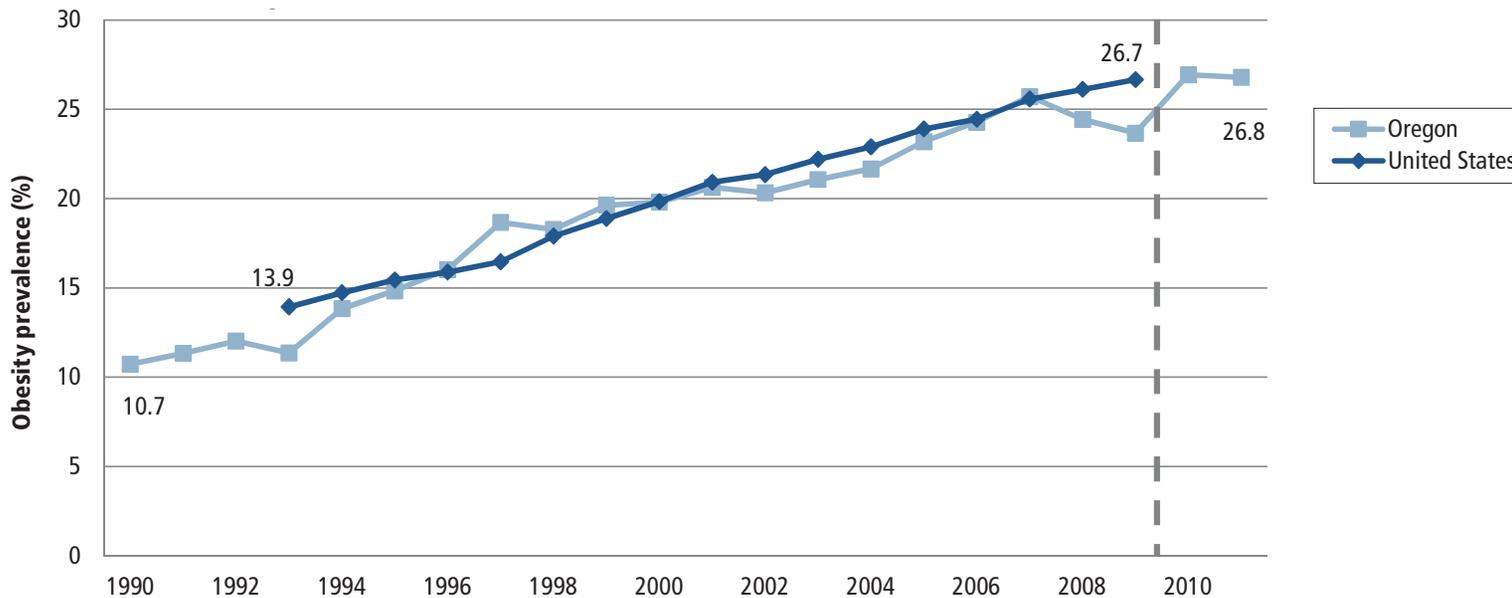


2.2 Who is obese?

Obesity is a major risk factor for chronic conditions such as high blood pressure and high cholesterol, and for chronic diseases such as diabetes, heart disease and stroke. To better understand the burden of these chronic conditions and diseases in Oregon, the prevalence of the underlying risk factors (or precursors of disease) needs to be known. It is important to report the prevalence of obesity* among

sub-populations of Oregonians (e.g., racial and ethnic minorities) to identify groups of Oregonians who are disproportionately affected by obesity compared to the general population in Oregon. This section will describe the burden of obesity among Oregon adults over time and by select demographics including gender, age, education, income, health insurance status, race and ethnicity, and by other chronic disease risk factors and conditions.

FIGURE 2.2.1 OBESITY AMONG ADULTS, BY YEAR, OREGON AND THE UNITED STATES, 1990–2011



Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line denotes a different adjustment method and inclusion of cellular phones in the sample. Starting in 2010, estimates are not comparable to earlier years. BMI calculated based on 2011 CDC definition for all years. Estimates are age-adjusted.

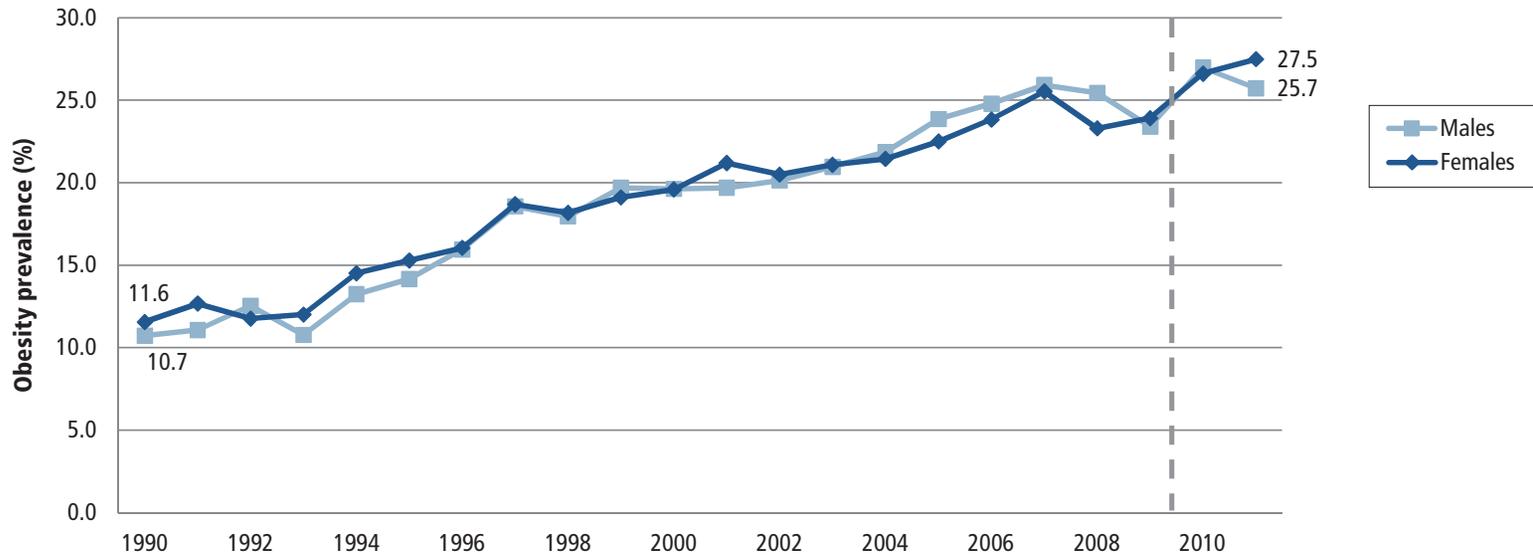
* For this report, adult obesity was determined by the percentage of adults who have a body mass index (BMI) of 30 or above based on self-reported height and weight.

TABLE 2.2.1 OBESITY AMONG ADULTS, BY YEAR, OREGON AND THE UNITED STATES, 1990–2011

YEAR	OREGON	UNITED STATES
1990	10.7	N/A
1991	11.3	N/A
1992	12.0	N/A
1993	11.4	13.9
1994	13.8	14.7
1995	14.8	15.5
1996	16.0	15.9
1997	18.7	16.5
1998	18.3	17.9
1999	19.6	18.9
2000	19.8	19.8
2001	20.6	20.9
2002	20.3	21.3
2003	21.1	22.2
2004	21.7	22.9
2005	23.2	23.9
2006	24.3	24.4
2007	25.7	25.6
2008	24.4	26.1
2009	23.7	26.7
2010	26.9	N/A
2011	26.8	N/A

- ▶ During the past 20 years, the adult obesity prevalence increased 150% in Oregon (Figure 2.2.1 and Table 2.2.1).
- ▶ In 2009, the percentage of Oregon adults who were obese was lower than the overall adult population in the United States; Oregon adults were 11.2% less likely to be obese than U.S. adults (Figure 2.2.1).
- ▶ Approximately 800,000 Oregon adults are considered obese, and more than 1.8 million are overweight or obese.

FIGURE 2.2.2 OBESITY AMONG ADULTS, BY SEX AND YEAR, OREGON, 1990–2011

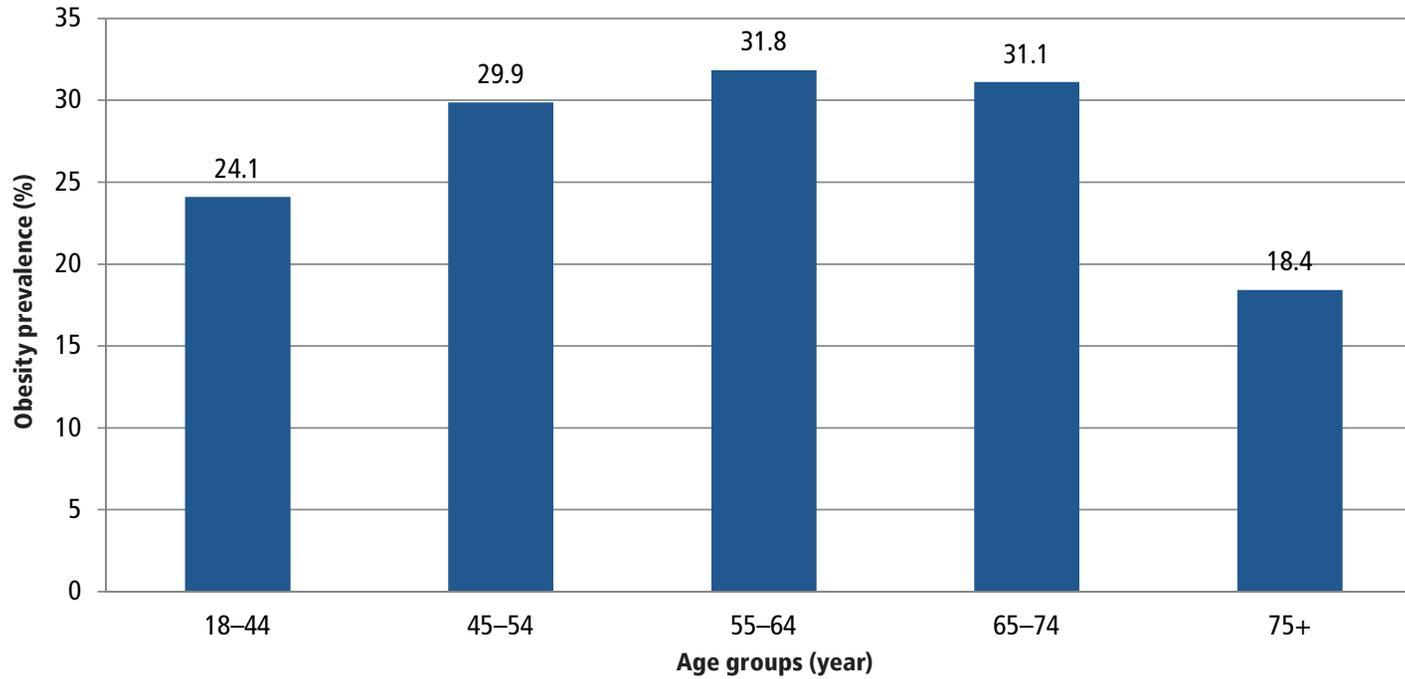


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The vertical dashed line denotes a different adjustment method and inclusion of cellular phones in the sample. Starting in 2010, estimates are not comparable to earlier years. BMI calculated based on 2011 CDC definition for all years. Estimates are age-adjusted.

- ▶ The percentage of men and women who are obese has been consistently similar.
- ▶ However, in 2011, 25.7% of men were considered obese compared to 27.5% of women.

FIGURE 2.2.3 OBESITY AMONG ADULTS, BY AGE GROUP, OREGON, 2011

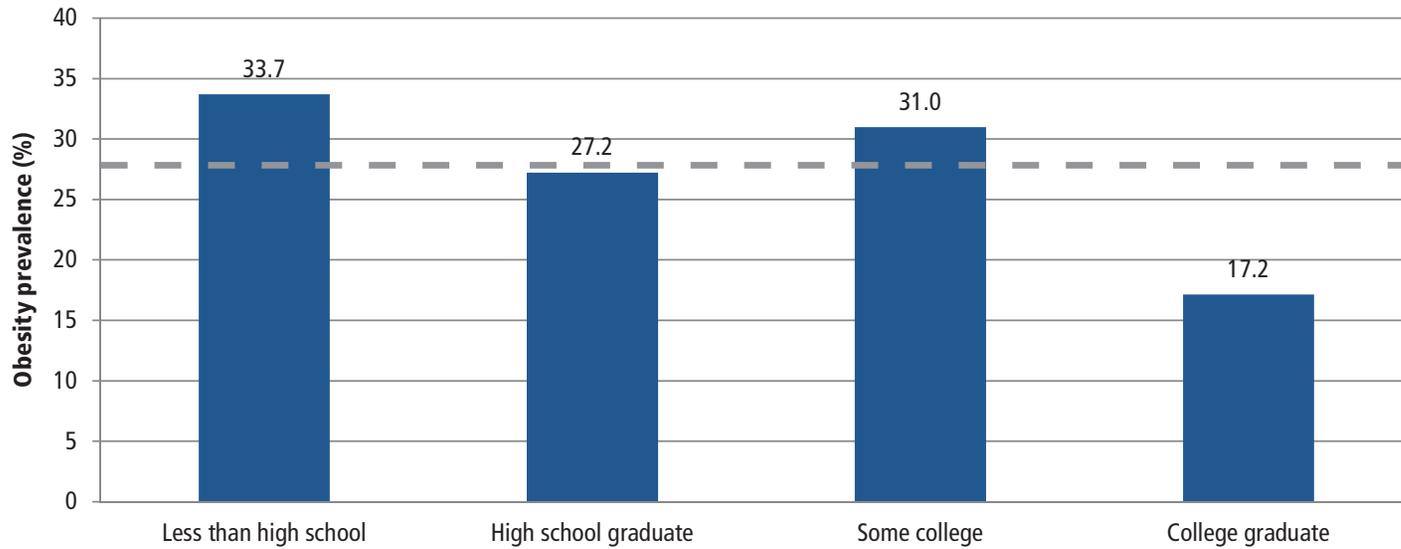


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: Estimates are not age-adjusted.

- Obesity was more prevalent at middle and older ages (45–74) compared to the youngest and oldest age groups (Figure 2.2.3).

FIGURE 2.2.4 OBESITY AMONG ADULTS, BY EDUCATION, OREGON, 2011

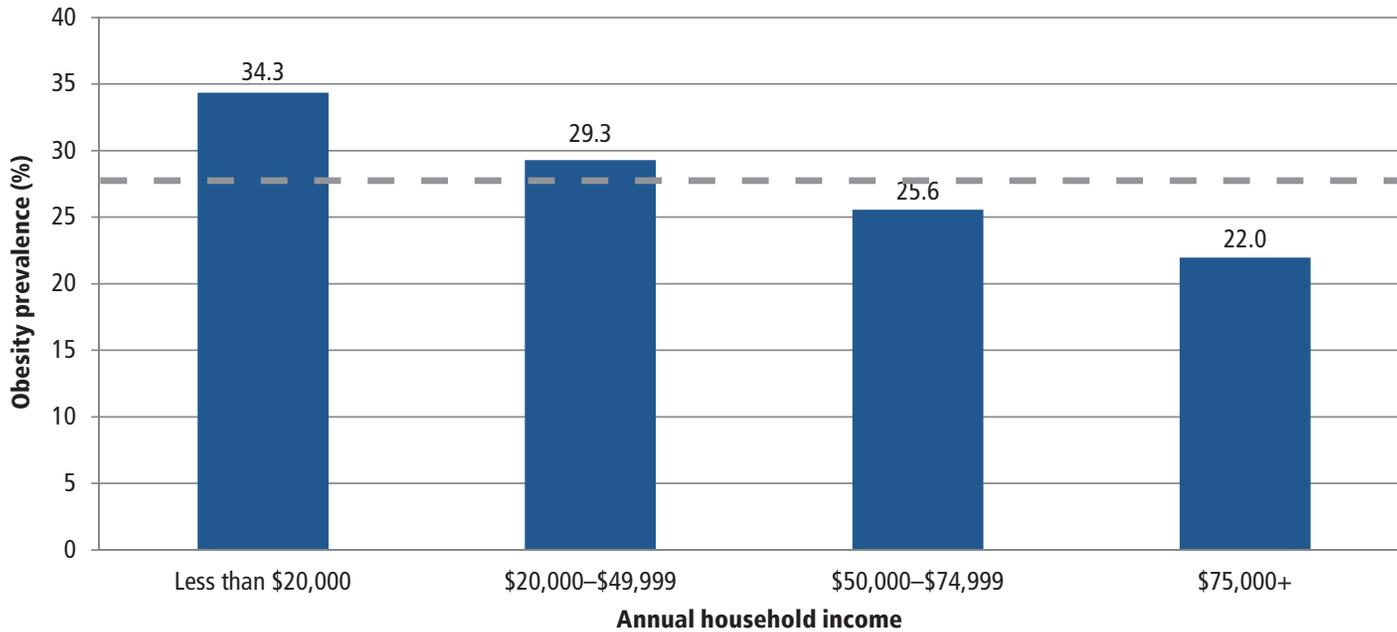


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who are obese (26.8%). Estimates are age-adjusted.

- ▶ The prevalence of obesity among adults with less than a high school education was nearly double that of adults with a college degree (Figure 2.2.4).

FIGURE 2.2.5 OBESITY AMONG ADULTS, BY ANNUAL HOUSEHOLD INCOME, OREGON, 2011



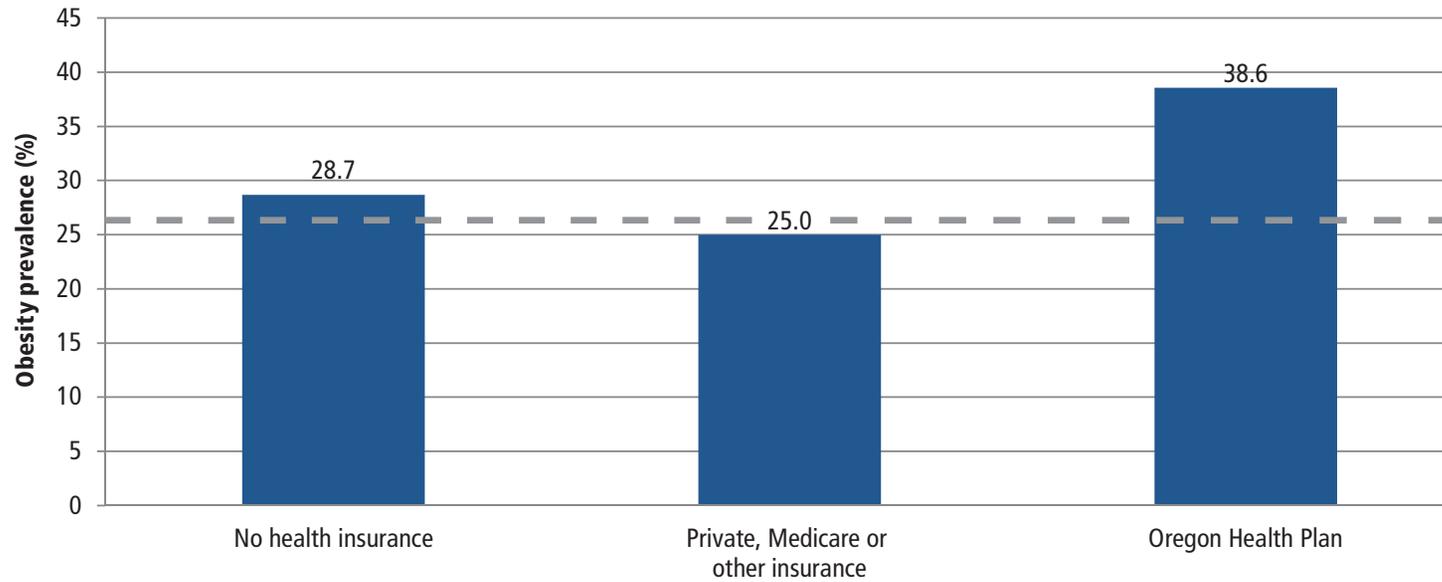
Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who are obese (26.8%). Estimates are age-adjusted.

- ▶ Obesity was more prevalent among Oregonians with lower household income levels (Figure 2.2.5).
- ▶ The prevalence of obesity among adults with a household income of less than \$20,000 was 36% higher than those who had a household income of \$75,000 or more.



FIGURE 2.2.6 OBESITY AMONG ADULTS, BY CURRENT TYPE OF HEALTH INSURANCE, OREGON, 2011



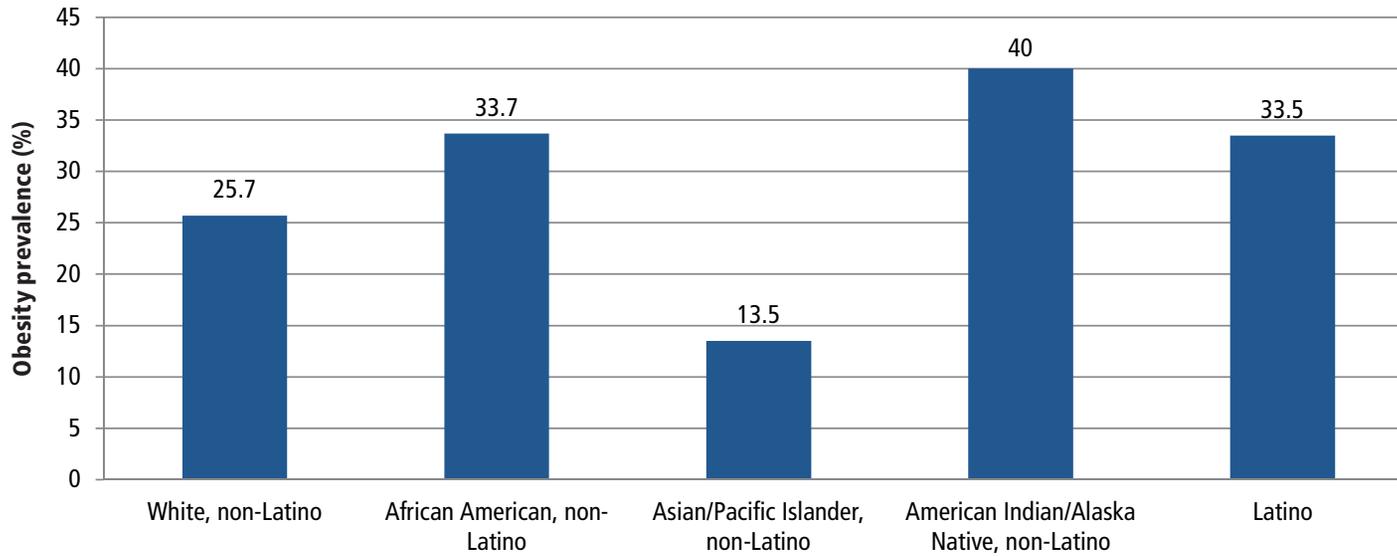
Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who are obese (26.8%). Estimates are age-adjusted.

- ▶ The prevalence of obesity among adults currently on the Oregon Health Plan was 35% higher compared to those who had private insurance or Medicare.



FIGURE 2.2.7 OBESITY AMONG ADULTS, BY RACE AND ETHNICITY, OREGON, 2010–2011

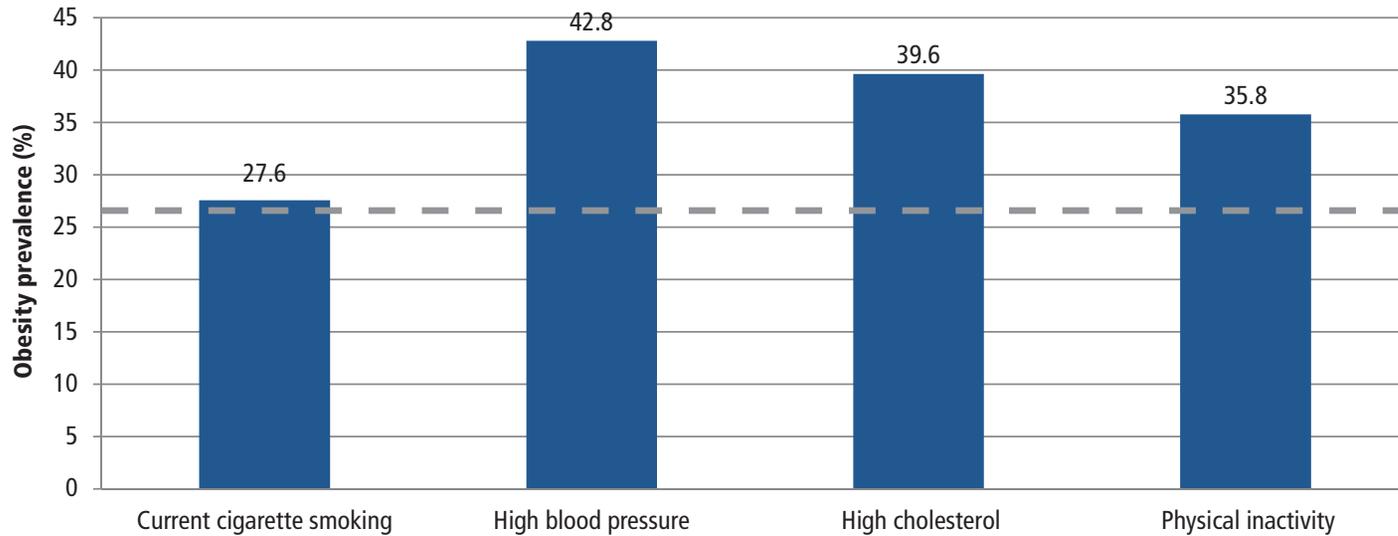


Data source: Oregon Behavioral Risk Factor Surveillance System 2010–2011 Race Oversample

Note: Estimates are age-adjusted.

- ▶ Many racial and ethnic minority groups in Oregon were disproportionately affected by obesity (Figure 2.2.7).
- ▶ The obesity prevalence among African American, American Indian or Alaska Native, and Latino persons was significantly higher compared to white persons.

FIGURE 2.2.8 OBESITY AMONG ADULTS WITH SELECTED HEALTH RISK FACTORS, OREGON, 2011

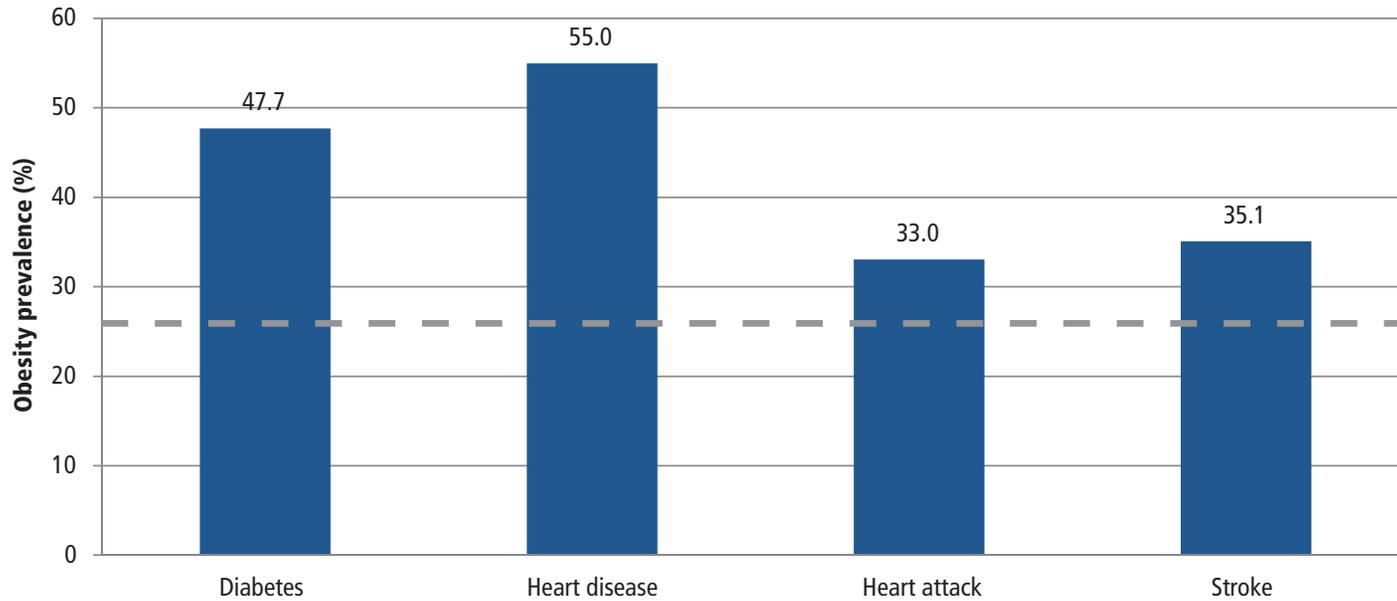


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who are obese (26.8%). Estimates are age-adjusted.

- ▶ Adults who have high blood pressure, high cholesterol, or are physically inactive had a higher obesity prevalence compared to the general population.

FIGURE 2.2.9 OBESITY AMONG ADULTS WITH DIABETES AND CARDIOVASCULAR DISEASES, OREGON, 2011

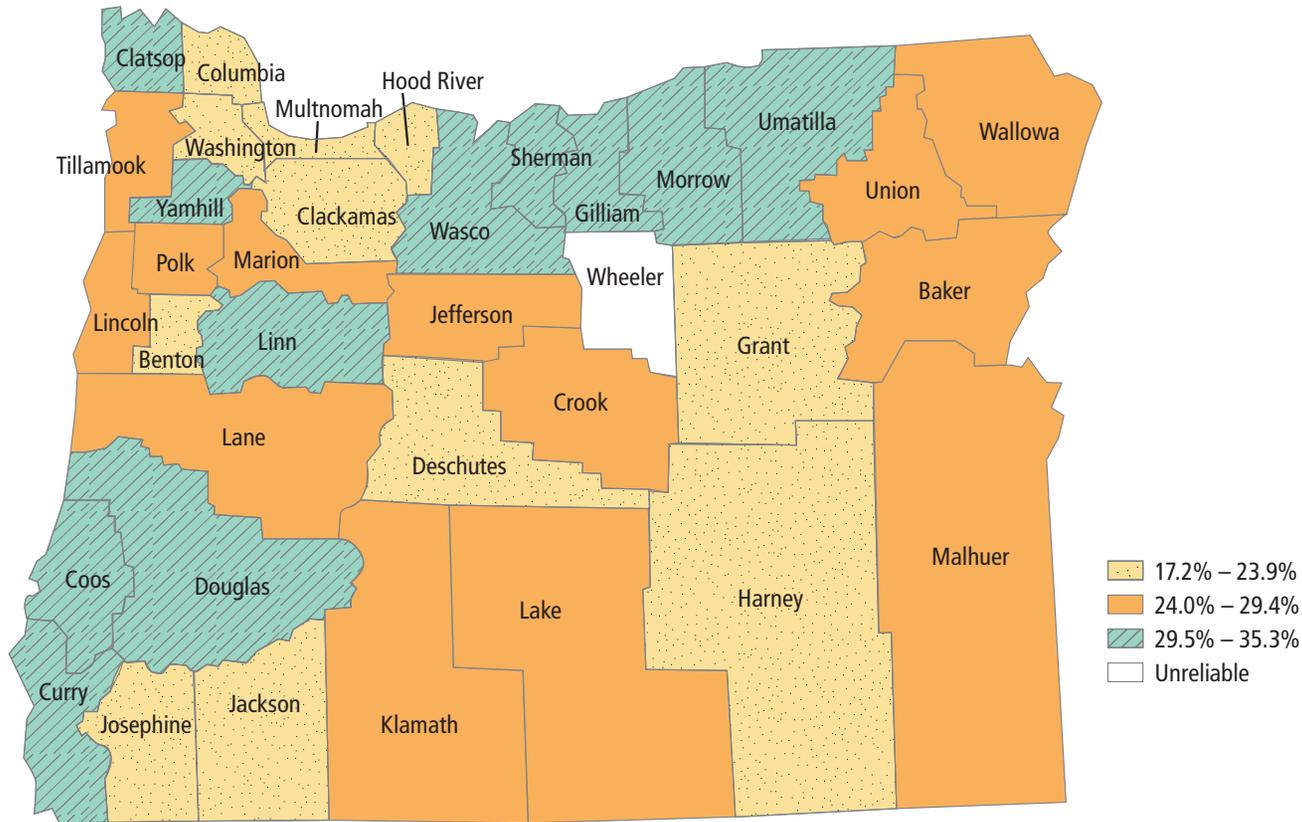


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who are obese (26.8%). Estimates are age-adjusted.

- ▶ Adults who have diabetes or cardiovascular diseases had a higher obesity prevalence compared to the general population.
- ▶ The prevalence of obesity among adults with diagnosed diabetes was 78% higher compared to the general population.
- ▶ The prevalence of obesity among adults with coronary heart disease was more than double that of the general population.

FIGURE 2.2.10 OBESITY AMONG ADULTS, BY COUNTY, OREGON, 2008–2011



Data source: Oregon Behavioral Risk Factor Surveillance System County Combined File

Note: Estimates are age-adjusted. The state diabetes prevalence for 2008–2011 was 24.8%.

- ▶ During 2008–2011, the prevalence of obesity among Oregon counties ranged from 17.2% to 35.3%
- ▶ Benton, Deschutes, Jackson, Josephine, Multnomah and Washington counties had significantly lower percentages of adults who were obese compared to the rest of the state.
- ▶ Coos, Douglas, Linn, Marion, Umatilla and Yamhill counties and North Central Health Division had significantly higher percentages of adults who were obese compared to the rest of the state.
- ▶ See Appendix A for detailed county estimates of obesity prevalence.

Conclusions

During the past two decades, obesity among Oregon adults has increased 150%. Today, 800,000 Oregon adults are considered obese, and an additional 1 million are overweight. Men and women have a similar prevalence of obesity. Obesity is prevalent among Oregonians of all ages, but less so among the very old. Differences were seen across other demographic factors. Obesity prevalence was higher among Oregon adults with less education, a smaller annual household income, and among those enrolled in the Oregon Health Plan, which is Oregon's Medicaid program. In addition, African American, American Indian/Alaska Native, and Latino persons had a high prevalence of obesity compared to white persons.

Oregon adults with other chronic disease risk factors and chronic conditions were also more likely to be obese compared to the general population. Most notable, obesity among adults with diagnosed diabetes was 78% higher compared to the general population, and obesity among adults with coronary heart diseases was more than double compared to the general population.



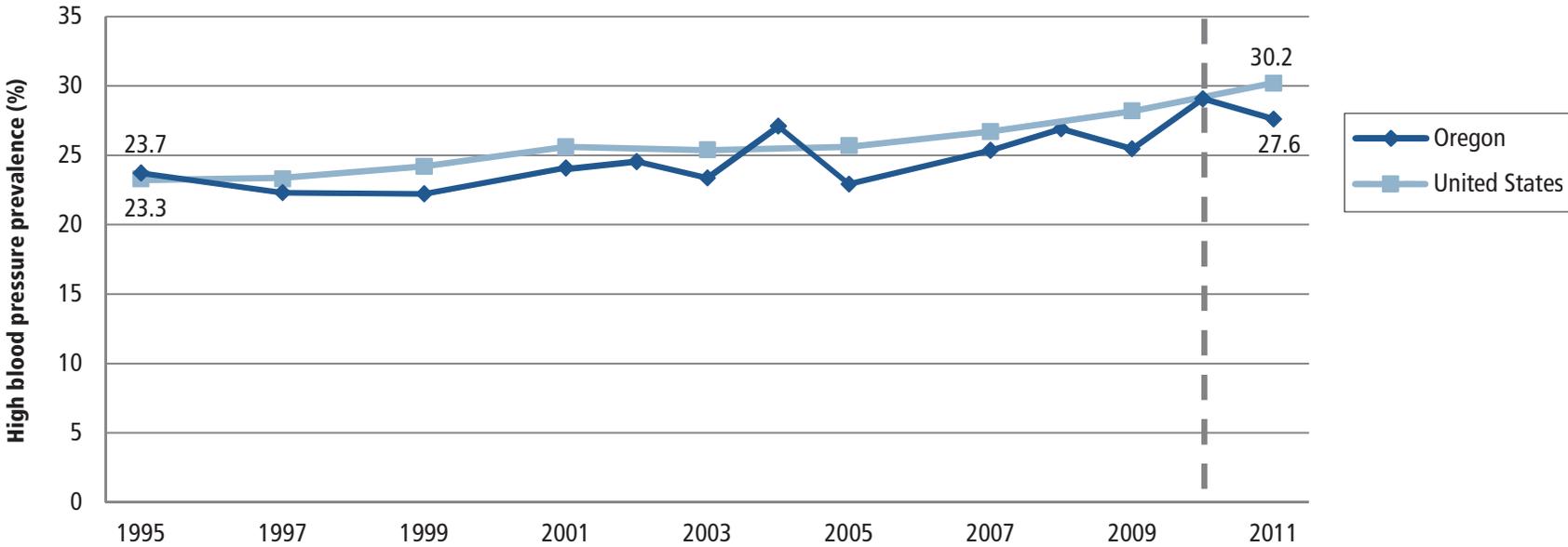


2.3 Who has high blood pressure?

Having high blood pressure increases risk for heart attack and stroke and complicates management of diabetes. High blood pressure can be caused by cigarette smoking, overweight or obesity, and excessive sodium in the diet. In 2011, an estimated 825,579 Oregon adults had high

blood pressure*. To understand the burden of heart disease, stroke and diabetes in Oregon, the prevalence of chronic disease risk factors such as high blood pressure needs to be understood. It is important to report the prevalence of high blood pressure among sub-populations of Oregonians (e.g., racial and ethnic minorities) to identify groups of Oregonians who are disproportionately affected by this

FIGURE 2.3.1 ADULTS WITH HIGH BLOOD PRESSURE, BY YEAR, OREGON AND THE UNITED STATES, 1990–2011



Data source: Oregon Behavioral Risk Factor Surveillance System
Note: The vertical dashed line denotes a different adjustment method and inclusion of cellular phones in the sample. Starting in 2010, estimates are not comparable to earlier years. Estimates are age-adjusted.

*For this report, high blood pressure prevalence for adults was determined by the percentage of adults who reported "Yes" when asked if they have ever been told by a doctor, nurse or other health professional that they have high blood pressure.

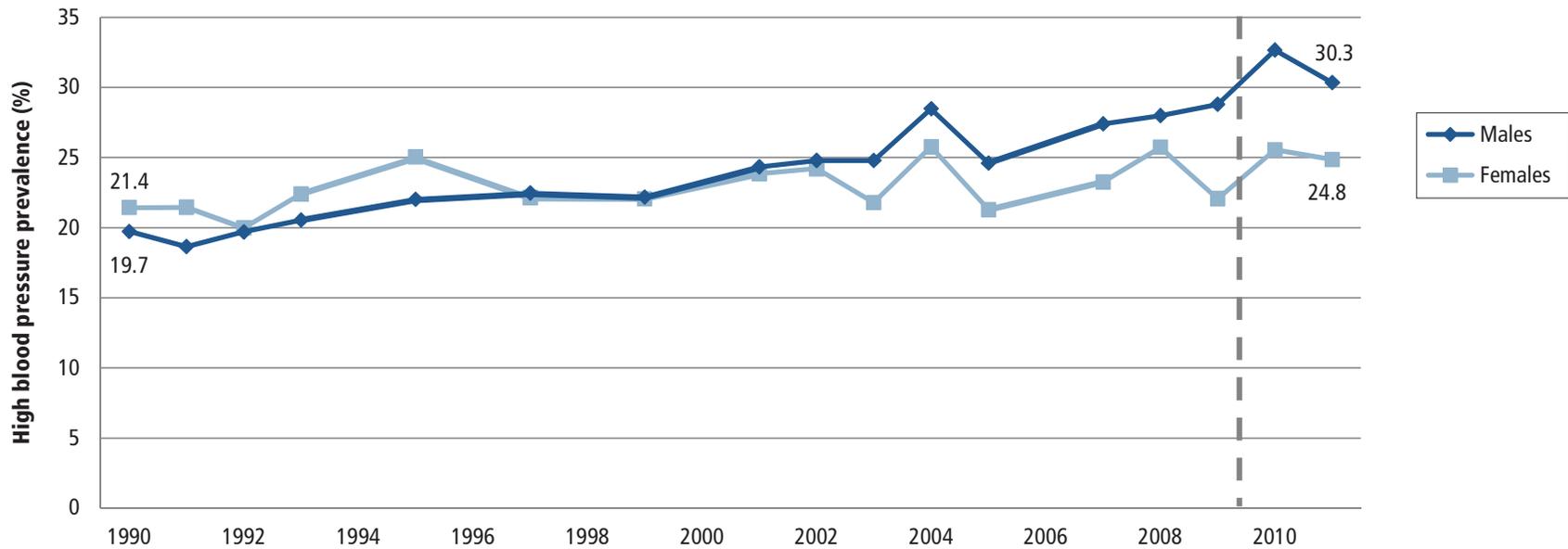
risk factor compared to the general population in Oregon. This section will describe the proportion of Oregonians who report high blood pressure. The high blood pressure prevalence will be discussed over time and by select demographics including gender, age, education, income, health insurance status, race and ethnicity, chronic disease risk factors, and chronic conditions.

- ▶ The proportion of adults with high blood pressure has been increasing over the last 15 years in Oregon and nationally (Figure 2.3.1 and Table 2.3.1).
- ▶ Fewer Oregon adults reported high blood pressure compared with the overall U.S. population, which has been consistent over time (Figure 2.3.1 and Table 2.3.1).
- ▶ From 1995 to 2011, the percentage of Oregonians with high blood pressure increased by 16.5% (Figure 2.3.1 and Table 2.3.1).
- ▶ In 2011, an estimated 825,579 Oregon adults had high blood pressure.

TABLE 2.3.1 ADULTS WITH HIGH BLOOD PRESSURE, BY YEAR, OREGON AND THE UNITED STATES, 1995–2011

YEAR	OREGON	UNITED STATES
1995	23.7	23.3
1996	N/A	N/A
1997	22.3	23.3
1998	N/A	N/A
1999	22.2	24.2
2000	N/A	N/A
2001	24.1	25.6
2002	24.6	N/A
2003	23.4	25.4
2004	27.1	N/A
2005	22.9	25.7
2006	N/A	N/A
2007	25.4	26.7
2008	26.9	N/A
2009	25.5	28.2
2010	29.1	N/A
2011	27.6	30.2

FIGURE 2.3.2 ADULTS WITH HIGH BLOOD PRESSURE, BY SEX AND YEAR, OREGON, 1990–2011

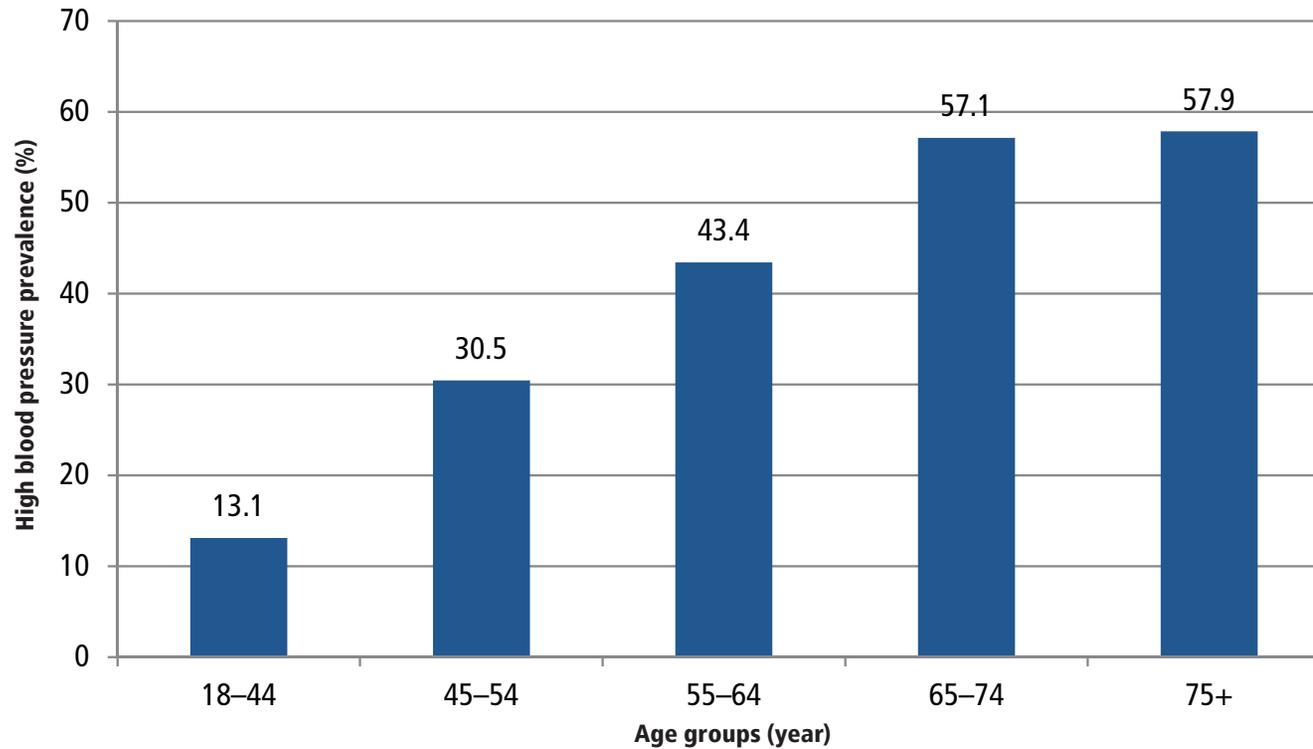


Data source: Oregon Behavioral Risk Factor Surveillance Systems

Note: The vertical dashed line denotes a different adjustment method and inclusion of cellular phones in the sample. Starting in 2010, estimates are not comparable to earlier years. Estimates are age-adjusted.

- ▶ Prior to 2002, a similar proportion of males and females in Oregon had high blood pressure. From 2002 to 2011, a higher proportion of males reported high blood pressure than females (Figure 2.3.2).
- ▶ In 2011, the percentage of adult males reporting high blood pressure was 22.2% higher than females (Figure 2.3.2).
- ▶ Although there is a disparity in prevalence of high blood pressure among genders, the proportion of adults with high blood pressure who were taking medication for high blood pressure did not differ significantly between males (53.9%) and females (58.5%).

FIGURE 2.3.3 ADULTS WITH HIGH BLOOD PRESSURE, BY AGE GROUP, OREGON, 2011

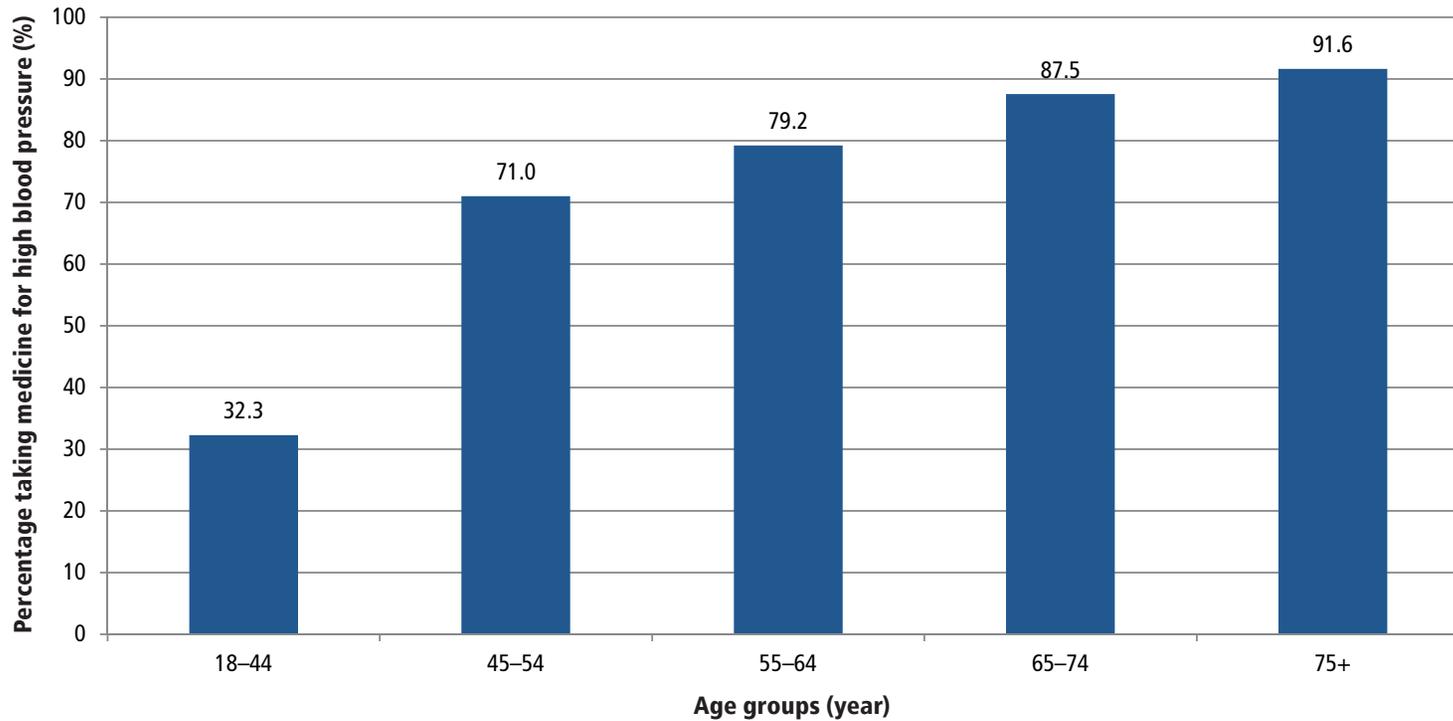


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: Estimates are not age-adjusted.

- ▶ The prevalence of high blood pressure increases greatly with age. More than half of Oregonians aged 65 and older had been diagnosed with high blood pressure, compared to less than 13% of adults aged 18-44 (Figure 2.3.3).

FIGURE 2.3.4 ADULTS WITH HIGH BLOOD PRESSURE WHO REPORTED TAKING MEDICATION FOR HIGH BLOOD PRESSURE, BY AGE GROUP, OREGON, 2011

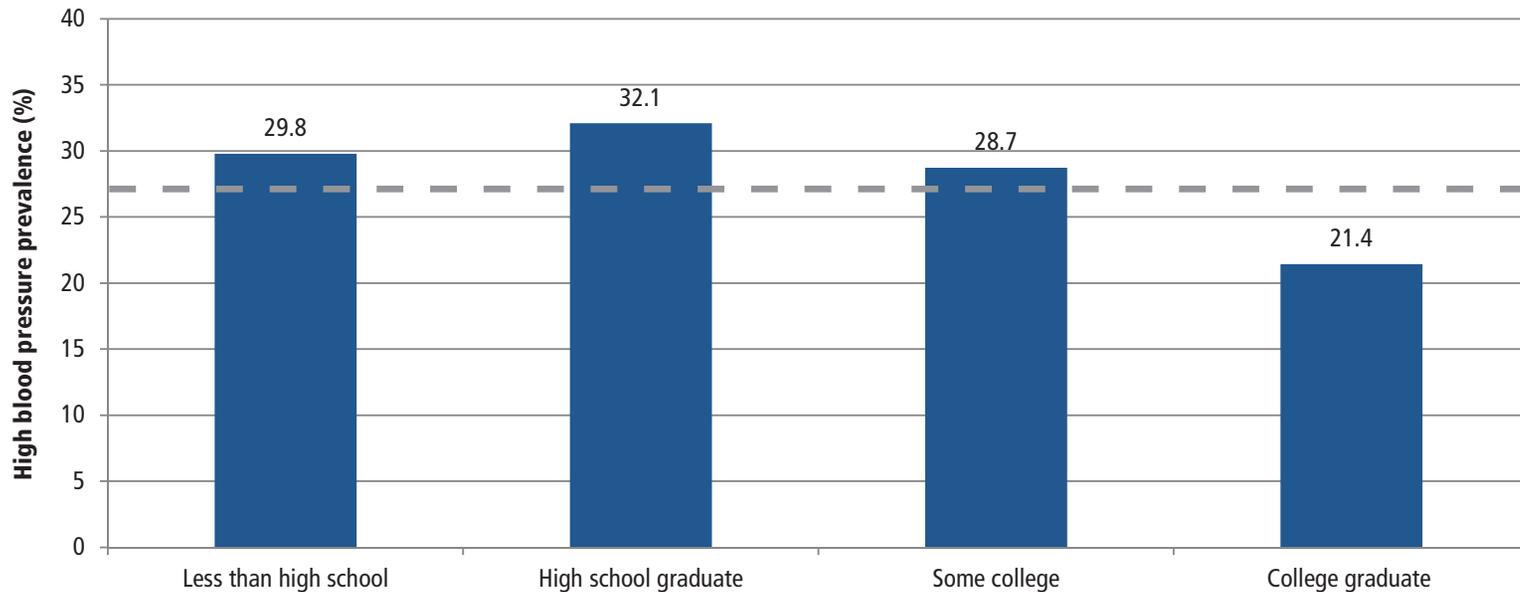


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: Estimates are not age-adjusted.

- ▶ Among Oregon adults with high blood pressure, the proportion taking medication for high blood pressure increased with age (Figure 2.3.4).
- ▶ Nearly all (91.6%) adults aged 75 years or older reported taking medicine for high blood pressure compared to approximately one-third of adults aged 18 to 44 with high blood pressure (Figure 2.3.4).

FIGURE 2.3.5 ADULTS WITH HIGH BLOOD PRESSURE, BY EDUCATION, OREGON, 2011

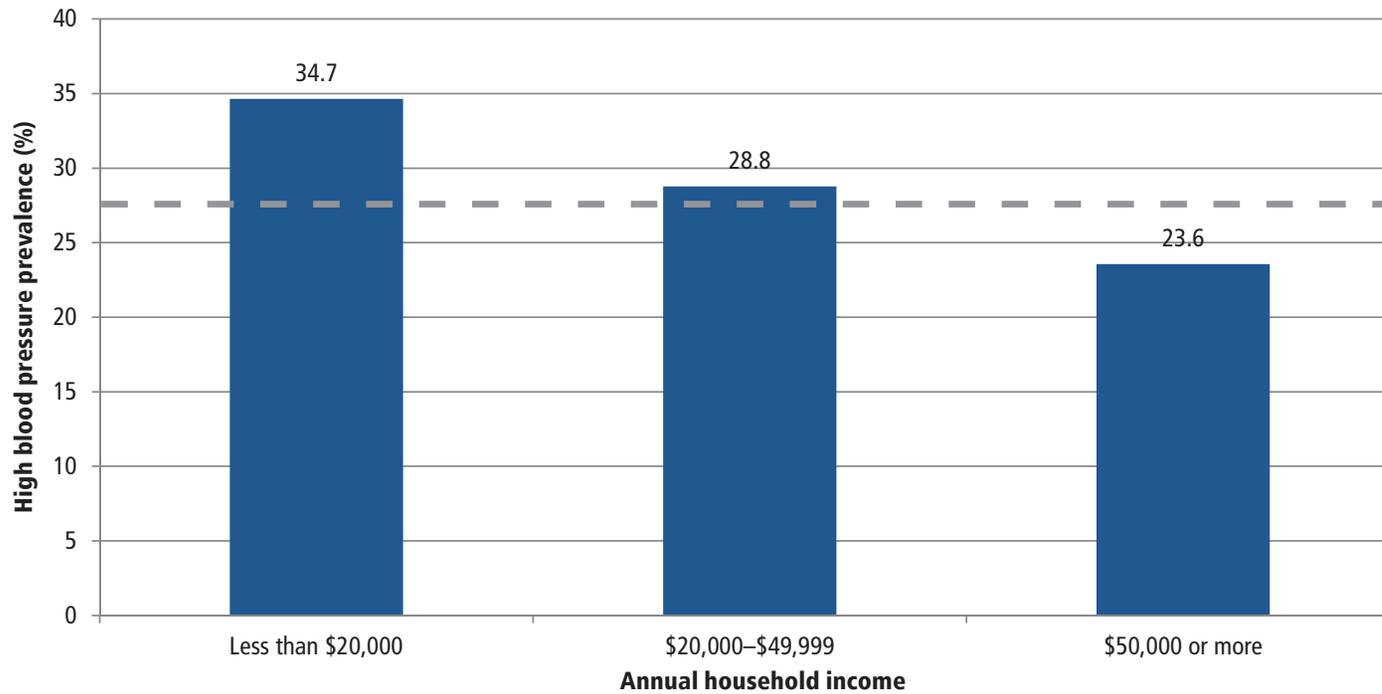


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with high blood pressure (27.6%). Estimates are age-adjusted.

- ▶ Oregon adults with less than a high school education were 39.3% more likely to report high blood pressure compared to Oregon adults with a college degree (Figure 2.3.5).
- ▶ The proportion of Oregon adults with high blood pressure taking medication for high blood pressure did not differ significantly by education level; approximately half of those with less than a high school education and half of those with a college degree were taking medication for high blood pressure.

FIGURE 2.3.6 ADULTS WITH HIGH BLOOD PRESSURE, BY ANNUAL HOUSEHOLD INCOME, OREGON, 2011

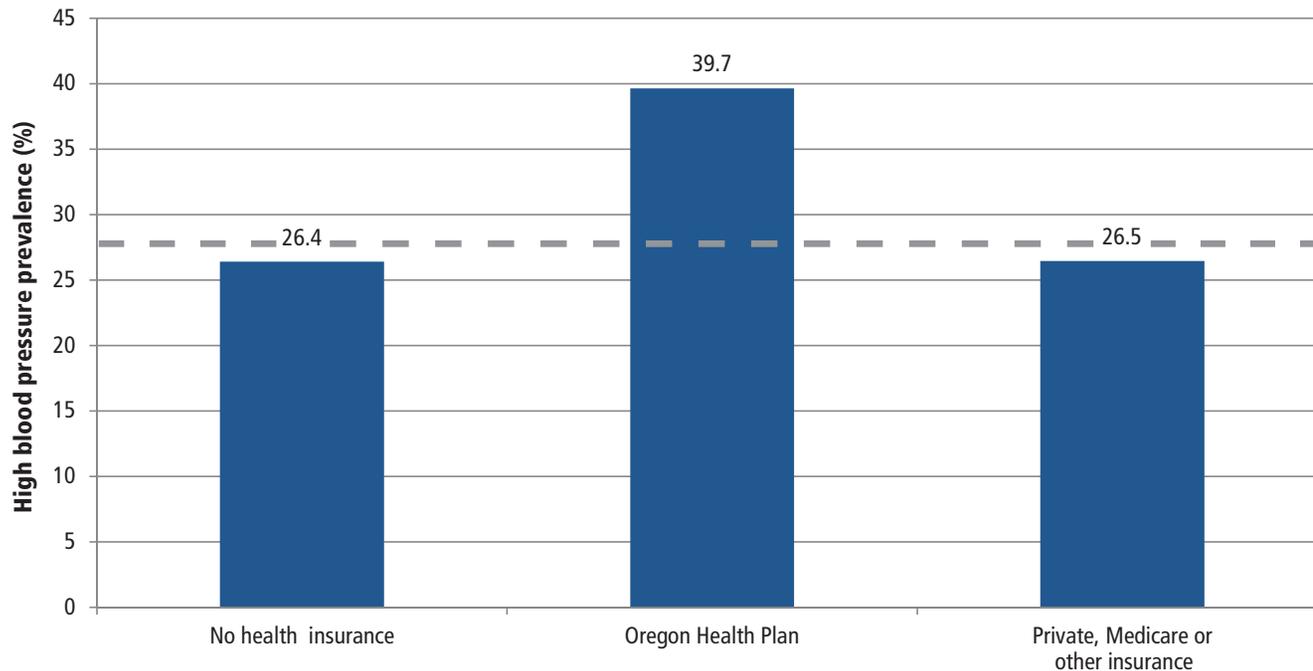


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with high blood pressure (27.6%). Estimates are age-adjusted.

- ▶ Oregon adults in households with an annual income of less than \$20,000 were 47% more likely to report high blood pressure compared to Oregon adults in households with an annual income of \$50,000 or more (Figure 2.3.6).

FIGURE 2.3.7 ADULTS WITH HIGH BLOOD PRESSURE, BY CURRENT TYPE OF HEALTH INSURANCE, OREGON, 2011

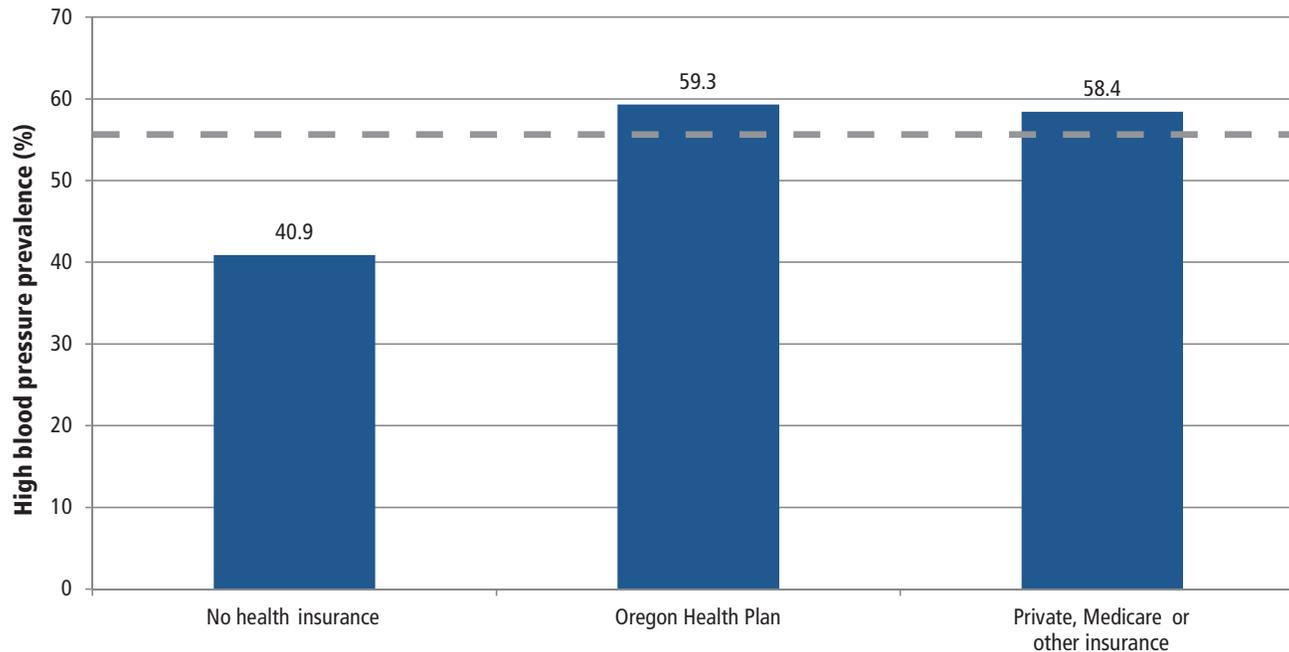


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with high blood pressure (27.6%). Estimates are age-adjusted.

- ▶ Oregon Health Plan (OHP) members were 49.8% more likely to report high blood pressure compared to individuals enrolled in private, Medicare or other health insurance plans (Figure 2.3.7).
- ▶ Oregon adults with no health insurance (26.4%) and those with private, Medicare or other health insurance plans (26.5%) reported a similar prevalence of high blood pressure (Figure 2.3.7). This is likely due to inadequate access to health care; access to care and contact with a health care provider are required to receive a diagnosis of high blood pressure. In addition, those with no health insurance are generally younger and healthier and therefore are less likely to have chronic health conditions.
- ▶ Adult OHP members were more than twice as likely to smoke as people with any other type of health insurance. Smoking is an important risk factor for high blood pressure. OHP is intended to help ensure that medical care is affordable for those with a low income. People with lower incomes were more likely to live in substandard housing, smoke cigarettes and higher disease morbidity.

FIGURE 2.3.8 ADULTS WITH HIGH BLOOD PRESSURE WHO REPORTED TAKING MEDICATION FOR HIGH BLOOD PRESSURE, BY INSURANCE STATUS, OREGON, 2011



Data source: Oregon Behavioral Risk Factor Surveillance System

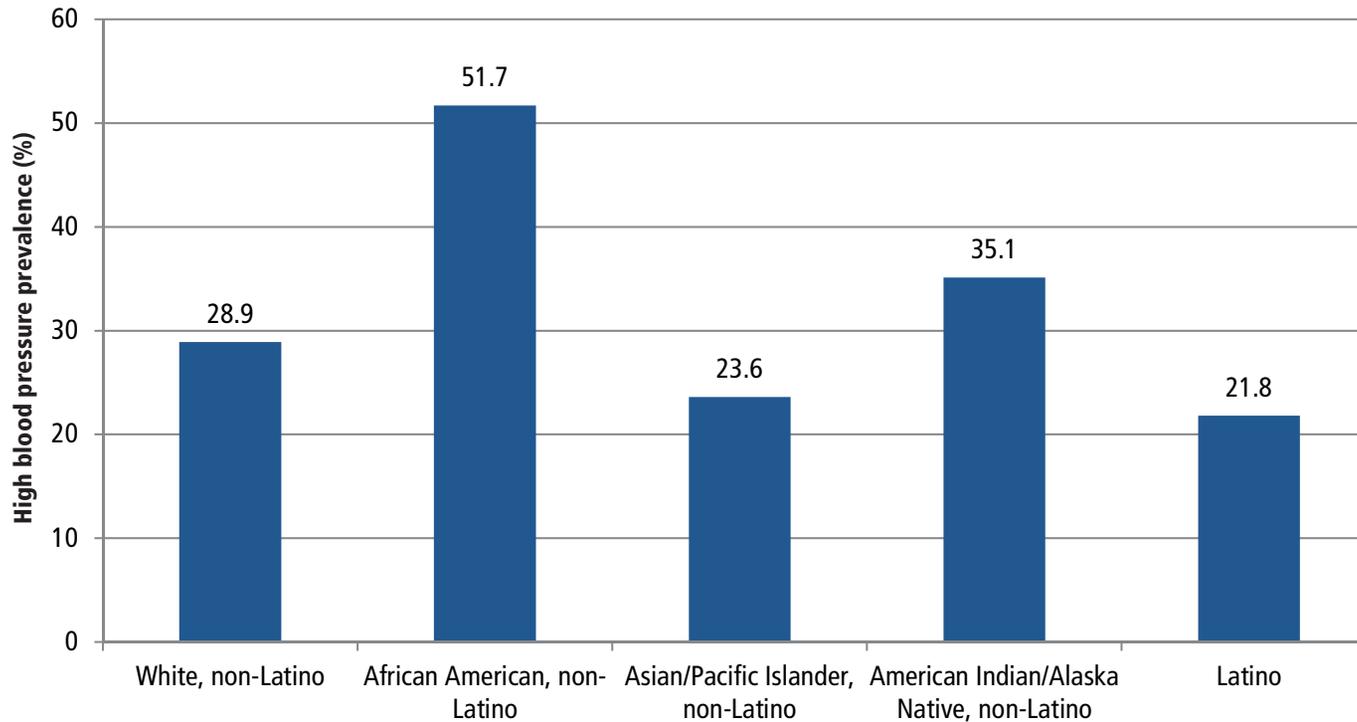
Note: The horizontal dashed line represents the percentage of the general population with high blood pressure taking medication for high blood pressure (55.7%). Estimates are age-adjusted

- ▶ The higher prevalence of high blood pressure observed among the adult population enrolled in OHP may be due to the demographic composition of this vulnerable population. Adult OHP members are low-income and include pregnant women, seniors and people with disabilities.
- ▶ Adult OHP members were more than twice as likely to smoke cigarettes as people with any other type of health insurance.⁴⁰ Cigarette smoking is an important risk factor for high blood pressure. OHP is intended to help ensure that

medical care is affordable for those with a low income.³⁸ People with lower incomes were more likely to live in substandard housing, smoke and have higher disease morbidity.³⁹

- ▶ Oregon adults with high blood pressure and no insurance were approximately 30% less likely to be taking medication for high blood pressure compared to adults enrolled in the Oregon Health Plan or those with private, Medicare or other insurance (Figure 2.3.8).

FIGURE 2.3.9 ADULTS WITH HIGH BLOOD PRESSURE, BY RACE AND ETHNICITY, OREGON, 2010–2011

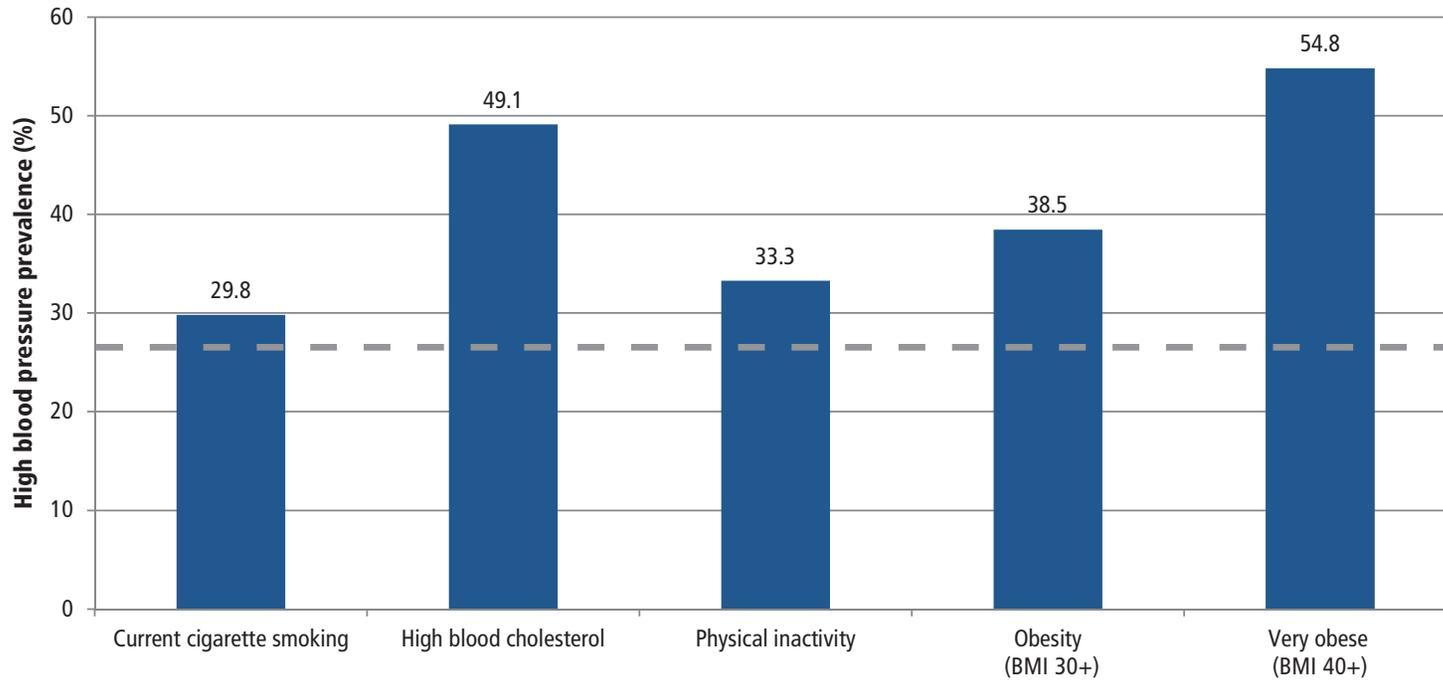


Data source: Oregon Behavioral Risk Factor Surveillance System 2010–2011 Race Oversample

Note: Estimates are age-adjusted.

- ▶ This is likely due to the high cost of prescription medications that become unavailable to those without insurance coverage.
- ▶ More African American (51.7%) and American Indian/Alaska Native (35.1%) persons reported high blood pressure compared to other racial and ethnic groups (Figure 2.3.9).
- ▶ The percentage of African American persons who reported high blood pressure was nearly double that of white persons (Figure 2.3.9).

FIGURE 2.3.10 HIGH BLOOD PRESSURE AMONG ADULTS WITH SELECTED HEALTH RISK FACTORS, OREGON, 2011

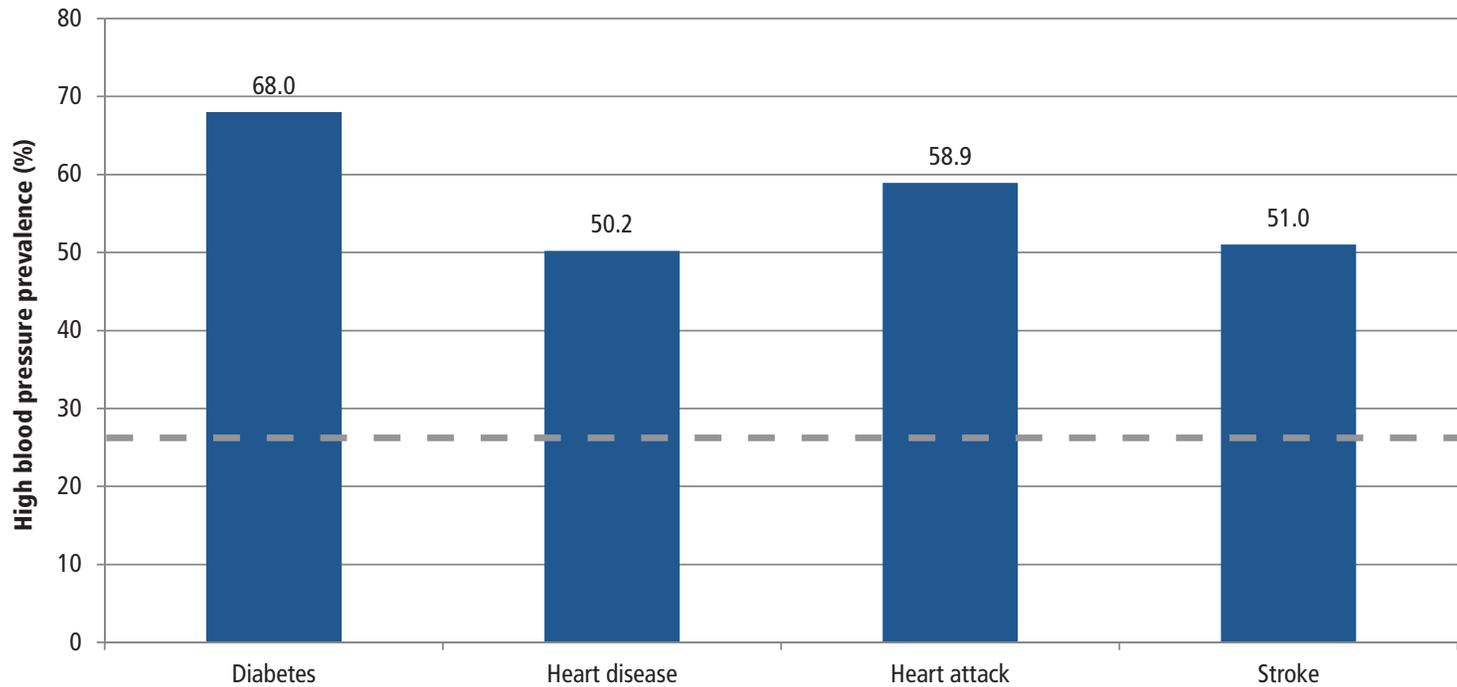


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with high blood pressure (27.6%). Estimates are age-adjusted.

- ▶ Adults who were obese or very obese, current cigarette smokers, had high cholesterol or were physically inactive reported high blood pressure more often than the general population of Oregon adults (Figure 2.3.10).
- ▶ The percentage of Oregon adults who had high blood pressure was 77.9% higher among those with high cholesterol compared to the general population (Figure 2.3.10).
- ▶ Oregon adults who were obese had a high blood pressure prevalence 39.5% higher than the general population; those who were very obese had a high blood pressure prevalence double that of the general population (Figure 2.3.10).

FIGURE 2.3.11 HIGH BLOOD PRESSURE AMONG ADULTS WITH DIABETES AND CARDIOVASCULAR DISEASES, OREGON, 2011

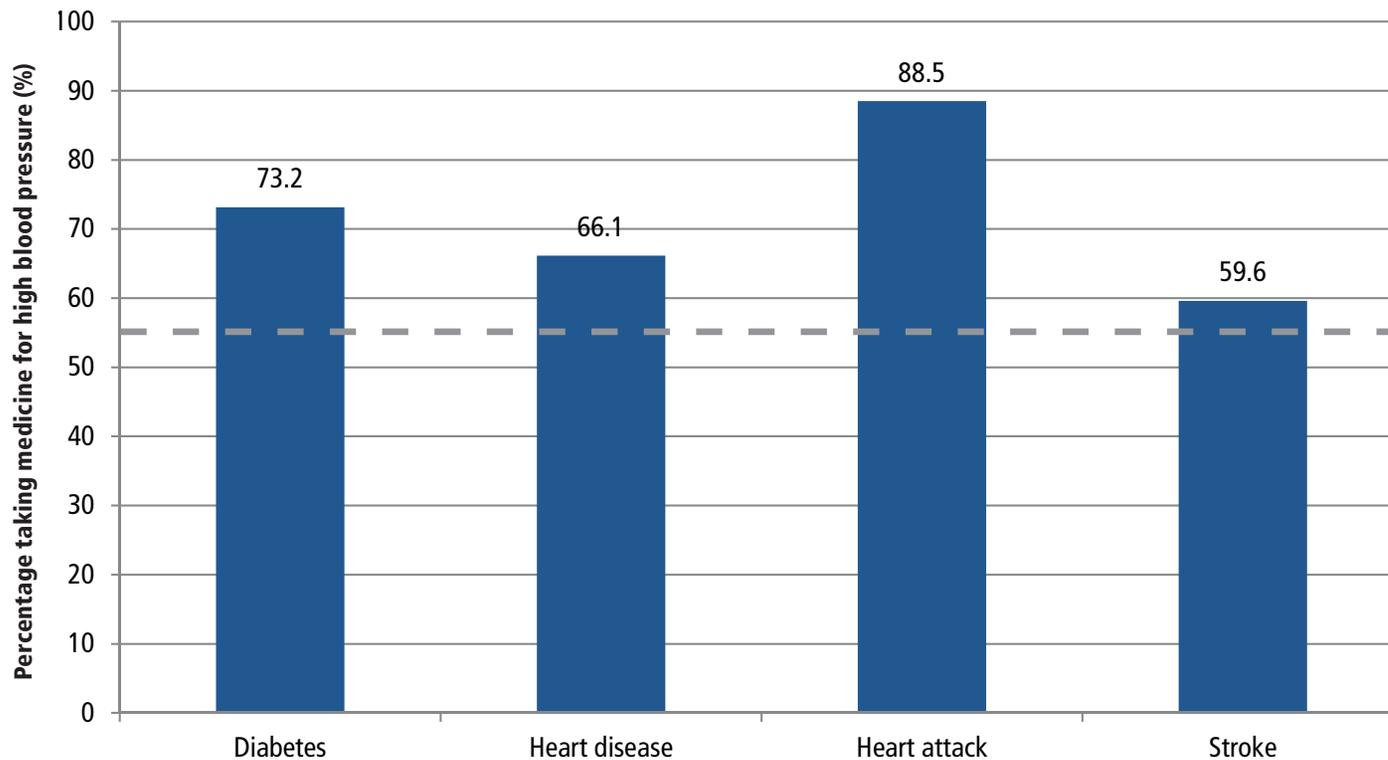


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with high blood pressure (27.6%). Estimates are age-adjusted.

- ▶ Adult Oregonians with diabetes and those who had a heart attack sometime in their life had a high blood pressure prevalence more than double that of adults in the general population (Figure 2.3.11).
- ▶ Oregonians who reported either heart disease or a stroke in their lifetimes had a high blood pressure prevalence nearly double that of the general population (Figure 2.3.11).

FIGURE 2.3.12 ADULTS WITH HIGH BLOOD PRESSURE WHO REPORTED TAKING MEDICATION FOR HIGH BLOOD PRESSURE, BY CHRONIC DISEASE STATUS, OREGON, 2011



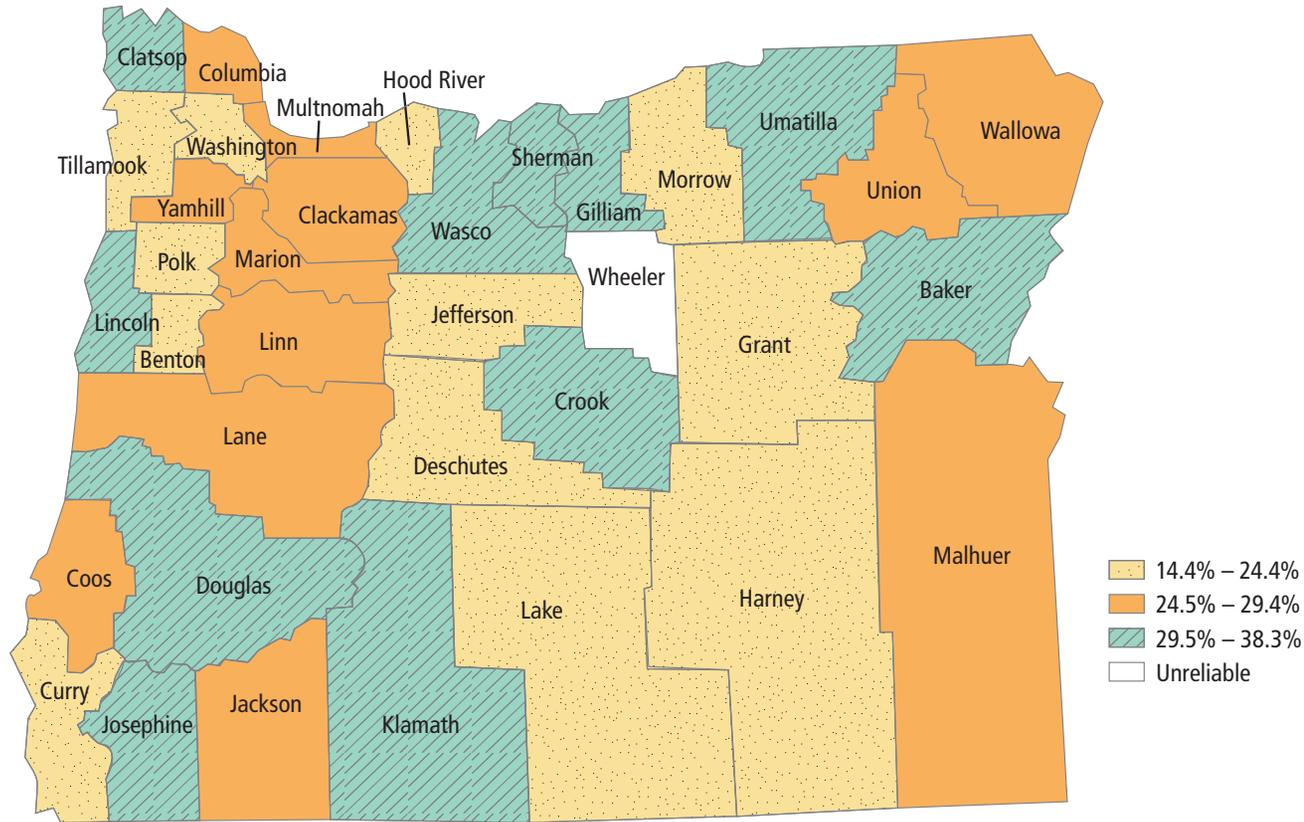
Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with high blood pressure taking medication for high blood pressure (55.7%). Estimates are age-adjusted.

► Oregon adults with high blood pressure and a comorbid chronic disease were more likely than the general population with high blood pressure to be taking blood pressure medication (Figure 2.3.12).

► Among Oregon adults with high blood pressure, those with a diagnosis of diabetes or heart attack were 31.4% and 58.9% more likely than the general population to be taking medication for high blood pressure, respectively (Figure 2.3.12).

FIGURE 2.3.13 ADULTS WITH HIGH BLOOD PRESSURE, BY COUNTY, OREGON, 2008–2011

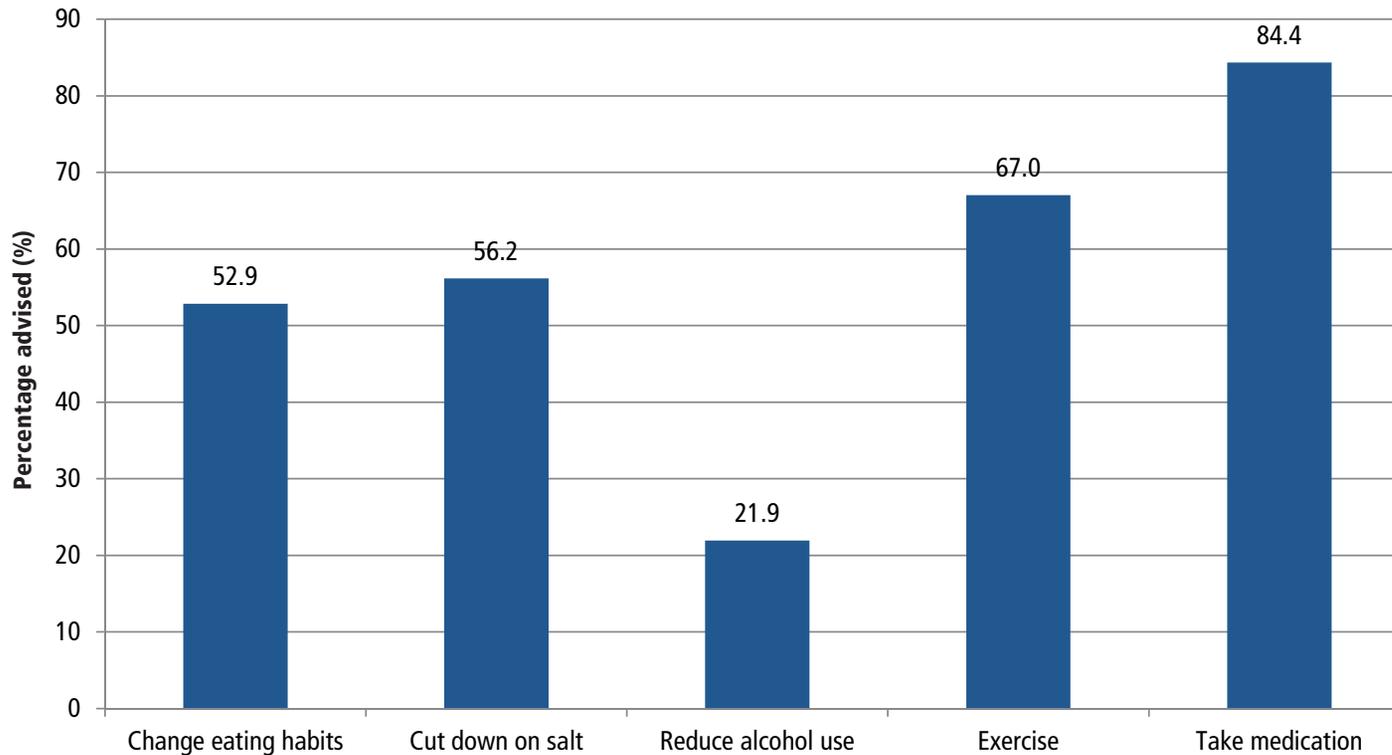


Data source: Oregon Behavioral Risk Factor Surveillance System county combined file

Note: Estimates are age-adjusted. The state diabetes prevalence for 2008-2011 was 26.6%.

- ▶ During 2008–2011, the prevalence of diagnosed high blood pressure among Oregon counties ranged from 14.4% to 38.3%.
- ▶ Deschutes, Harney, Jefferson and Washington counties had significantly lower percentages of adults with diagnosed high blood pressure compared to the rest of the state.
- ▶ Douglas County had a significantly higher percentage of adults with diagnosed high blood pressure compared to the rest of the state.
- ▶ See Appendix A for detailed county estimates for high blood pressure prevalence.

FIGURE 2.3.14 ADULTS WITH HIGH BLOOD PRESSURE WHO WERE ADVISED BY A DOCTOR TO CONTROL HIGH BLOOD PRESSURE, OREGON, 2011

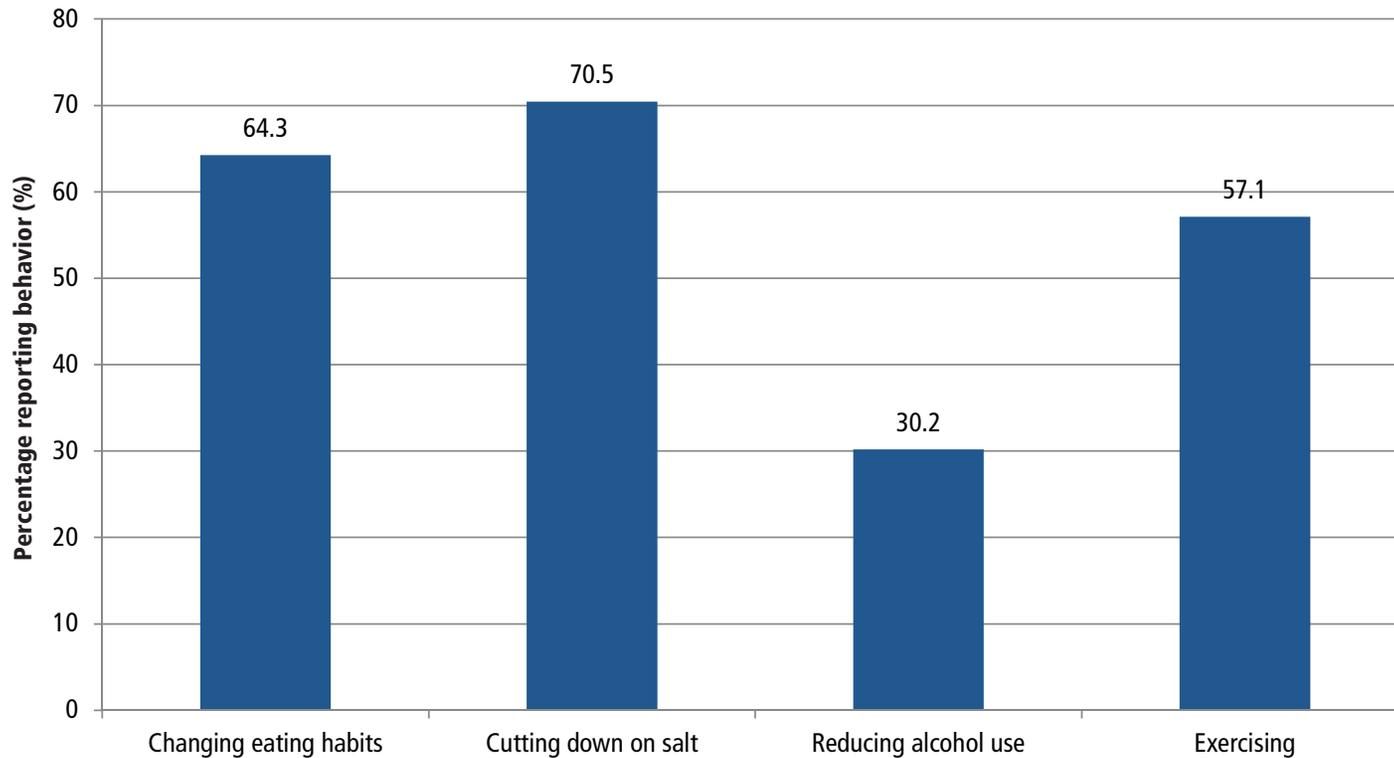


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: Estimates are age-adjusted.

- ▶ Among Oregon adults with a diagnosis of high blood pressure, a little more than half were advised by their health care professional to change their eating habits and cut down on salt intake; nearly one-in-four were advised to reduce alcohol use, two-in-three were advised to exercise and five-in-six were advised to take blood pressure medication to control high blood pressure (Figure 2.3.14).

FIGURE 2.3.15 ADULTS WITH HIGH BLOOD PRESSURE WHO CHANGED BEHAVIORS TO CONTROL HIGH BLOOD PRESSURE, OREGON, 2011



Data source: Oregon Behavioral Risk Factor Surveillance System

Note: Estimates are age-adjusted.

- ▶ Among Oregon adults with a diagnosis of high blood pressure, nearly two-in-three reported changing their eating habits, nearly three-in-four reported cutting down on salt intake, nearly one-in-three report reduced alcohol use, and a little more than half reported engaging in physical activity to reduce their high blood pressure (Figure 2.3.15).

Conclusions

Overall, the prevalence of high blood pressure among Oregon adults is steadily increasing over time, likely coinciding with the rise in obesity. There are notable differences in prevalence of high blood pressure among males and vulnerable groups of Oregonians including those with less education, a smaller annual household income, and those enrolled in the Oregon Health Plan. In addition, African American persons reported high blood pressure more often than other racial and ethnic groups. Over half of African American persons in Oregon have high blood pressure, which is nearly double the proportion of white persons. Oregon adults with chronic disease risk were also more likely to report high blood pressure than the general population, particularly those with high cholesterol and those who are very obese. Oregonians with diabetes or cardiovascular disease were also more likely to report high blood pressure than the general population and were also more likely to be taking medication for high blood pressure. Fortunately, Oregon adults with high blood pressure are engaging in behaviors that will help to lower their high blood pressure, including changing eating habits, cutting down on salt intake and exercising. The vast majority of those with high blood pressure were advised by their health care provider to take blood pressure medication. Approximately half were not advised to change their eating habits or lower salt intake and 40% were not advised to exercise. These are all key components to the control of high blood pressure.

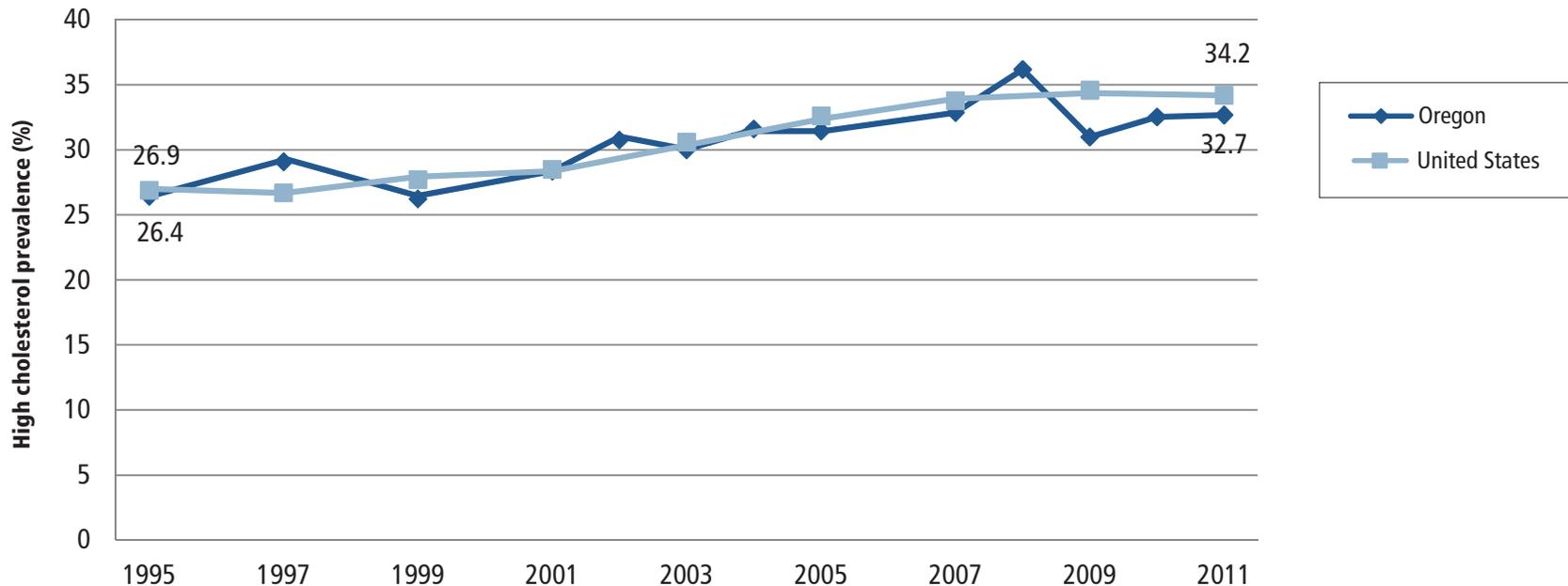


2.4 Who has high cholesterol?

Having high cholesterol increases risk for heart attack and stroke and is an indicator for diabetes. High cholesterol can be caused by overweight or obesity, and a diet high in artificial trans fats. In 2011, an estimated 1.1 million Oregon adults had high cholesterol. It is important to report the prevalence of

high cholesterol* among sub-populations of Oregonians (e.g., racial and ethnic minorities) to identify groups of Oregonians who are disproportionately affected by this risk factor compared to the general population in Oregon. This section will describe the proportion of Oregonians who report high cholesterol. The high cholesterol prevalence will be discussed over time and by select demographics including

FIGURE 2.4.1 ADULTS WITH HIGH CHOLESTEROL, BY YEAR, OREGON AND THE UNITED STATES, 1995–2011



Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The vertical dashed line denotes a different adjustment method and inclusion of cellular phones in the sample. Starting in 2010, estimates are not comparable to earlier years. Estimates are age-adjusted.

*For this report, high cholesterol prevalence for adults was determined by the percentage of adults who reported “Yes” when asked if they have ever been told by a doctor, nurse or other health professional that they have high cholesterol.

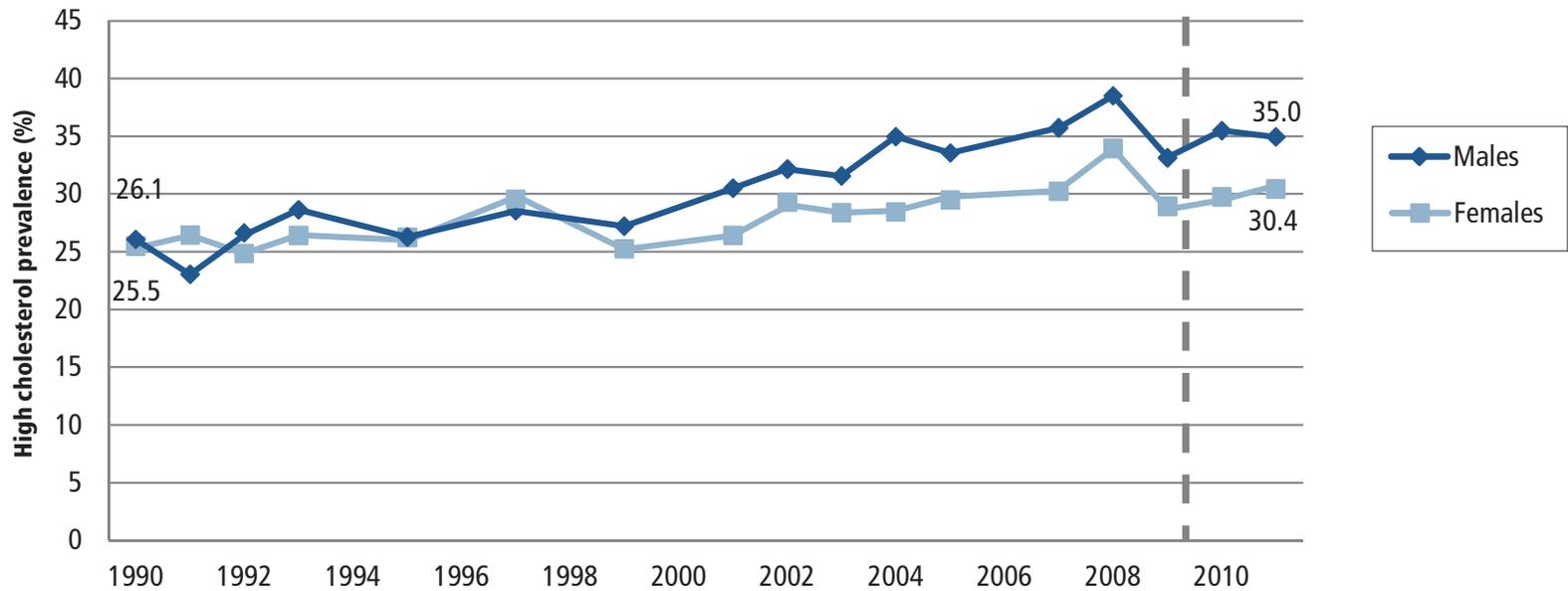
gender, age, education, income, health insurance status, race and ethnicity, chronic disease risk factors, and chronic conditions.

- ▶ The prevalence of high cholesterol has steadily increased in both Oregon and the United States during the last 15 years (Figure 2.4.1).
- ▶ Fewer Oregon adults currently reported high cholesterol compared to the overall U.S. population; however, the prevalence of high cholesterol among adults in Oregon and the United States has been fairly similar over time (Figure 2.4.1 and Table 2.4.1).
- ▶ From 1995 to 2011, the prevalence of high cholesterol among Oregon adults increased 23.8% (Figure 2.4.1 and Table 2.4.1).
- ▶ In 2011, an estimated 1,151,922 Oregon adults had high cholesterol.

TABLE 2.4.1 ADULTS WITH HIGH CHOLESTEROL, BY YEAR, OREGON AND THE UNITED STATES, 1995–2011

YEAR	OREGON	UNITED STATES
1995	26.4	26.9
1996	N/A	N/A
1997	29.1	26.7
1998	N/A	N/A
1999	26.2	27.7
2000	N/A	N/A
2001	28.4	28.5
2002	30.8	N/A
2003	30.0	30.6
2004	31.6	N/A
2005	31.5	32.6
2006	N/A	N/A
2007	32.9	33.8
2008	36.2	N/A
2009	31.0	34.6
2010	32.5	N/A
2011	32.7	34.2

FIGURE 2.4.2 ADULTS WITH HIGH CHOLESTEROL, BY SEX AND YEAR, OREGON, 1990–2011

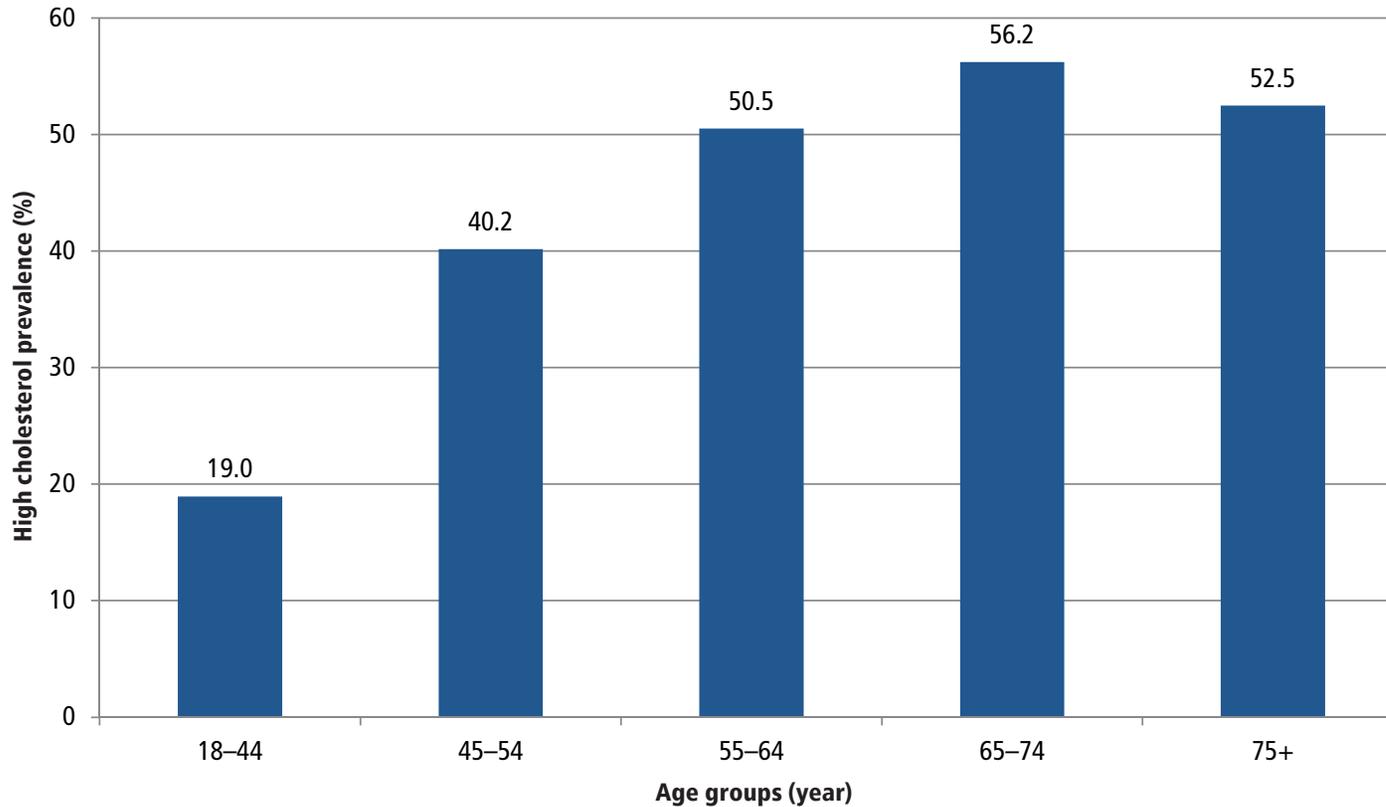


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The vertical dashed line denotes a different adjustment method and inclusion of cellular phones in the sample. Starting in 2010, estimates are not comparable to earlier years. Estimates are age-adjusted.

- ▶ Prior to 1998, a similar proportion of males and females in Oregon had high cholesterol. From 1998 to 2011, a higher proportion of males than females reported high cholesterol (Figure 2.4.2).
- ▶ In 2011, the percentage of adult males reporting high cholesterol was 15% higher than females (Figure 2.4.2).
- ▶ Although males had a higher prevalence of high cholesterol, a higher proportion of females (72.5%) reported getting a cholesterol screening in the past five years than males (67.7%).

FIGURE 2.4.3 ADULTS WITH HIGH CHOLESTEROL, BY AGE GROUP, OREGON, 2011

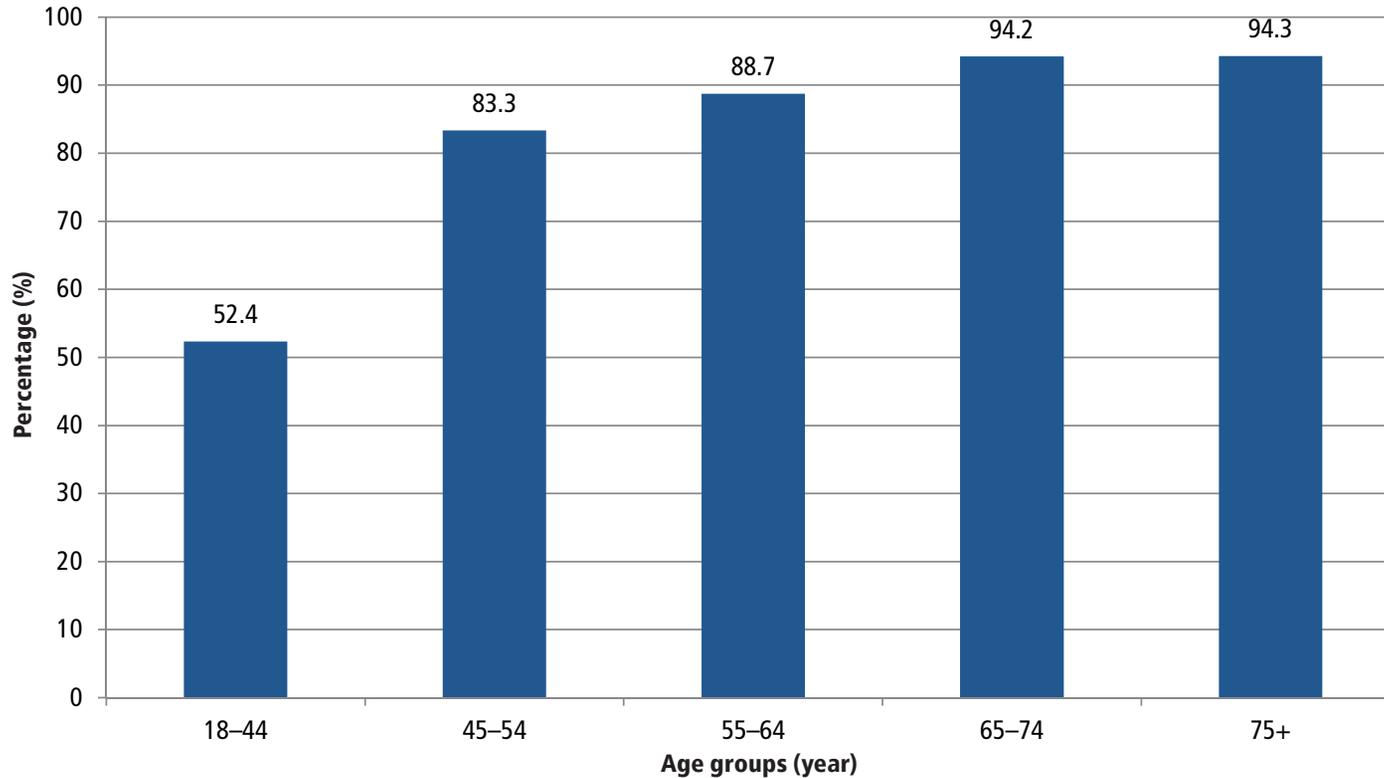


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: Estimates are not age-adjusted.

- ▶ The percentage of adults reporting high cholesterol increased with age (Figure 2.4.3).
- ▶ Approximately half of Oregon adults aged 55 or older had high cholesterol, and approximately one-in-five of those aged 18 to 44 reported high cholesterol (Figure 2.4.3).

FIGURE 2.4.4 ADULTS WITH A CHOLESTEROL SCREENING IN PAST FIVE YEARS, BY AGE GROUP, OREGON, 2011

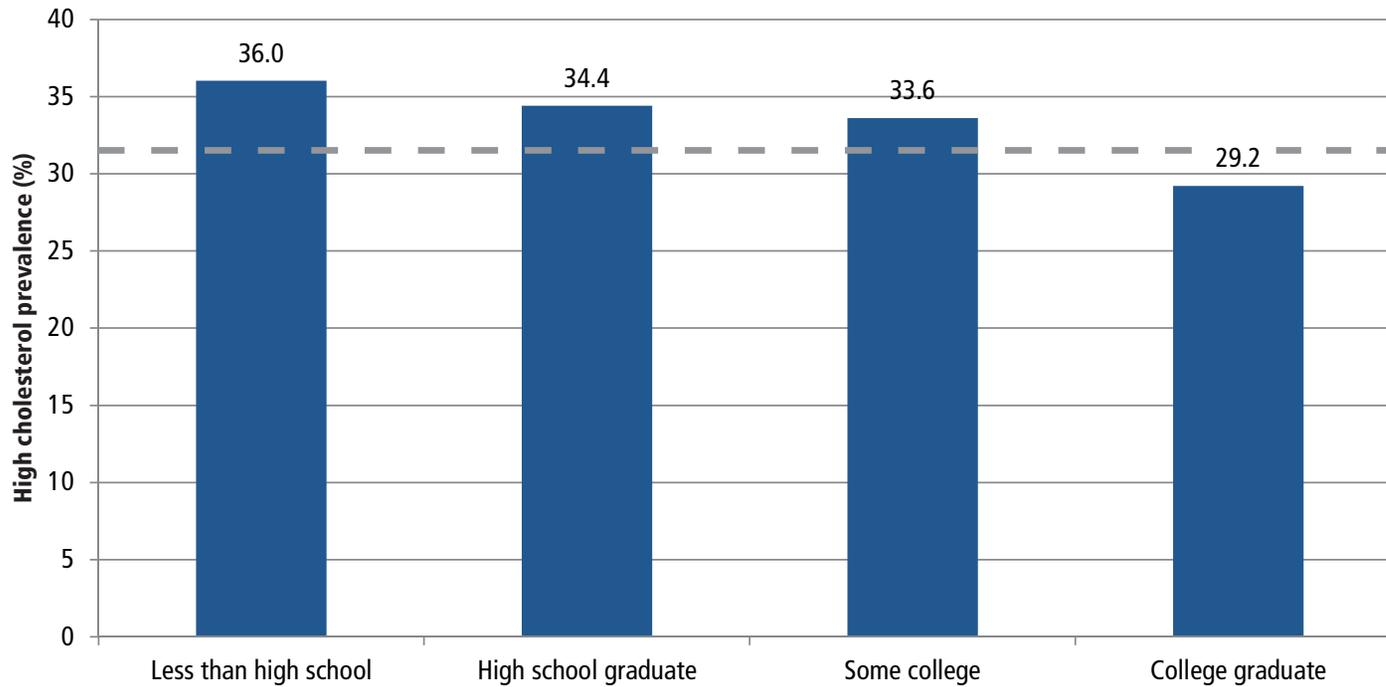


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: Estimates are not age-adjusted.

- ▶ The proportion of Oregon adults who received a cholesterol screening in the past five years also increased with age; half of adults aged 18 to 44 met cholesterol screening recommendations and nearly all Oregon adults 45-years-old or older received cholesterol screening in the last five years (Figure 2.4.4).

FIGURE 2.4.5 ADULTS WITH HIGH CHOLESTEROL, BY EDUCATION, OREGON, 2011

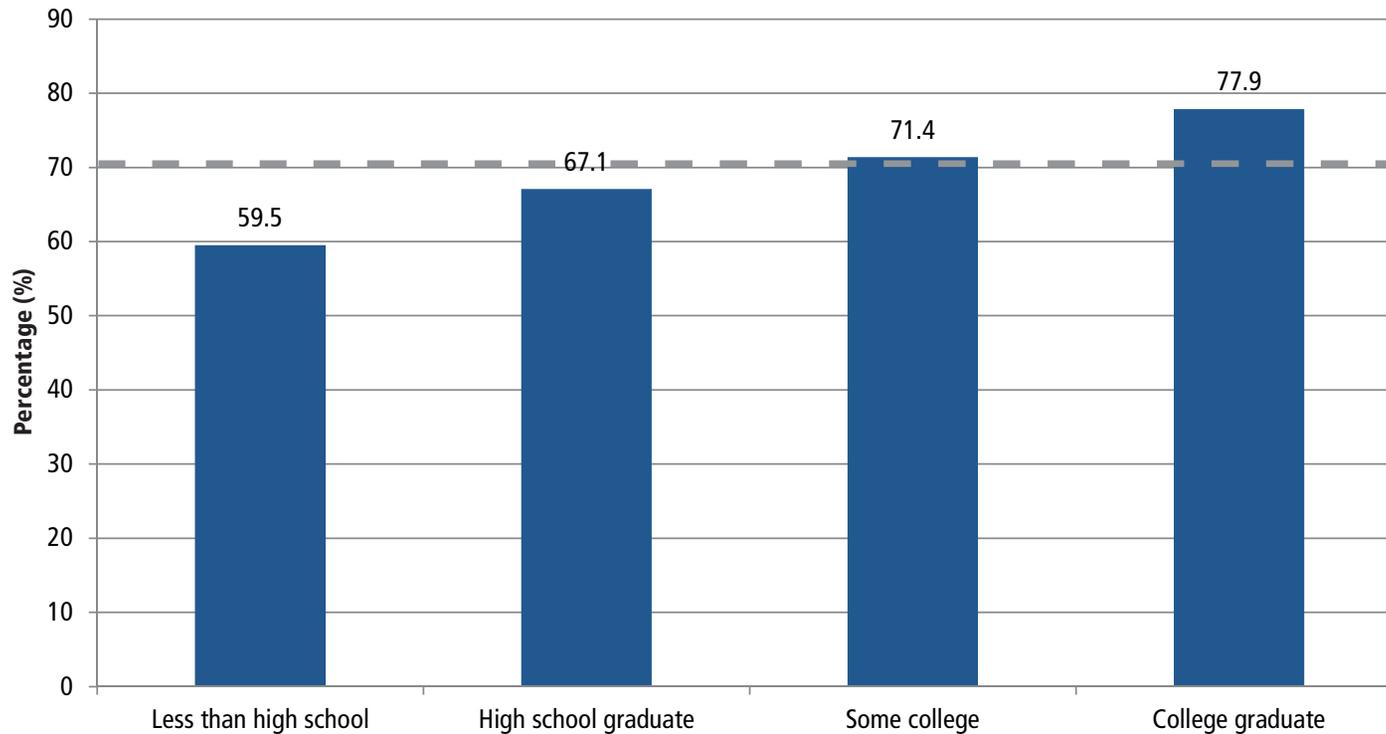


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with high cholesterol (32.7%). Estimates are age-adjusted.

- ▶ Oregon adults with less than a high school education were 23.3% more likely to have high cholesterol compared to Oregon adults with a college degree (Figure 2.4.5).

FIGURE 2.4.6 ADULTS WITH A CHOLESTEROL SCREENING IN PAST FIVE YEARS, BY EDUCATION, OREGON, 2011

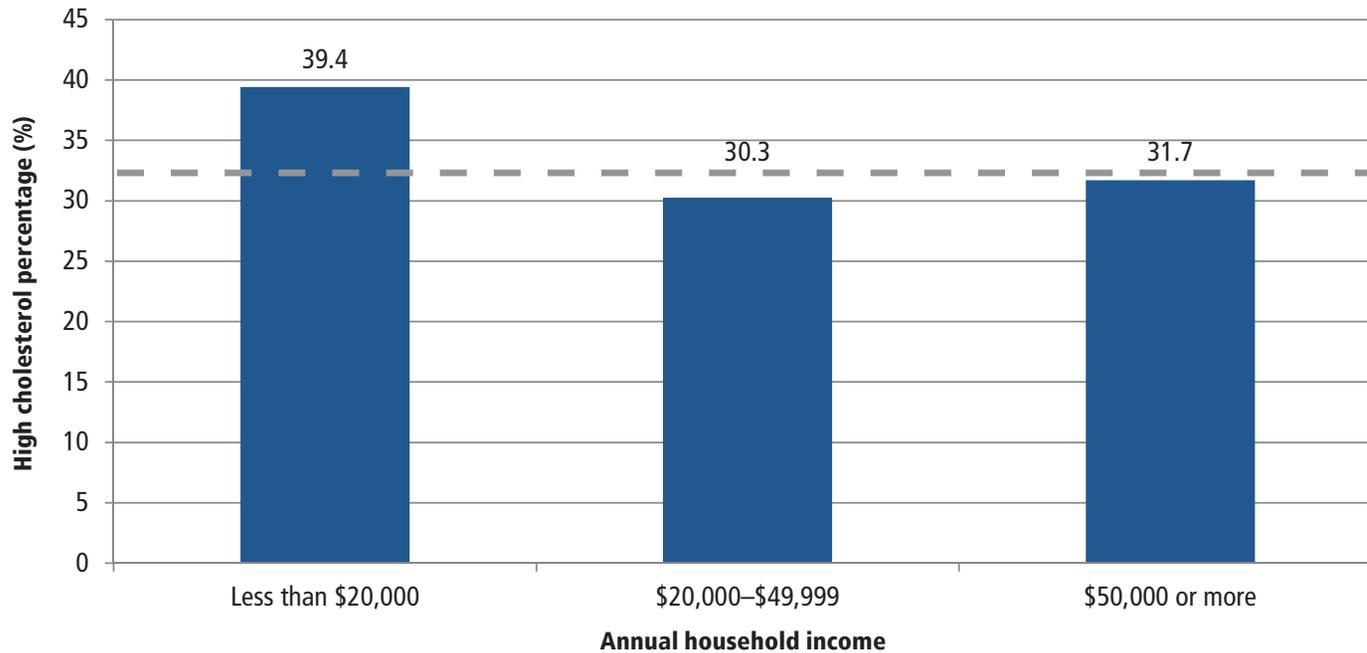


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with a cholesterol screening in the past five years (70.1%). Estimates are age-adjusted.

- ▶ Oregon adults with less than a high school education were 23.6% less likely to have had a cholesterol screening in the past five years compared to Oregon adults with a college degree (Figure 2.4.6).

FIGURE 2.4.7 ADULTS WITH HIGH CHOLESTEROL, BY ANNUAL HOUSEHOLD INCOME, OREGON, 2011

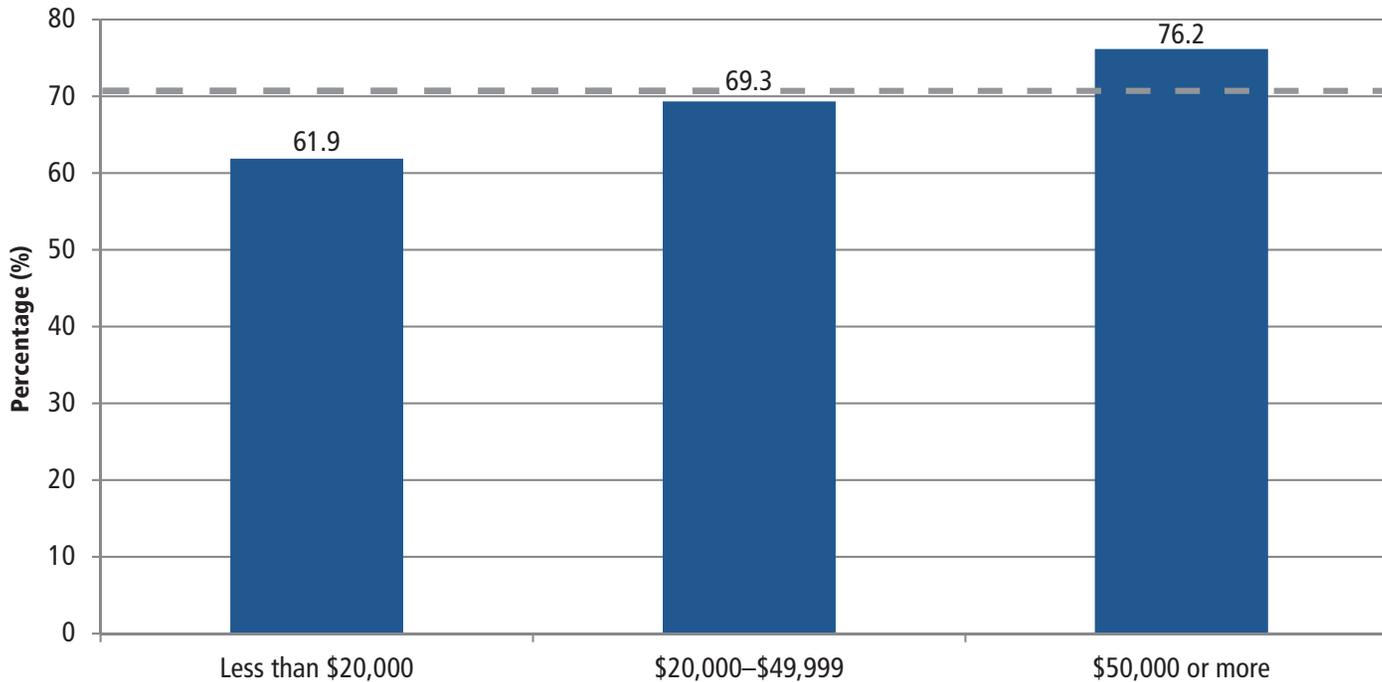


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with high cholesterol (32.7%). Estimates are age-adjusted.

- ▶ Oregon adults in households with an annual income of less than \$20,000 were 24.3% more likely to report high cholesterol compared to Oregon adults in households with an annual income of \$50,000 or more (Figure 2.4.7).

FIGURE 2.4.8 ADULTS WITH A CHOLESTEROL SCREENING IN PAST FIVE YEARS, BY ANNUAL HOUSEHOLD INCOME, OREGON, 2011

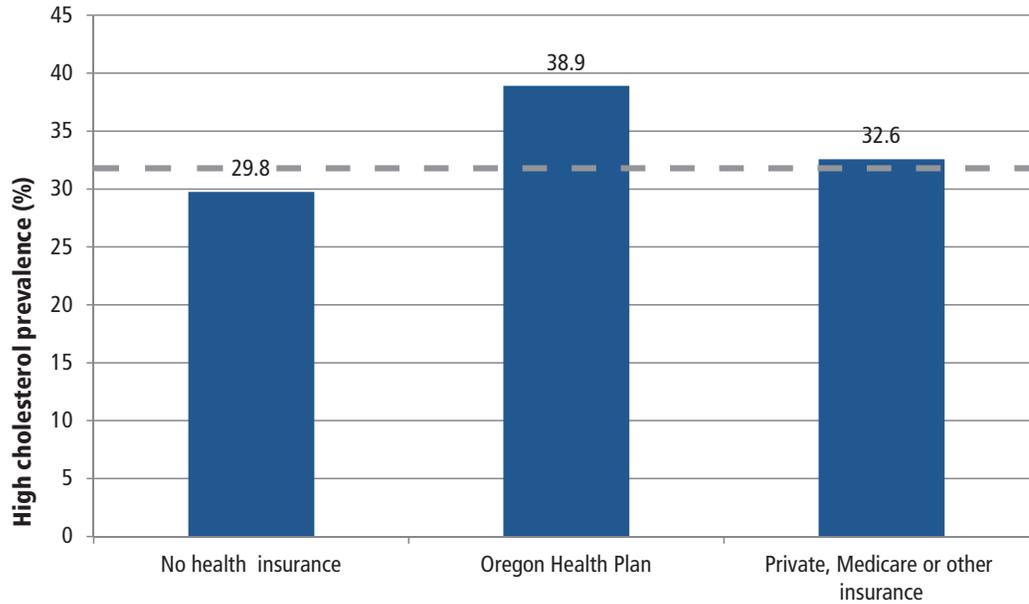


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with a cholesterol screening in the past five years (70.1%). Estimates are age-adjusted.

- ▶ Oregon adults in households with an annual income of less than \$20,000 were 18.8% less likely to report cholesterol screening compared to Oregon adults in households with an annual income of \$50,000 or more (Figure 2.4.8).

FIGURE 2.4.9 ADULTS WITH HIGH CHOLESTEROL, BY CURRENT TYPE OF HEALTH INSURANCE, OREGON, 2011



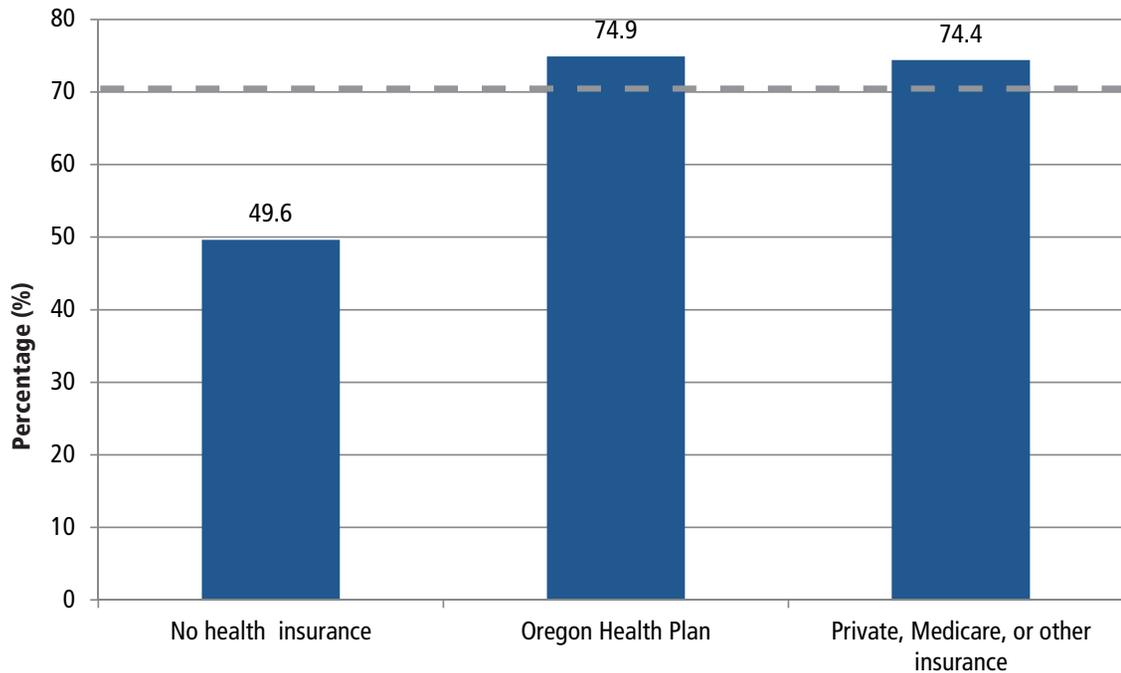
Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with high cholesterol (32.7%). Estimates are age-adjusted.

- ▶ Oregon Health Plan members were 19.3% more likely to report high cholesterol compared to individuals enrolled in private, Medicare or other health insurance plans (Figure 2.4.9).
- ▶ The higher prevalence of high cholesterol observed among the adult population enrolled in OHP may be due to the demographic composition of this vulnerable population (Figure 2.4.9). Adult OHP members are low-income and include pregnant women, seniors and people with disabilities. Adult OHP members are more than twice as likely to smoke as people with any other type of health

insurance.⁴⁰ Cigarette smoking is an important risk factor for high cholesterol. OHP is intended to help ensure that medical care is affordable for those with low incomes.³⁸ People with lower incomes are more likely to smoke cigarettes and have higher disease morbidity.³⁹

FIGURE 2.4.10 ADULTS WITH A CHOLESTEROL SCREENING IN PAST FIVE YEARS, BY HEALTH INSURANCE STATUS, OREGON, 2011



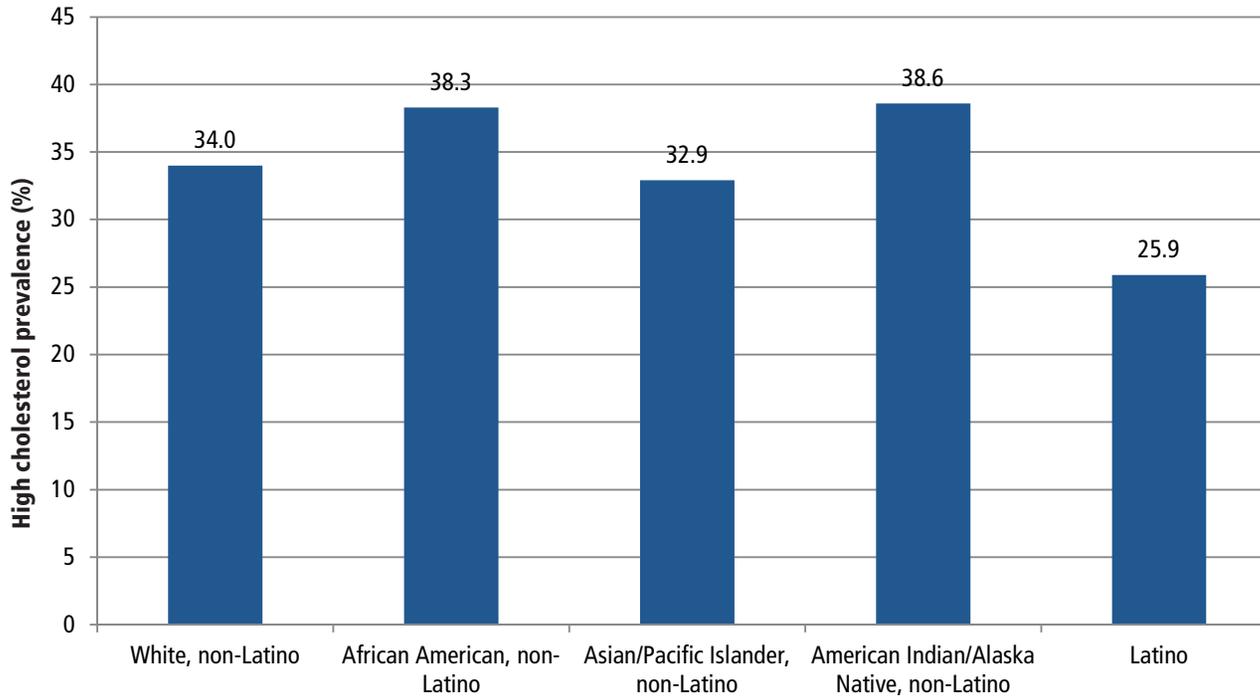
Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with a cholesterol screening in the past five years (70.1%). Estimates are age-adjusted.

- ▶ A similar proportion of OHP members and adults with private insurance reported receiving a cholesterol screening in the past five years (Figure 2.4.10). This is likely due to equal access to health care, which makes it more likely a person will receive recommended preventive health screenings such as cholesterol tests.
- ▶ Oregon adults with no health insurance were less likely than both members of the Oregon Health Plan and those with private insurance to report high blood pressure or a

cholesterol screening in the past five years (figures 2.4.9 and 2.4.10). This is likely due to inadequate access to health care. Access to care and contact with a health care provider are required to receive a cholesterol screening and receive a diagnosis of high cholesterol from a health care provider. In addition, those with no health insurance are generally younger and healthier and therefore are less likely to have chronic health conditions.

FIGURE 2.4.11 ADULTS WITH HIGH CHOLESTEROL, BY RACE AND ETHNICITY, OREGON, 2010–2011



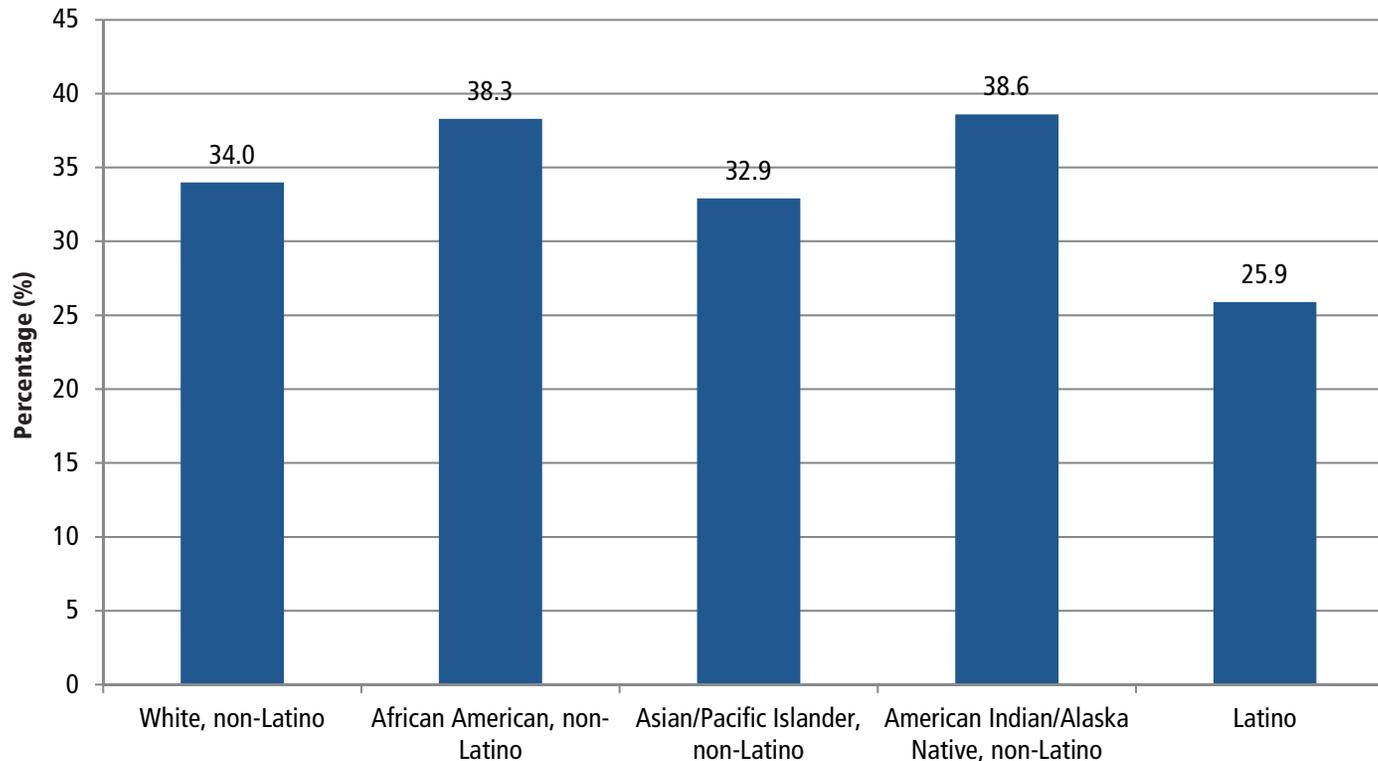
Data source: Oregon Behavioral Risk Factor Surveillance System 2010–2011 Race Oversample

Note: Estimates are age-adjusted.

► More African American (38.3%) and American Indian/Alaska Native (38.6%) persons reported high cholesterol compared to other racial and ethnic groups (Figure 2.4.11).

► The percentage of non-Latino African American persons who reported high cholesterol was 12.6% higher than non-Latino white persons (Figure 2.4.11).

FIGURE 2.4.12 ADULTS WITH A CHOLESTEROL SCREENING IN PAST FIVE YEARS, BY RACE AND ETHNICITY, OREGON, 2010–2011

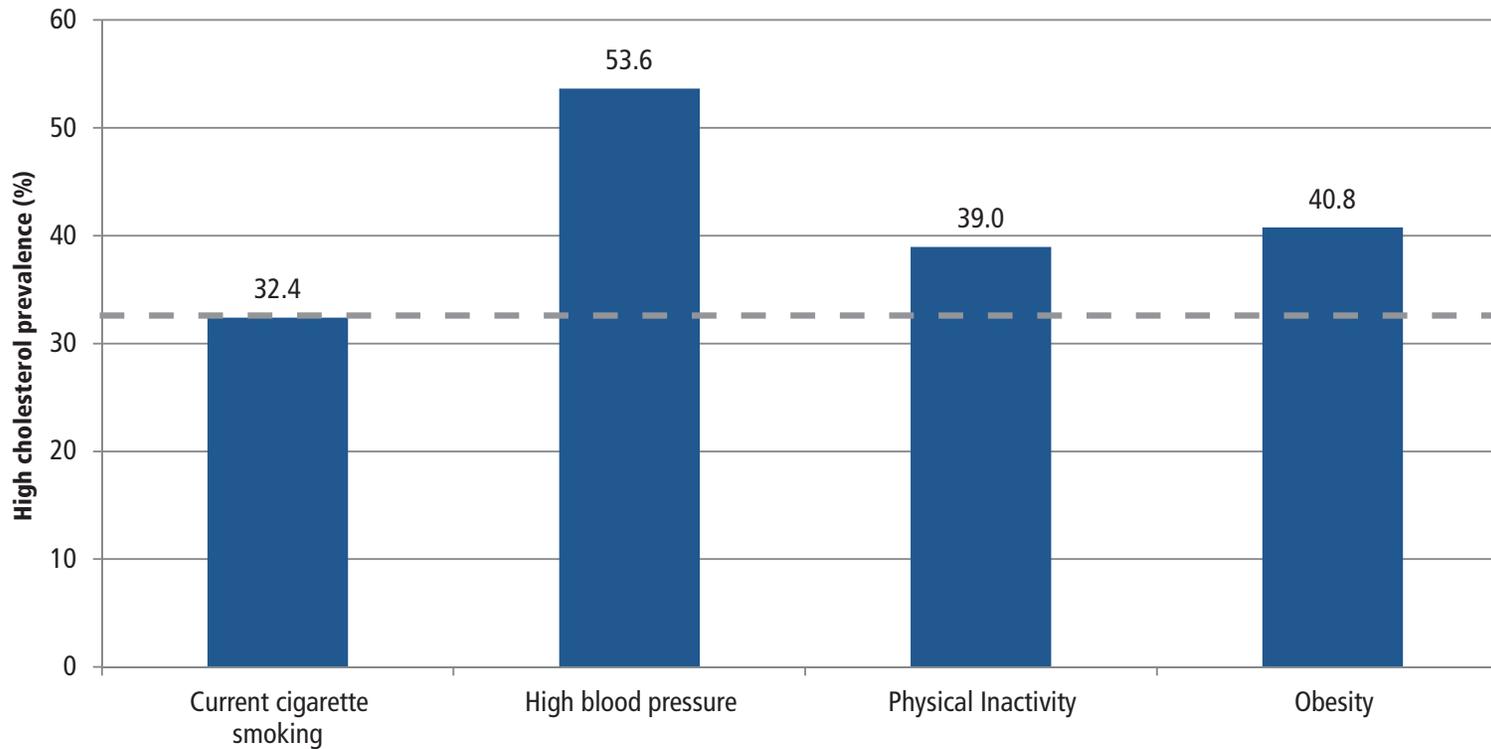


Data source: Oregon Behavioral Risk Factor Surveillance System 2010–2011 Race Oversample

Note: Estimates are age-adjusted.

- ▶ More non-Latino African American (76.1%) and non-Latino American Indian/Alaska Native (76.6%) persons reported receiving a cholesterol screening in the past five years compared to other racial and ethnic groups (Figure 2.4.12).
- ▶ The percentage of non-Latino African American persons who reported a cholesterol screening was 9.5% higher than non-Latino white persons (Figure 2.4.12).
- ▶ Latino persons were less likely to report a cholesterol screening than all other racial and ethnic groups, with a little more than half (59.9%) of this population reporting the recommended screening (2.4.12).

FIGURE 2.4.13 HIGH CHOLESTEROL AMONG ADULTS WITH SELECTED HEALTH RISK FACTORS, OREGON, 2011

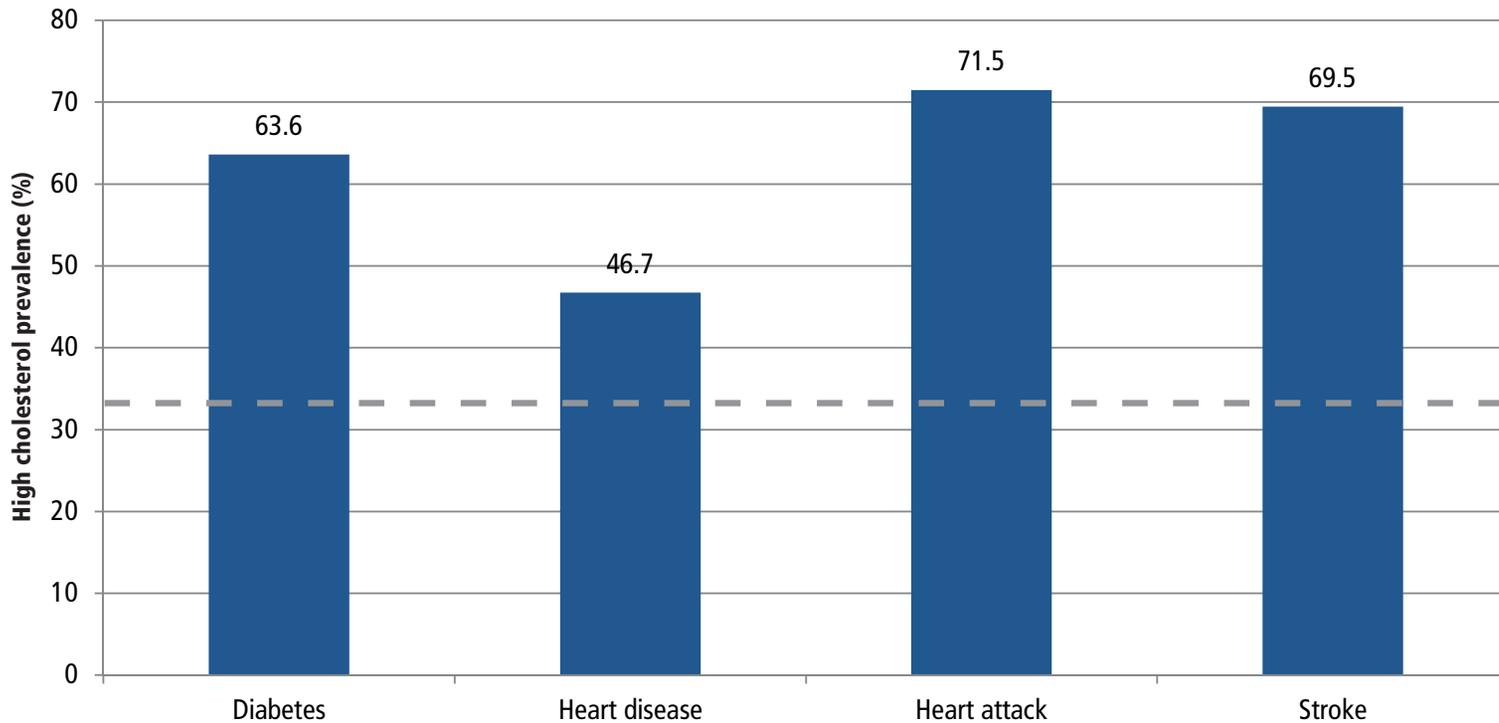


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with high cholesterol (32.7%). Estimates are age-adjusted.

- ▶ Adult Oregonians who were obese, had high blood pressure or were physically inactive reported having high cholesterol more often than the general population of Oregon adults (Figure 2.4.13).
- ▶ The percentage of Oregon adults with high cholesterol was 63.9% higher among those who also had high blood pressure compared to the general population (Figure 2.4.13).

FIGURE 2.4.14 HIGH CHOLESTEROL AMONG ADULTS WITH DIABETES AND CARDIOVASCULAR DISEASES, OREGON, 2011

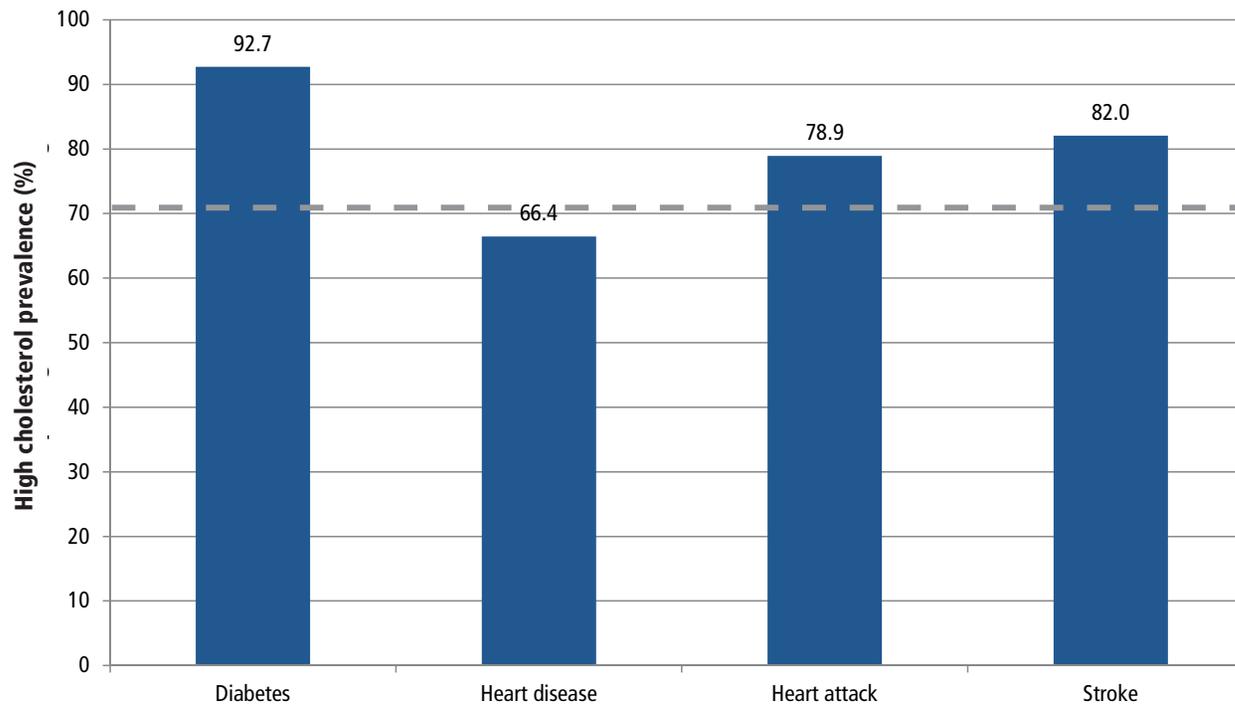


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population with high cholesterol (32.7%). Estimates are age-adjusted.

- ▶ Oregon adults with diabetes had a high cholesterol prevalence nearly double that of adults in the general population (Figure 2.4.14).
- ▶ Those with heart disease were 42.8% more likely to report high cholesterol compared to the general population of Oregon adults (Figure 2.4.14).
- ▶ High cholesterol was especially common among those who have had a heart attack or stroke sometimes in their life. Oregon adults who had had a heart attack or stroke were more than twice as likely as the general population to report high cholesterol (Figure 2.1.14).

FIGURE 2.4.15 CHOLESTEROL SCREENING IN PAST FIVE YEARS AMONG ADULTS WITH DIABETES AND CARDIOVASCULAR DISEASES, OREGON, 2011



Data source: Oregon Behavioral Risk Factor Surveillance System

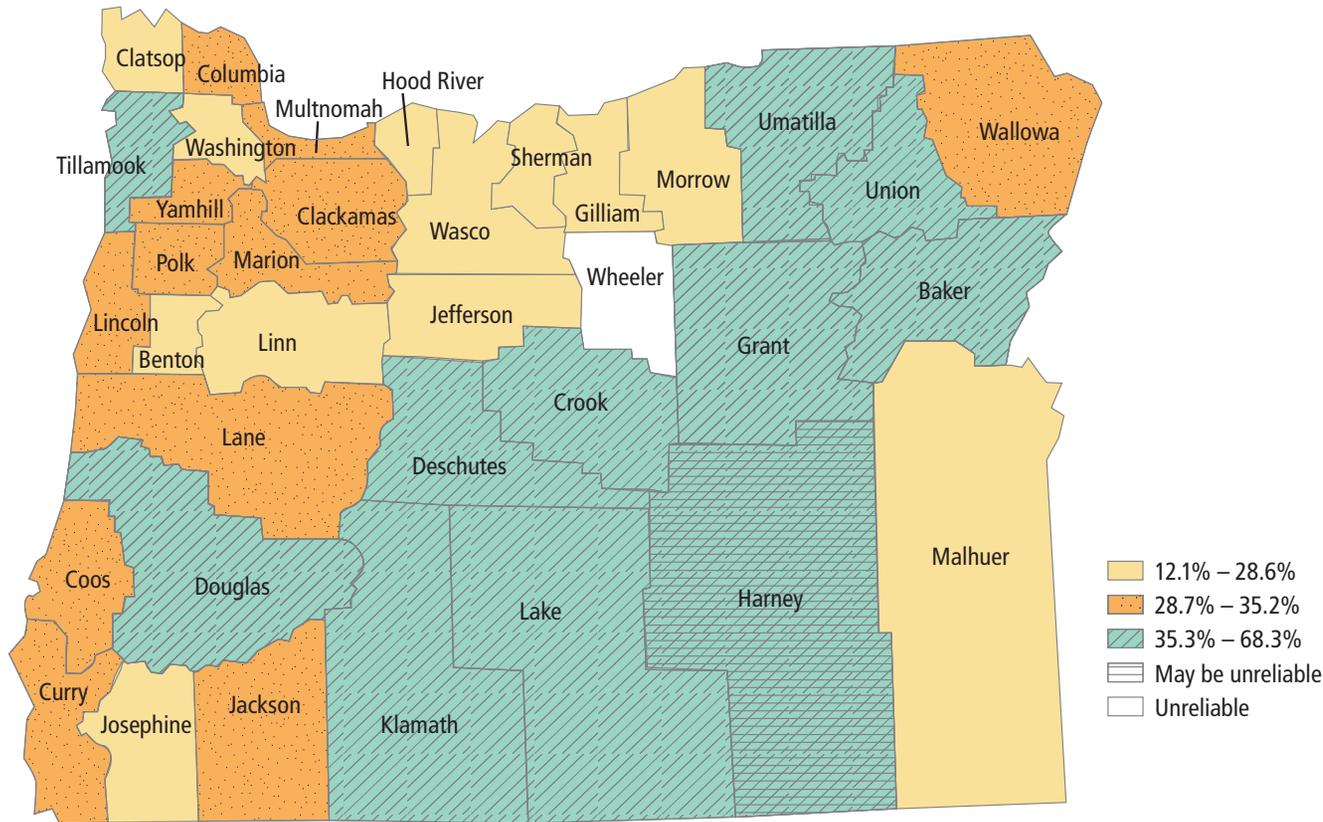
Note: The horizontal dashed line represents the percentage of the general population with a cholesterol screening in the past five years (70.1%). Estimates are age-adjusted.

- ▶ Although Oregon adults with diabetes and cardiovascular disease were more likely to have high cholesterol, they were also more likely to receive a cholesterol screening than the general population (Figure 2.1.15).
- ▶ In particular, nearly all adults with a diagnosis of diabetes (92.7%) received a cholesterol screening in the past five

years and were 32.2% more likely to be screened than the general population (Figure 2.1.15).

- ▶ Oregon adults who have had a heart attack or stroke sometime in their life were 12.6% and 17.0% more likely to have received a cholesterol screening than the general population (Figure 2.1.15).

FIGURE 2.4.16 ADULTS WITH HIGH CHOLESTEROL, BY COUNTY, OREGON, 2008–2011

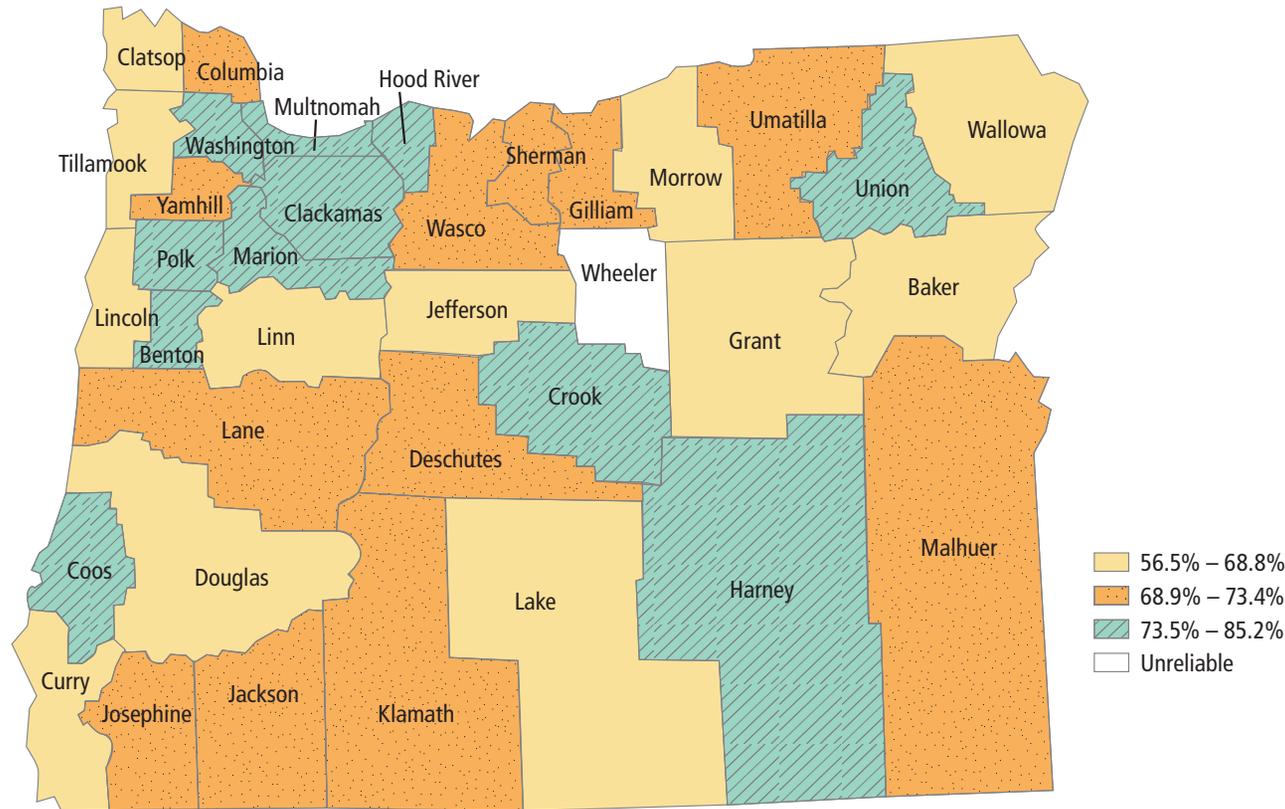


Data source: Oregon Behavioral Risk Factor Surveillance System County Combined File

Note: Estimates are age-adjusted. The state high cholesterol prevalence for 2008–2011 was 32.2%.

- ▶ During 2008–2011, the prevalence of diagnosed high cholesterol among Oregon counties ranged from 12.1% to 68.3%.
- ▶ Grant and Umatilla counties had significantly higher percentages of adults with diagnosed high cholesterol compared to the rest of the state.
- ▶ Hood River, Josephine, Multnomah and Washington counties had significantly lower percentages of adults with diagnosed high cholesterol compared to the rest of the state.
- ▶ See Appendix A for detailed county estimates of the prevalence of high cholesterol.

FIGURE 2.4.17 ADULTS WITH CHOLESTEROL SCREENING IN PAST FIVE YEARS, BY COUNTY, OREGON, 2008–2011



Data source: Oregon Behavioral Risk Factor Surveillance System County Combined File

Note: Estimates are age-adjusted. The state cholesterol screening prevalence for 2008–2011 was 73.1%.

- ▶ During 2008–2011, the prevalence of cholesterol screening among Oregon counties ranged from 56.5% to 78.3%.
- ▶ Douglas, Jefferson and Wallowa counties had significantly lower percentages of adults who have had cholesterol screening in the past five years compared to the rest of the state.
- ▶ Multnomah and Union counties had significantly higher percentages of adults who have had cholesterol screening in the past five years compared to the rest of the state.
- ▶ See Appendix A for detailed county estimates of cholesterol screening.

Conclusions

Overall, the prevalence of high cholesterol among Oregon adults is steadily increasing over time, likely coinciding with the rise in obesity. There are notable differences in prevalence of high blood pressure among males and vulnerable groups of Oregonians including those with less education, a smaller annual household income, and those enrolled in the Oregon Health Plan. In addition, African American and American Indian/Alaska Native persons reported high cholesterol more often than other racial and ethnic groups. Fortunately, these groups report receiving cholesterol screening more often than other racial and ethnic groups and are therefore more likely to be aware of high cholesterol, which is essential for making plans to manage the condition. Oregon adults with diabetes or who have had a heart attack and stroke sometime in their life were more likely to report high cholesterol than the general population, but were also more likely to receive a cholesterol screening. Those with heart disease were more likely than the general population to report high cholesterol, but were slightly less likely than the general population to report a cholesterol screening. This indicates a potential need for improved adherence to recommended preventive health screenings among this vulnerable group.



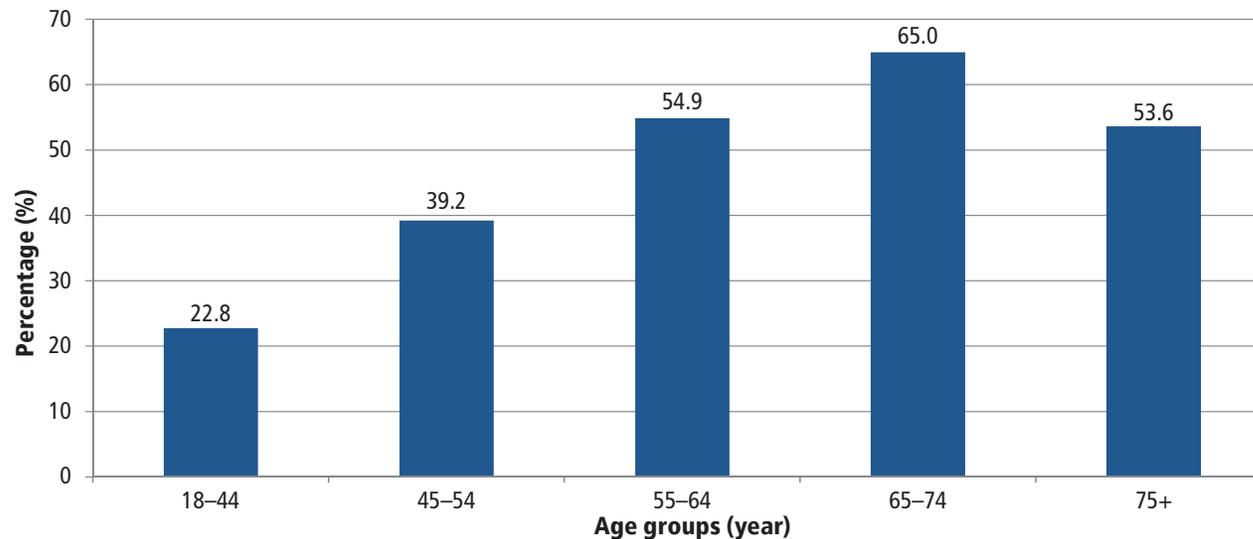
2.5 Who is reducing sodium intake?

Excess consumption of sodium in the diet increases high blood pressure and subsequent risk for cardiovascular disease. In 2011, an estimated 1.1 million Oregonians, with equal proportions of males and females, were reducing their salt intake. To understand the burden of heart disease, stroke and diabetes in Oregon, the prevalence of chronic disease risk factors such as high sodium intake needs to be known. This section will describe the proportion of Oregonians reporting reductions in sodium intake, as well as the proportion who received advice from their health care provider to lower sodium intake.* The proportion of Oregon

adults reducing their sodium intake will be discussed by select demographics including age, education, income, health insurance status, chronic disease risk factors and chronic conditions.

- ▶ The percentage of adults currently reducing their sodium intake increased with age up to age 74 and then begins to decline (Figure 2.5.1).
- ▶ Nearly two-in-three Oregon adults aged 65 to 74 reported reducing sodium intake (Figure 2.5.1).
- ▶ Approximately 80% of adults aged 18 to 44 were not currently reducing their sodium intake (Figure 2.5.1)

FIGURE 2.5.1 ADULTS CURRENTLY REDUCING THEIR SODIUM INTAKE, BY AGE GROUP, OREGON, 2011

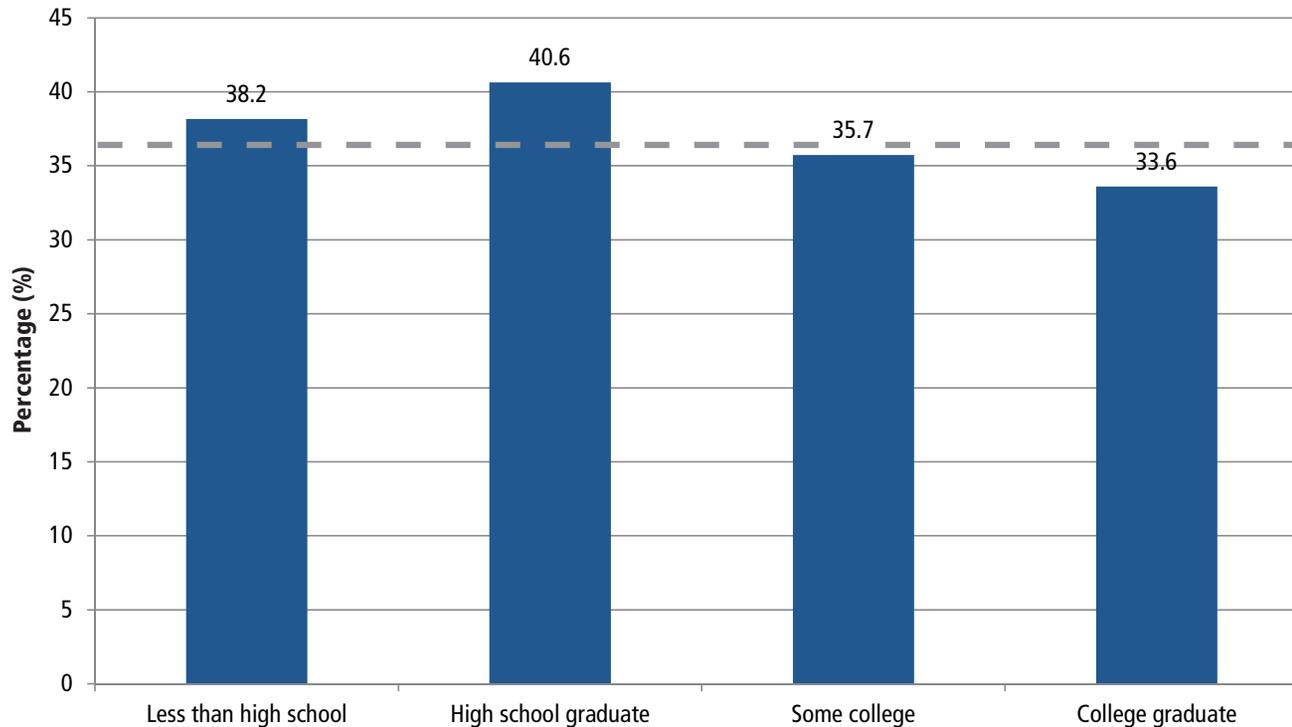


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: Estimates are not age-adjusted.

*For this report, current sodium reduction among adults was determined by the percentage of adults who reported "Yes" when asked if they are currently reducing their sodium intake.

FIGURE 2.5.2 ADULTS CURRENTLY REDUCING THEIR SODIUM INTAKE, BY EDUCATION, OREGON, 2011

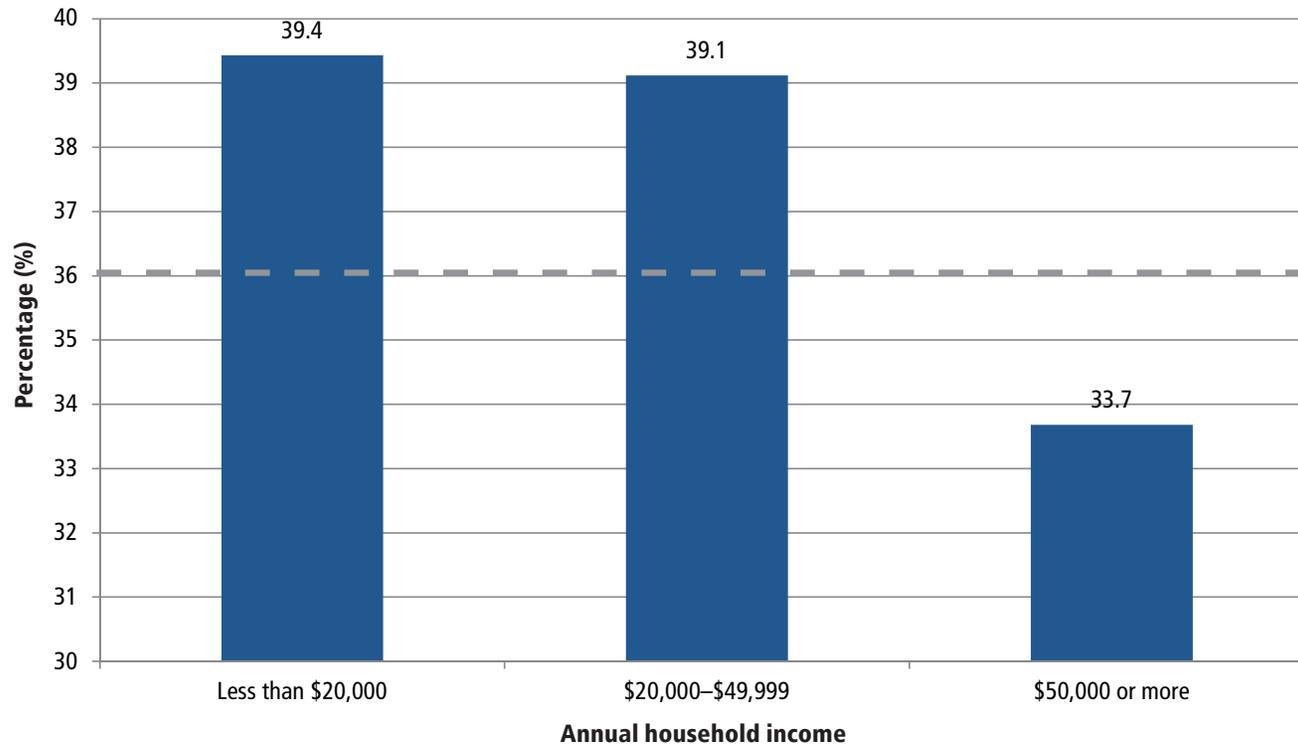


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population currently reducing their sodium intake (36.3%). Estimates are age-adjusted.

- ▶ The proportion of Oregon adults currently reducing their sodium intake did not appear to vary significantly by level of education and was similar at all educational levels to the general population of Oregon adults (Figure 2.5.2).
- ▶ Those who are high school graduates only or had less than a high school education were more likely to report current reduction of sodium intake than those with some college education or those with a college degree. The reason for this is unknown.

FIGURE 2.5.3 ADULTS CURRENTLY REDUCING THEIR SODIUM INTAKE, BY ANNUAL HOUSEHOLD INCOME, OREGON, 2011



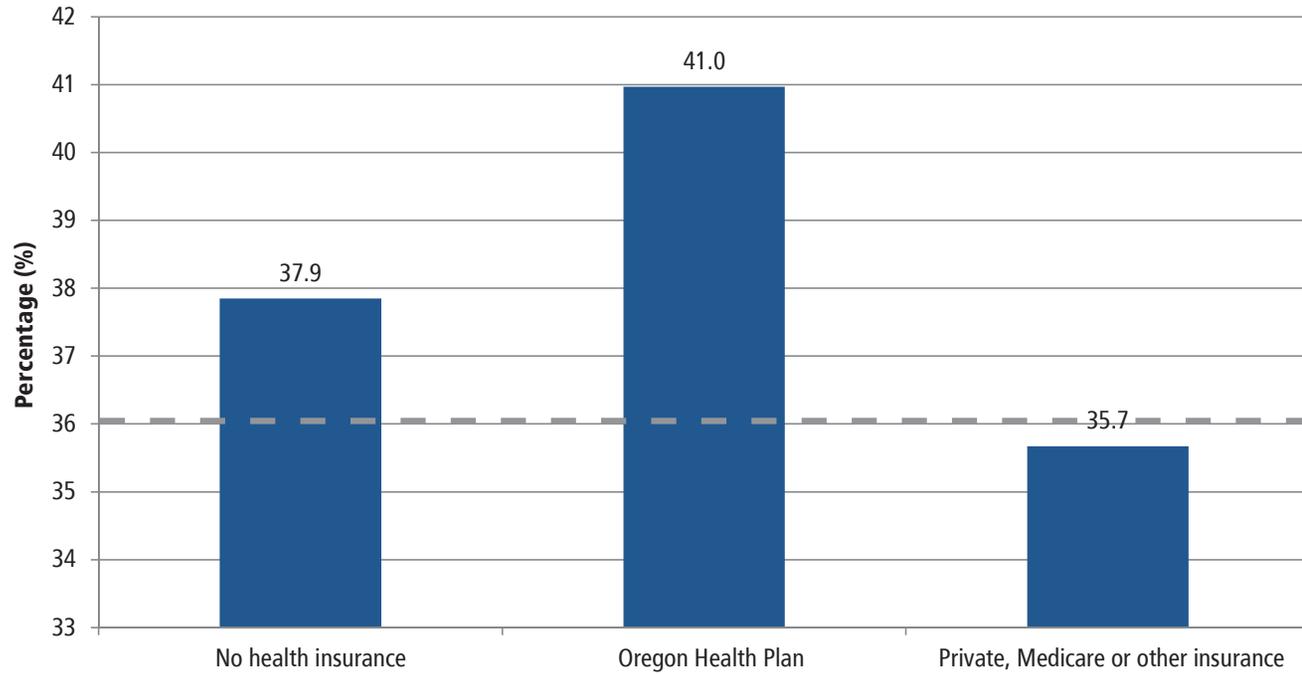
Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population currently reducing their sodium intake (36.3%). Estimates are age-adjusted.

► The proportion of Oregon adults currently reducing their sodium intake did not appear to vary significantly by annual household income and was relatively similar at all income levels to the general population of Oregon adults (Figure 2.5.3).

► The proportion of Oregon adults in households with an annual income of \$50,000 or more were less likely to report current sodium intake reduction than Oregon adults in households with an annual income of less than \$20,000 (Figure 2.5.3). The reason for this is unknown.

FIGURE 2.5.4 ADULTS CURRENTLY REDUCING THEIR SODIUM INTAKE, BY CURRENT TYPE OF HEALTH INSURANCE, OREGON, 2011

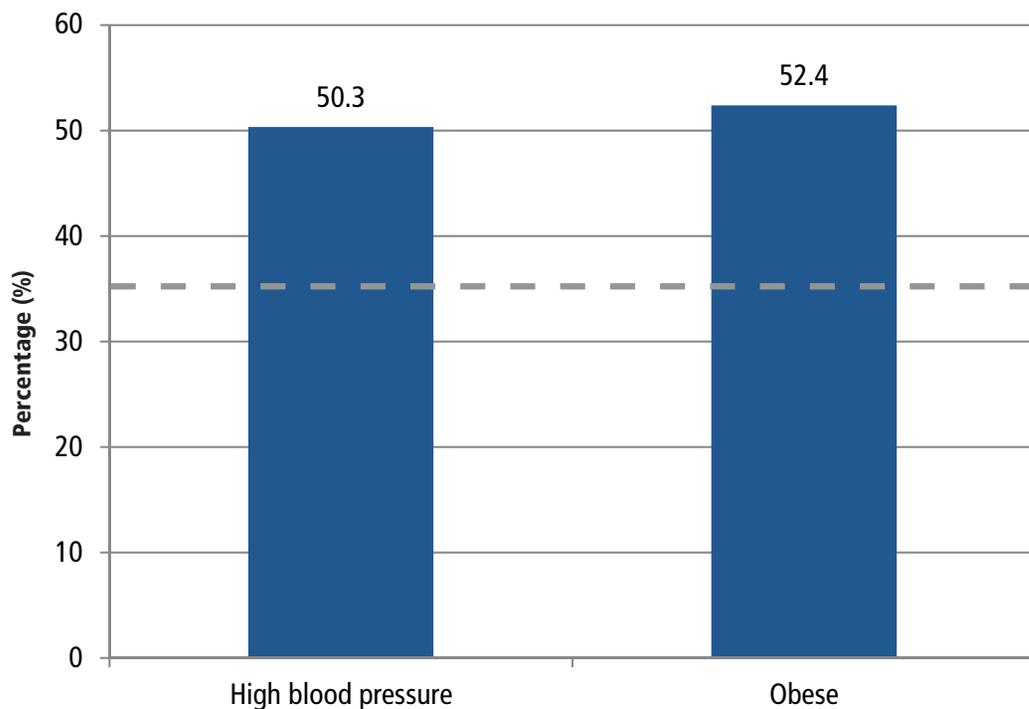


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population currently reducing their sodium intake (36.3%). Estimates are age-adjusted.

- ▶ The proportion of Oregon adults currently reducing their sodium intake did not appear to vary significantly by insurance status and was relatively similar at all levels of insurance status to the general population of Oregon adults (Figure 2.5.4).
- ▶ Those enrolled in OHP were 14.8% more likely than those with private, Medicare or other health insurance to currently reduce their sodium intake (Figure 2.5.4). The reason for this is unknown.

FIGURE 2.5.5 ADULTS WITH SELECTED HEALTH RISK FACTORS WHO ARE CURRENTLY REDUCING THEIR SODIUM INTAKE, OREGON, 2011



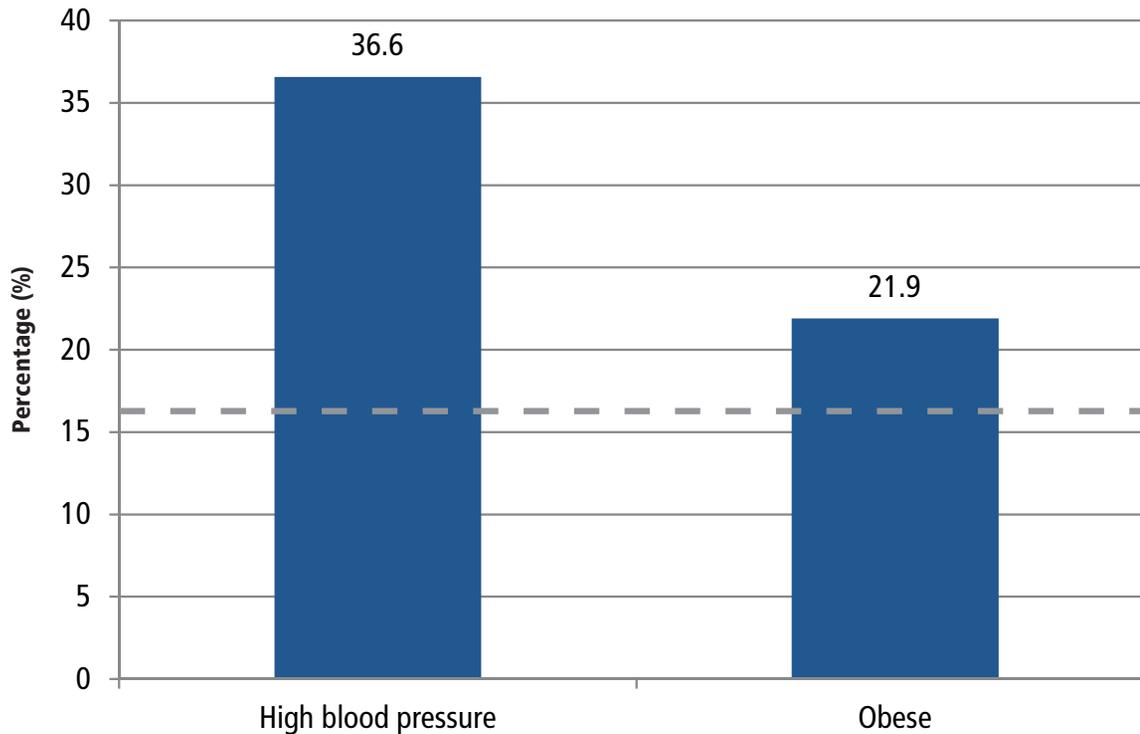
Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population currently reducing their sodium intake (36.3%). Estimates are age-adjusted.

► Oregon adults reporting high blood pressure were 38.6% more likely than the general population to be reducing sodium intake (Figure 2.5.5).

► Compared to the general population of Oregon adults, Oregonians who were obese were 44.4% more likely to report a current reduction in sodium intake (Figure 2.5.5).

FIGURE 2.5.6 ADULTS WITH SELECTED HEALTH RISK FACTORS WHO WERE ADVISED BY A DOCTOR TO LOWER SODIUM INTAKE, OREGON, 2011

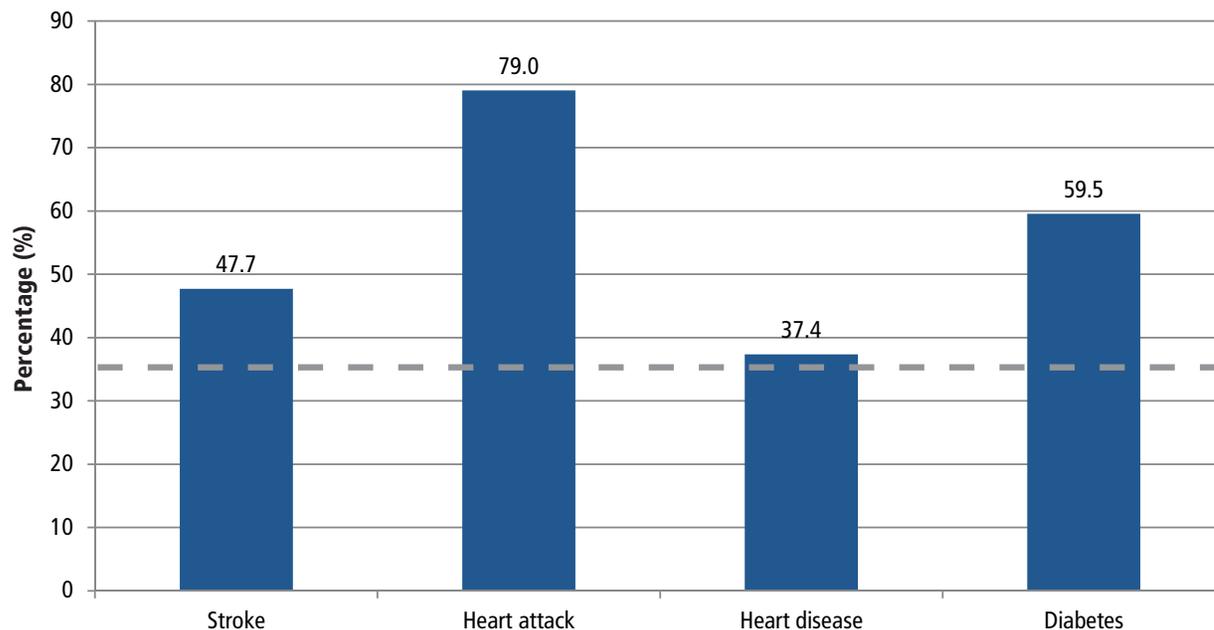


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who had been advised by a doctor to reduce sodium intake (16.3%). Estimates are age-adjusted.

- ▶ Oregon adults with high blood pressure and obesity were more likely than the general population to receive advice from a health care provider to lower sodium intake (Figure 2.5.6).
- ▶ Oregon adults with high blood pressure were more than twice as likely to receive advice from a health care provider to lower sodium intake as the general population of Oregon adults (Figure 2.5.6).

FIGURE 2.5.7 ADULTS WITH DIABETES AND CARDIOVASCULAR DISEASES WHO ARE CURRENTLY REDUCING THEIR SODIUM INTAKE, OREGON, 2011



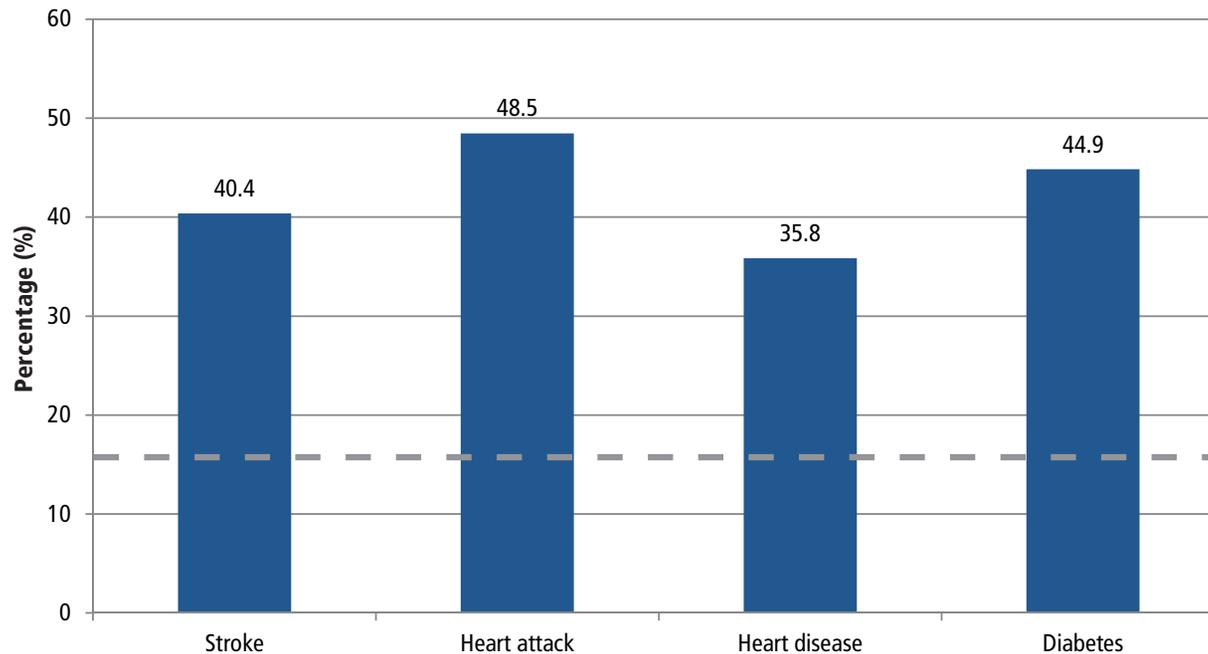
Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population currently reducing their sodium intake (36.3%). Estimates are age-adjusted.

▶ Oregon adults with diabetes were 63.9% more likely to report current reduction of sodium intake than the general population of Oregon adults; those with diabetes were nearly three times as likely to receive advice from a health care provider to lower sodium intake (figures 2.5.7 and 2.5.8).

▶ Oregonians who had had a heart attack in their lifetime were more than twice as likely to report current sodium reduction compared to the general population; those who had had a heart attack sometime in their life were nearly three times as likely to receive advice from a health care provider to lower sodium intake (figures 2.5.7 and 2.5.8).

FIGURE 2.5.8 ADULTS WITH DIABETES AND CARDIOVASCULAR DISEASE WHO WERE ADVISED BY A DOCTOR TO LOWER SODIUM INTAKE, OREGON, 2011



Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who had been advised by a doctor to reduce sodium intake (16.3%). Estimates are age-adjusted.

- ▶ Oregon adults who had had a stroke in their lifetime were 31.4% more likely than the general population to report current reduction of sodium intake; those who had had a stroke sometime in their life were more than twice as likely to receive advice from a health care provider to lower sodium intake (figures 2.5.7 and 2.5.8).



Conclusions

A little more than one-third of the Oregon adult population is currently reducing sodium intake. Reductions in salt intake were more likely in Oregonians of older ages with only 20% of the 18- to 44-year-old population reducing their sodium intake. Current reductions of sodium intake did not appear to differ significantly by education, income level or insurance status. Encouragingly, Oregon adults who had high blood pressure, obesity, cardiovascular disease and diabetes were more likely to report reductions of sodium intake. In addition, these groups were also more likely to receive advice from a health care provider to lower sodium intake than the general population.

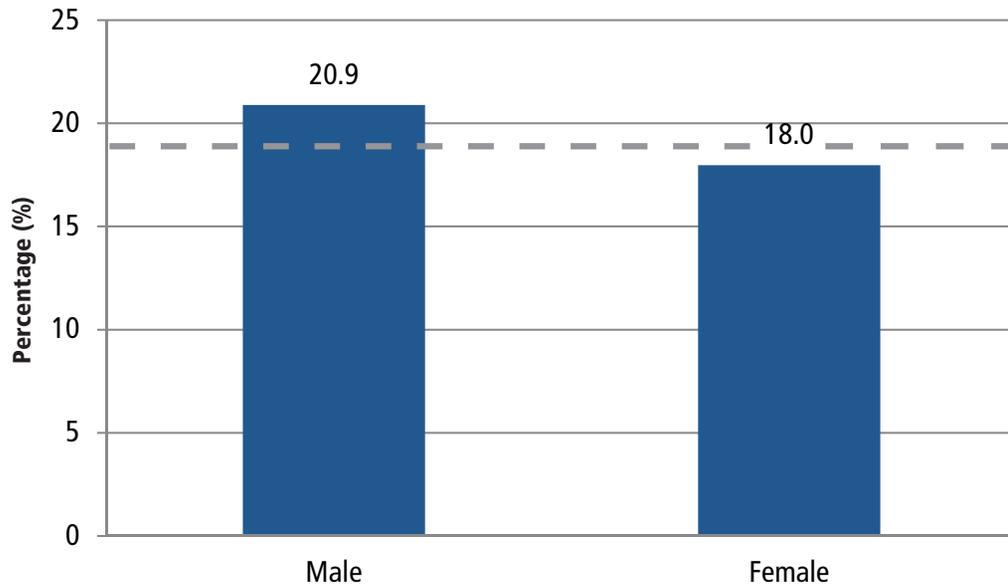
2.6 Who lacks physical activity?

A lack of physical activity is a known risk factor for chronic conditions such as high blood pressure and high cholesterol, and for chronic diseases such as diabetes, heart disease and stroke. To better understand the burden of these chronic conditions and diseases in Oregon, the prevalence of the underlying risk factors (or precursors of disease) needs to be known. It is important to report lack of physical activity among sub-populations of Oregonians (e.g., racial and ethnic minorities) to identify groups of Oregonians who are disproportionately affected compared to the general population in Oregon. This section will describe lack of physical activity* among Oregon adults by select demographics including gender, age, education, income, health insurance status, race and ethnicity, and by other chronic disease risk factors and conditions.



*For this report, lack of physical activity among adults was determined by the percentage of adults who reported "No" when asked if they participated in any physical activities other than their regular job in the past month.

FIGURE 2.6.1 LACK OF PHYSICAL ACTIVITY AMONG ADULTS, BY SEX, OREGON, 2011

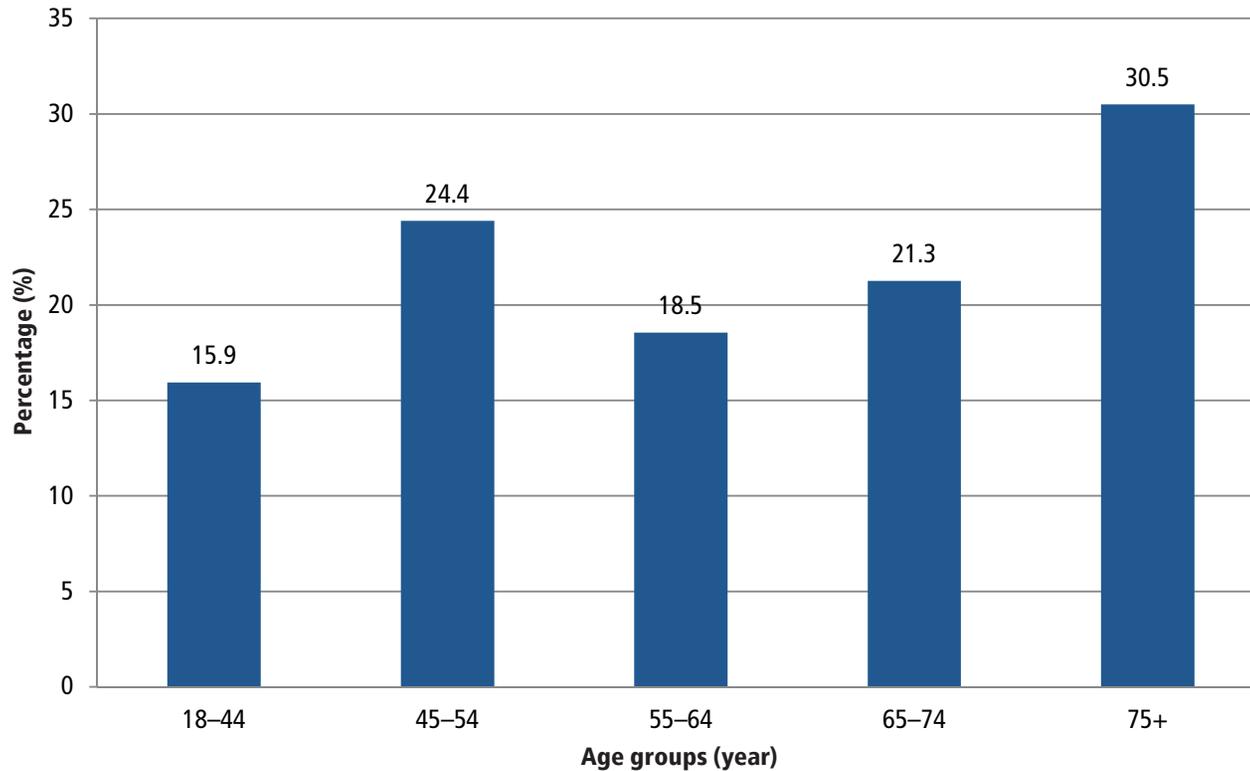


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who report no physical activity outside of work in the past 30 days (19.5%). Estimates are age-adjusted.

- ▶ Overall, 19.5% of Oregonians reported being physically inactive in 2011. Approximately 600,000 adults in Oregon were physically inactive outside of work.
- ▶ While one-fifth of the adult population reported being physically inactive, Oregon has one of the lowest levels of physical inactivity in the United States.
- ▶ In Oregon, the percentage of men who reported being physically inactive is slightly higher than women (Figure 2.6.1).

FIGURE 2.6.2 LACK OF PHYSICAL ACTIVITY AMONG ADULTS, BY AGE GROUP, OREGON, 2011

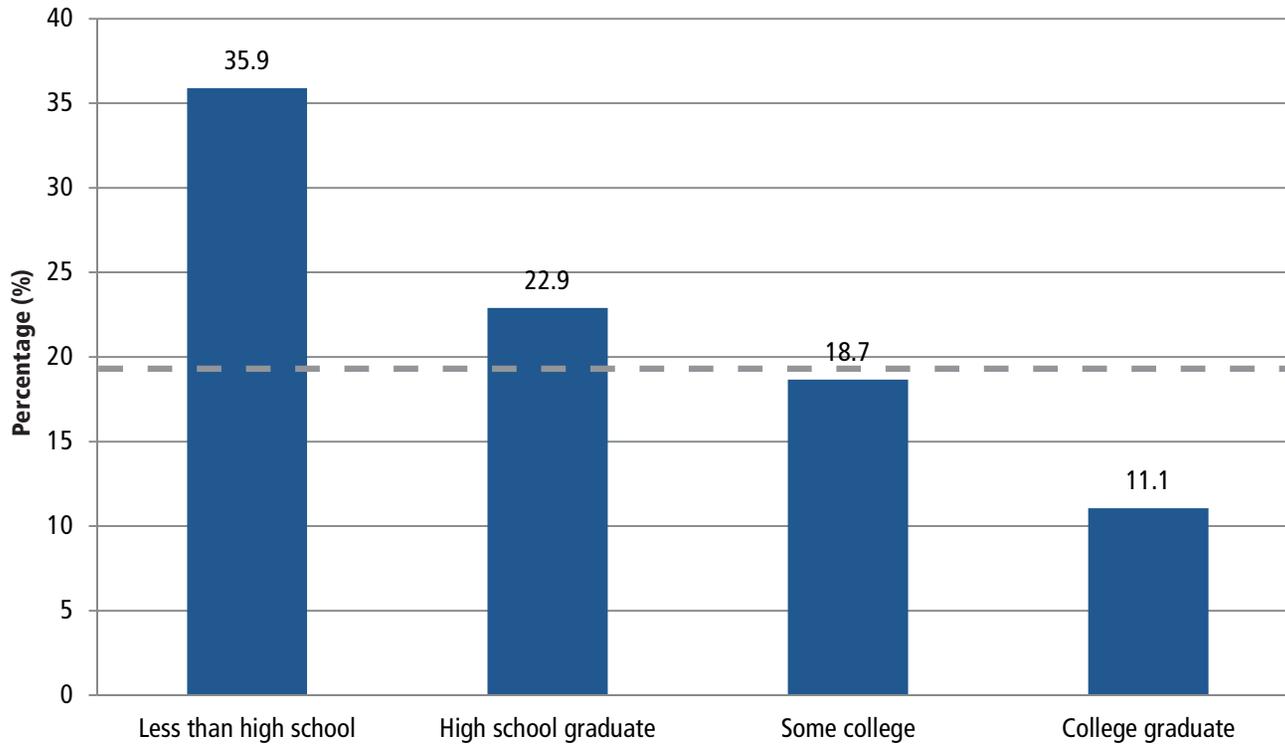


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: Estimates are age-adjusted.

- ▶ Adults of middle and older ages were more likely to report a lack of physical activity compared to the youngest age group (Figure 2.6.2).

FIGURE 2.6.3 LACK OF PHYSICAL ACTIVITY AMONG ADULTS, BY EDUCATION, OREGON, 2011

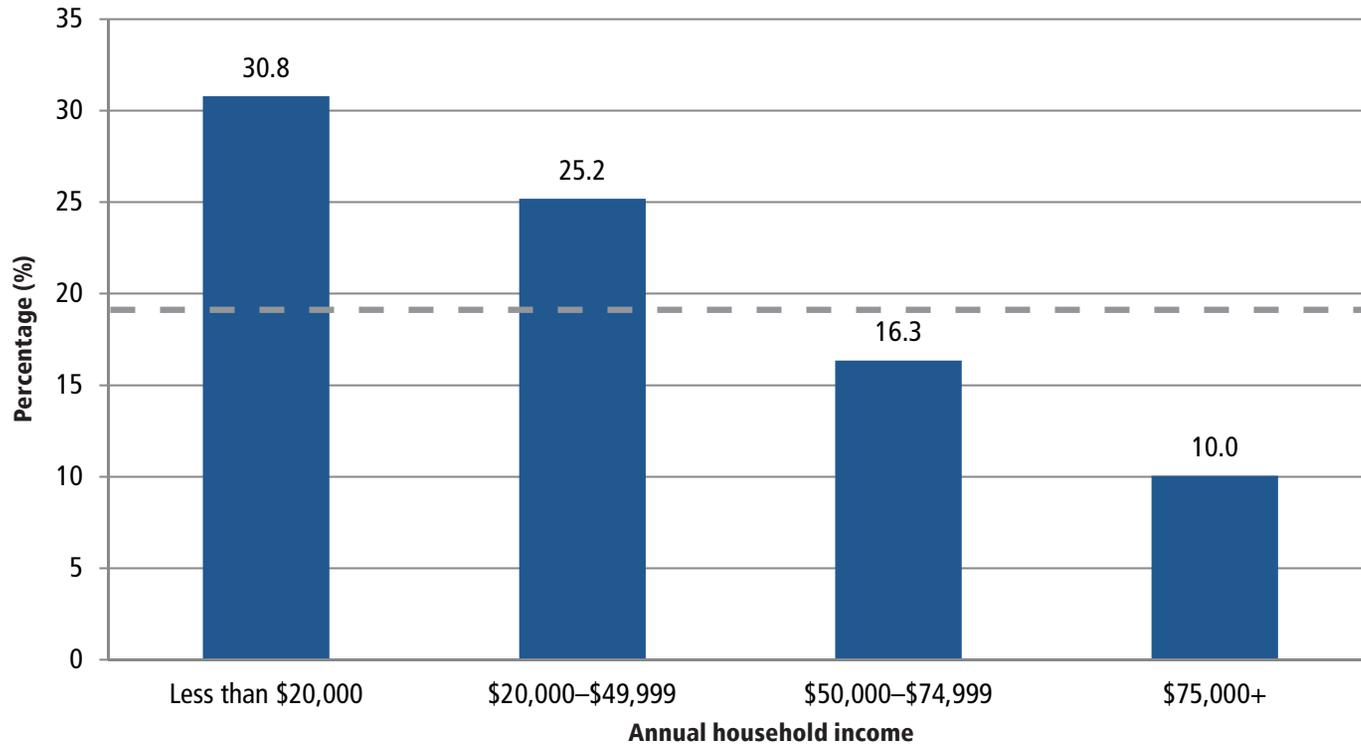


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who report no physical activity outside of work in the past 30 days (19.5%). Estimates are age-adjusted.

- ▶ Lack of physical activity was more common among Oregonians with lower education levels (Figure 2.6.3).
- ▶ Adults with less than a high school education were 70% more likely to report being physically inactive compared to adults with a college degree.

FIGURE 2.6.4 LACK OF PHYSICAL ACTIVITY AMONG ADULTS, BY ANNUAL HOUSEHOLD INCOME, OREGON, 2011

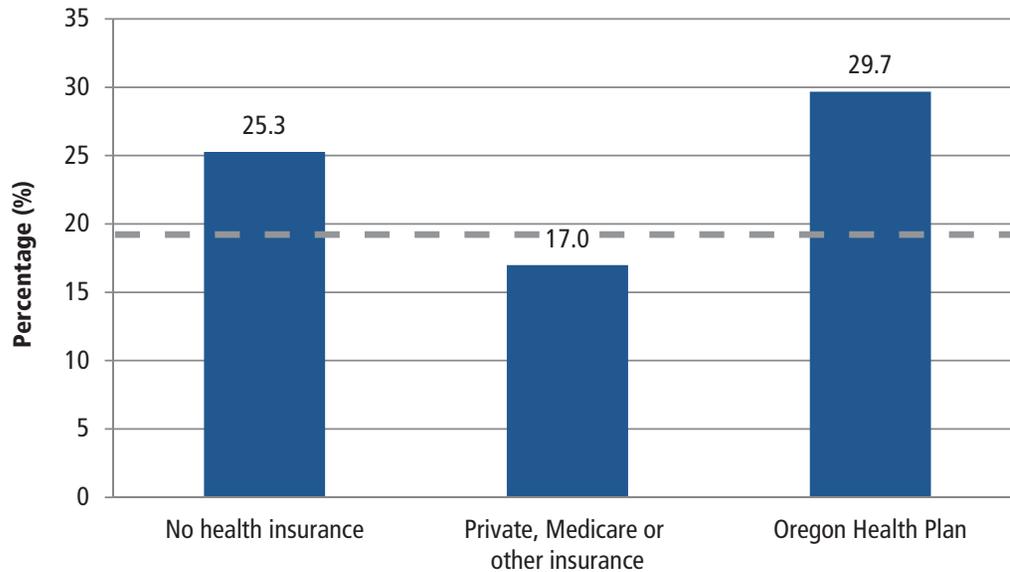


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who report no physical activity outside of work in the past 30 days (19.5%). Estimates are age-adjusted.

- ▶ Lack of physical activity was more prevalent among Oregonians with lower household income levels (Figure 2.6.4).
- ▶ Adults who had a household income of \$20,000 or less were 68% more likely to report being physically inactive compared to adults who had a household income of \$75,000 or more.

FIGURE 2.6.5 LACK OF PHYSICAL ACTIVITY AMONG ADULTS, BY CURRENT TYPE OF HEALTH INSURANCE, OREGON, 2011

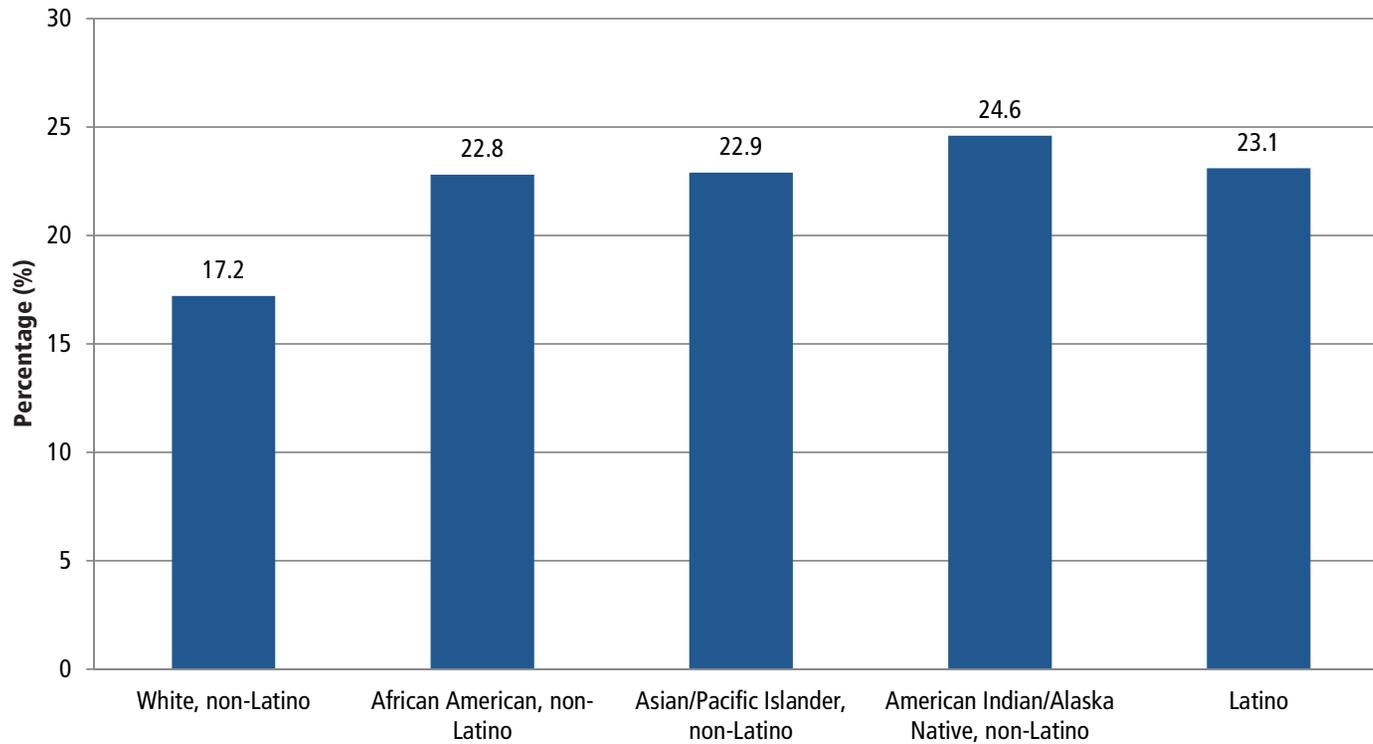


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who report no physical activity outside of work in the past 30 days (19.5%). Estimates are age-adjusted.

- ▶ Adults without health insurance and adults currently on the Oregon Health Plan were more likely to report being physically inactive.
- ▶ Adults who were currently on the Oregon Health Plan were 45% more likely to report being physically inactive compared to the general population.

FIGURE 2.6.6 LACK OF PHYSICAL ACTIVITY AMONG ADULTS, BY RACE AND ETHNICITY, OREGON, 2010–2011

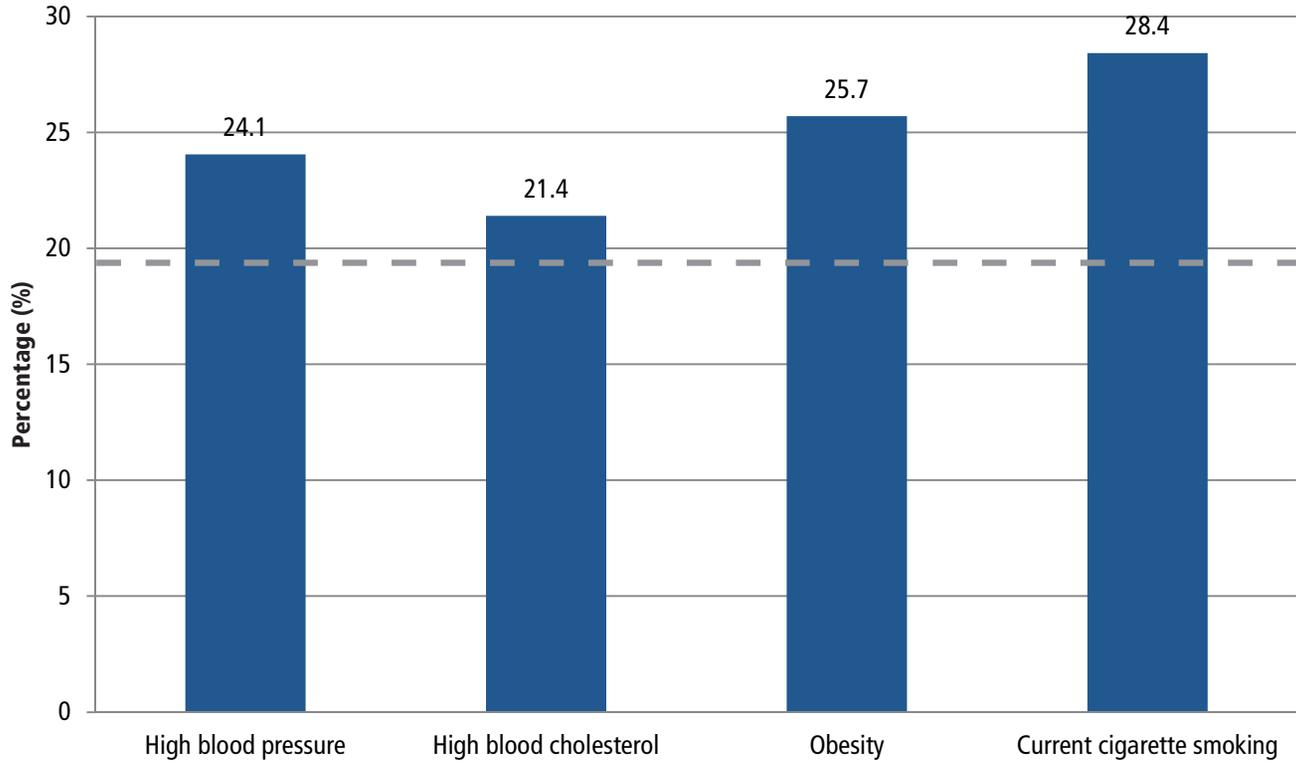


Data source: Oregon Behavioral Risk Factor Surveillance System 2010–2011 Race Oversample

Note: Estimates are age-adjusted.

- ▶ Compared to white persons, non-Latino adults of racial and ethnic minorities in Oregon were more likely to report a lack of physical activity.

FIGURE 2.6.7 LACK OF PHYSICAL ACTIVITY AMONG ADULTS WITH SELECTED HEALTH RISK FACTORS, OREGON, 2011

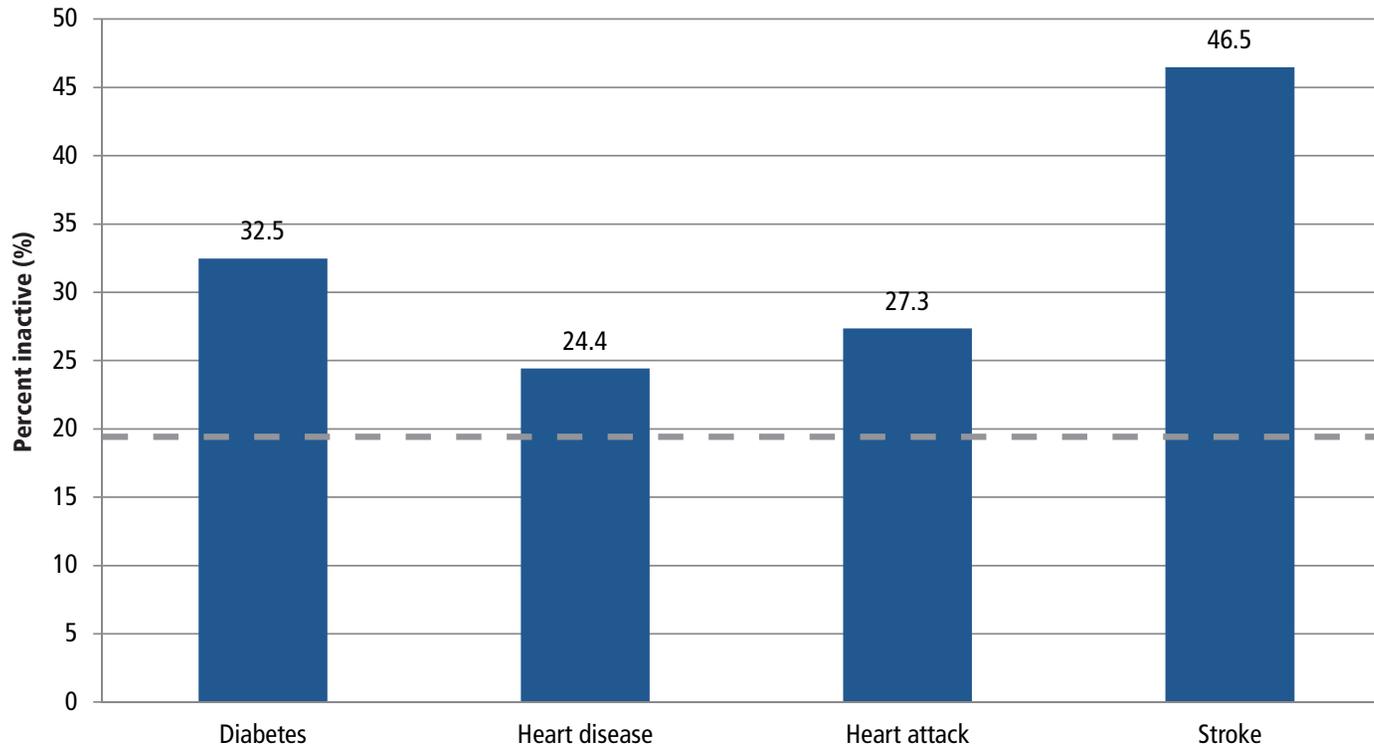


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who report no physical activity outside of work in the past 30 days (19.5%). Estimates are age-adjusted.

- ▶ Adults with other chronic disease risk factors were more likely to report a lack of physical activity compared to adults in the general population.
- ▶ Adults who currently smoke cigarettes were nearly 40% more likely to report lack of physical activity compared to the general population.

FIGURE 2.6.8 LACK OF PHYSICAL ACTIVITY AMONG ADULTS WITH DIABETES AND CARDIOVASCULAR DISEASE, OREGON, 2011

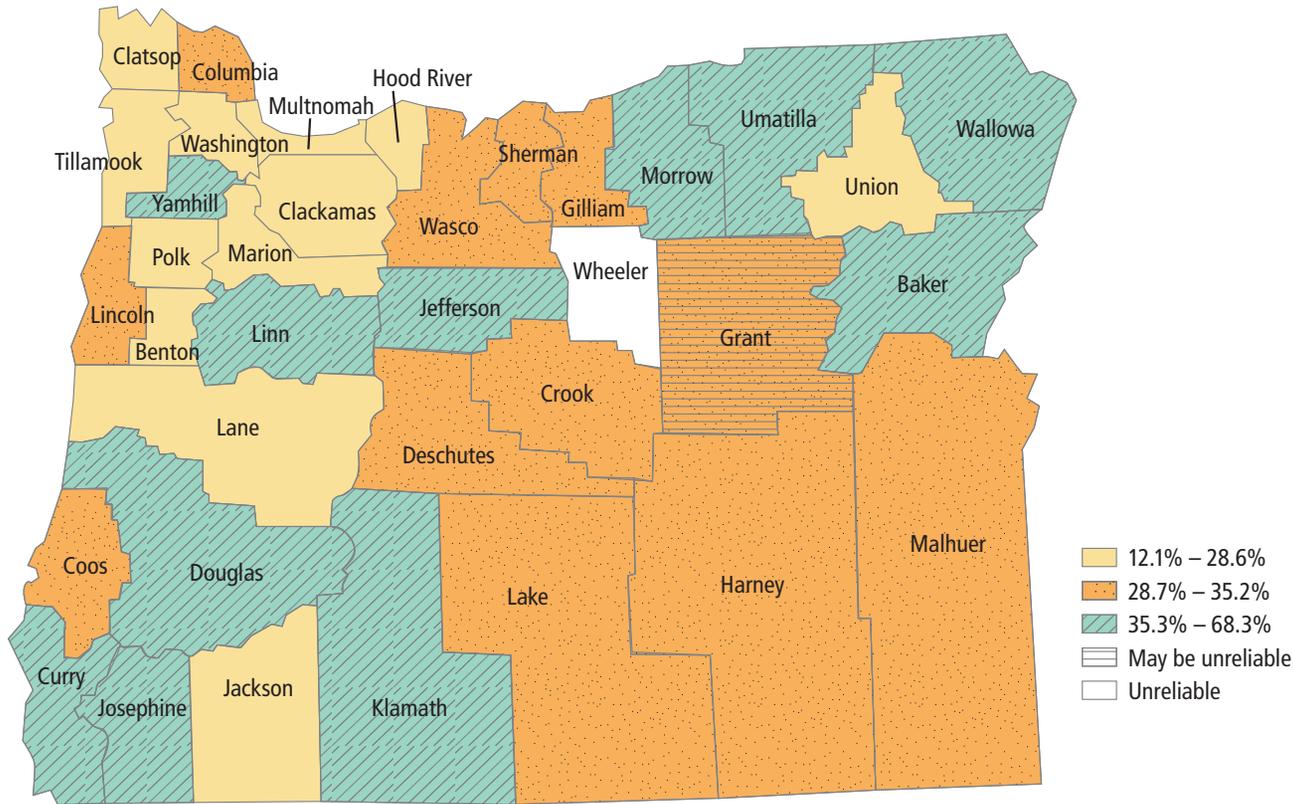


Data source: Oregon Behavioral Risk Factor Surveillance System

Note: The horizontal dashed line represents the percentage of the general population in Oregon who report no physical activity outside of work in the past 30 days (19.5%). Estimates are age-adjusted.

- ▶ Adults who reported having diabetes, heart disease and stroke were more likely to indicate a lack of physical activity than the general population.
- ▶ Lack of physical activity among adults with diabetes was approximately 60% higher compared to the general population.
- ▶ Stroke survivors were much more likely to report a lack of physical activity than the general population of Oregon adults. This is likely due to the physical disability associated with having a stroke. However, more than half reported participating in some form of exercise or physical activity outside of work (Figure 2.6.8).

FIGURE 2.6.9 LACK OF PHYSICAL ACTIVITY AMONG ADULTS, BY COUNTY, OREGON, 2008–2011



Data source: Oregon Behavioral Risk Factor Surveillance System County Combined File
Note: Estimates are age-adjusted. The state prevalence of lack of physical activity for 2008–2011 was 17.5%.

- ▶ During 2008–2011, the prevalence of lack of physical activity among Oregon counties ranged from 13.9% to 31.7%.
- ▶ Clackamas, Jackson and Multnomah counties had significantly lower percentages of adults who lacked physical activity compared to the rest of the state.
- ▶ Baker, Lincoln and Morrow counties had significantly higher percentages of adults who lacked physical activity compared to the rest of the state.
- ▶ See Appendix A for detailed county estimates of lack of physical activity.

Conclusions

Approximately one-fifth of the adult population in Oregon reports being physically inactive. Slightly more men report being physically inactive compared to women. As expected, a higher proportion of older Oregonians report being physically inactive compared to the younger adult population. However, many modifiable and non-modifiable differences were seen across other demographic factors. Lack of physical activity was more common among Oregon adults with less education and a smaller annual household income, as well as among those enrolled in the Oregon Health Plan, which is Oregon's Medicaid program. In addition, a higher proportion of racial and ethnic minority populations reported lack of physical activity compared to non-Latino whites. Oregon adults with chronic disease risk factors and comorbid chronic conditions were also more likely to report a lack of physical activity than the general population. Compared to the general population, adults with diagnosed diabetes were 60% more likely to report being physically inactive, and current cigarette smokers were 40% more likely to report being physically inactive.



WAYS TO REDUCE RISK FACTORS FOR DIABETES, HEART DISEASE AND STROKE IN OREGON

Risk factors for heart disease, stroke and diabetes include cigarette smoking and exposure to secondhand smoke, overweight and obesity, high blood pressure, high cholesterol, inadequate consumption of fruits and vegetables and excess consumption of sodium, and lack of physical activity.

Many of these factors can be addressed through lifestyle changes and creation of environments that support Oregonians in eating better, moving more and living tobacco-free. Effectively reducing these risk factors will help reduce the prevalence of diabetes, heart disease and stroke in the future. Oregon is committed to preventing heart disease, stroke and diabetes by addressing the **ABCS** — **A**1C checks, **B**lood pressure control, **C**holesterol control, and **S**moking cessation, and reduced **S**odium consumption — through these evidence-based policy strategies:

- ▶ Tobacco-free environments and helping cigarette smokers quit;
- ▶ Improved access to evidence-based quality care;
- ▶ Healthy worksites that encourage healthy eating and offer opportunities for physical activity;
- ▶ Environments with limited access to foods high in sodium and trans fats.

The Oregon Tobacco Quit Line provides tobacco cessation counseling and increases the chances of quitting successfully. Walk with Ease, a gentle exercise program that addresses the risk factor of physical inactivity by increasing walking among participants, and Living Well with Chronic Conditions (www.healthoregon.org/takecontrol) and Tomando Control de su Salud, programs that teach people living with chronic conditions the skills to take care of themselves, are offered throughout the state.

Oregon promotes and supports strategies to improve delivery and use of quality clinical services including conducting recommended screenings for blood pressure, cholesterol and blood sugar; increasing clinical referrals to self-management education programs; and delivering health care in accordance with clinical practice guidelines.

Visit the Oregon Heart Disease and Stroke Prevention webpage for more information and heart disease prevention resources: <http://public.health.oregon.gov/DiseasesConditions/ChronicDisease/HeartDiseaseStroke/Pages/index.aspx>.

Visit the Oregon Diabetes and Prevention Control Program webpage for diabetes prevention resources and more information on strategies to reduce the burden of diabetes in Oregon: www.healthoregon.org/diabetes.

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APPENDIX A: COUNTY-LEVEL ESTIMATES



TABLE A.1. AGE-ADJUSTED AND UNADJUSTED PREVALENCE OF DIABETES, HEART ATTACK AND HEART DISEASE AMONG ADULTS, BY COUNTY, OREGON 2008–2011

	Diabetes		Heart attack		Heart disease	
	Unadjusted	Age-adjusted	Unadjusted	Age-adjusted	Unadjusted	Age-adjusted
OREGON	–	7.2%	–	9.9%	–	3.5%
County						
Baker	11.2%	10.0%†	6.1%†	7.5%	6.0%†	6.4%†
Benton	6.8%	7.5%	2.5%	10.8%	2.5%	2.5%*
Clackamas	8.1%	7.5%	2.9%	9.5%	2.9%	2.6%*
Clatsop	8.7%	7.5%	6.5%	5.9%*	4.9%	3.8%
Columbia	8.4%	7.5%	2.9%	11.3%	3.5%	3.0%
Coos	12.4%	10.9%	7.6%	18.1%*	8.5%	7.3%†
Crook	10.2%	9.1%	4.7%†	6.8%†	2.8%†	2.0%†
Curry	9.7%	6.8%	6.5%	8.8%	7.5%	4.9%
Deschutes	6.6%	5.8%	2.8%	9.2%	3.5%	2.9%
Douglas	12.8%	11.2%*	6.7%	14.2%*	4.4%	3.2%
Grant	8.3%†	5.8%†	3.5%†	12.1%†	4.7%†	2.6%†
Harney	9.0%†	7.7%†	–	15.1%†	–	–
Hood River	6.1%†	5.3%†	–	2.2%†	–	–
Jackson	8.6%	7.8%	3.8%	9.1%	3.8%	3.2%
Jefferson	6.1%†	5.3%†	5.3%†	9.2%†	2.6%†	2.0%†
Josephine	10.3%	7.6%	6.6%	10.6%	6.6%	4.7%
Klamath	8.0%	7.0%	6.4%	14.1%	4.0%	3.3%



TABLE A.1. AGE-ADJUSTED AND UNADJUSTED PREVALENCE OF DIABETES, HEART ATTACK AND HEART DISEASE AMONG ADULTS, BY COUNTY, OREGON 2008–2011, CONTINUED

	Diabetes		Heart attack		Heart disease	
	Unadjusted	Age-adjusted	Unadjusted	Age-adjusted	Unadjusted	Age-adjusted
OREGON	–	7.2%	–	9.9%	–	3.5%
County						
Lake	7.6%†	4.9%†	7.9%†	7.2%†	5.1%†	3.3%†
Lane	7.4%	6.9%	3.9%	11.7%*	3.6%	3.1%
Lincoln	10.4%	7.8%	4.1%	9.6%	3.9%	2.7%
Linn	8.6%	7.3%	4.3%	9.9%	5.4%	4.4%
Malheur	10.5%	10.3%	3.4%†	9.3%	4.1%†	4.0%†
Marion	7.8%	7.6%	3.8%	9.2%	4.4%	4.1%
Morrow	7.3%†	6.6%†	4.1%†	6.6%†	5.8%†	5.6%†
Multnomah	6.5%	6.6%	2.7%	8.9%	3.7%	3.7%
Polk	8.3%	7.5%	6.6%	10.6%	6.2%	5.8%
Tillamook	12.8%	11.2%	5.4%	6.4%*	5.3%	3.3%
Umatilla	9.6%	9.4%	4.0%	9.1%	2.3%	2.1%*
Union	9.1%†	8.6%†	3.8%†	13.5%	4.0%†	3.4%†
Wallowa	7.1%†	5.0%†	4.6%†	6.2%†	6.6%†	4.4%†
Washington	5.8%	6.0%*	2.5%	9.6%	2.9%	3.1%
Wheeler	–	–	–	–	–	–
Yamhill	6.1%	6.0%	4.2%†	9.3%	4.2%	4.0%
Gilliam/Sherman/ Wasco	8.1%	6.6%	6.3%	7.5%†	5.6%	4.9%†

* Statistically significant difference compared with all other counties (p-value <= 0.05)

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

– This number is suppressed because it is statistically unreliable.

Data source: Oregon BRFSS County Combined Dataset 2008–2011

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

TABLE A.2. AGE-ADJUSTED AND UNADJUSTED PREVALENCE OF STROKE, HIGH BLOOD PRESSURE AND HIGH CHOLESTEROL AMONG ADULTS, BY COUNTY, OREGON, 2008–2011

	Stroke		High blood pressure		High cholesterol	
	Unadjusted	Age-adjusted	Unadjusted	Age-adjusted	Unadjusted	Age-adjusted
OREGON	–	2.3%	–	26.6%	–	32.2%
County						
Baker	5.3%†	–	40.4%	32.8%	56.4%	51.7%
Benton	1.5%	1.6%*	20.9%	21.5%	29.1%	27.8%
Clackamas	2.5%	2.2%	28.9%	27.0%	37.1%	33.1%
Clatsop	4.2%	3.1%	35.6%	31.2%	41.3%	28.4%
Columbia	2.7%†	2.5%†	32.7%	29.4%	40.7%	29.8%
Coos	6.2%†	5.9%†	32.9%	26.1%	39.8%	35.2%
Crook	–	–	42.4%	38.3%	48.3%	42.9%
Curry	2.5%†	1.3%†	35.8%	22.7%	44.9%	29.3%
Deschutes	1.8%	1.5%*	24.6%	21.2%*	38.0%	37.8%
Douglas	4.3%	3.3%	36.8%	33.1%*	43.5%	38.4%
Grant	–	–	37.3%	22.8%	54.2%	68.3%*
Harney	–	–	21.3%†	14.4%*	39.1%	37.8%†
Hood River	–	–	23.2%	20.6%	16.2%	12.1%*
Jackson	2.7%	2.1%	32.0%	29.0%	41.6%	34.0%
Jefferson	1.8%†	1.4%†	21.9%	17.6%*	38.6%	24.0%
Josephine	3.2%	2.4%	35.5%	29.7%	38.2%	26%*
Klamath	3.4%	3.2%	33.7%	30.6%	44.0%	39.7%
Lake	–	–	32.2%†	22.1%	58.8%	51.0%
Lane	2.4%	2.1%	28.3%	26.8%	39.1%	33.7%

TABLE A.2. AGE-ADJUSTED AND UNADJUSTED PREVALENCE OF STROKE, HIGH BLOOD PRESSURE AND HIGH CHOLESTEROL AMONG ADULTS, BY COUNTY, OREGON, 2008–2011, CONTINUED

	Stroke		High blood pressure		High cholesterol	
	Unadjusted	Age-adjusted	Unadjusted	Age-adjusted	Unadjusted	Age-adjusted
OREGON	–	2.3%	–	26.6%	–	32.2%
County						
Lincoln	3.7%	2.8%†	39.6%	35.1%	45.4%	34.8%
Linn	3.9%	3.6%	28.8%	26.3%	33.8%	28.4%
Malheur	1.6%†	1.4%†	29.3%	26.0%	30.3%	21.7%*
Marion	3.0%	2.8%	27.9%	27.2%	33.6%	29.8%
Morrow	–	–	29.1%	22.9%	41.6%	27.5%
Multnomah	1.9%	2.0%*	26.1%	26.1%	35.1%	32.4%
Polk	1.5%	1.3%*	25.9%	24.4%	36.4%	30.5%
Tillamook	3.8%†	3.0%†	27.9%	20.4%	47.0%	44.9%
Umatilla	3.7%	3.4%	32.7%	32.1%	47.6%	42.6%*
Union	2.9%†	2.3%†	31.8%	28.8%	41.3%	40.0%
Wallowa	5.8%†	–	43.7%	28.7%	44.6%	35.2%
Washington	2.1%	2.1%	23.5%	24.2%*	32.2%	28.6%*
Wheeler	–	–	–	–	–	–
Yamhill	2.2%	2.0%	27.8%	26.9%	35.3%	32.7%
Gilliam/Sherman/ Wasco	2.4%†	1.6%†	37.8%	34.1%	35.6%	27.3%

* Statistically significant difference compared with all other counties (p-value <= 0.05)

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

– This number is suppressed because it is statistically unreliable.

Data source: Oregon BRFSS County Combined Dataset 2008–2011

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

TABLE A.3. AGE-ADJUSTED AND UNADJUSTED PREVALENCE OF OBESITY, CURRENT SMOKER AND LACK OF PHYSICAL ACTIVITY AMONG ADULTS, BY COUNTY, OREGON, 2008–2011

	Obese		Current cigarette smoker		Lack of physical activity	
	Unadjusted	Age-adjusted	Unadjusted	Age-adjusted	Unadjusted	Age-adjusted
OREGON	–	24.8%	–	16.3%	–	17.5%
County						
Baker	26.6%	26.6%	23.0%	26.4%*	27.7%	31.7%*
Benton	18.1%	18.7%*	10.3%	10.2%*	13.4%	13.9%
Clackamas	24.0%	23.9%	14.0%	14.3%*	15.7%	15.4%*
Clatsop	30.5%	31.4%	19.6%	20.3%	18.3%	17.5%
Columbia	24.7%	23.7%	18.2%	19.2%	19.2%	18.9%
Coos	30.0%	30.0%*	24.8%	28.3%*	21.7%	19.8%
Crook	25.5%	25.6%	16.7%	17.4%	19.4%	18.7%
Curry	30.1%	31.5%	24.5%	32.3%*	25.5%	25.1%
Deschutes	17.4%	17.2%*	13.1%	13.8%	18.1%	18.2%
Douglas	32.5%	33.6%*	23.8%	26.7%*	21.4%	20.9%
Grant	23.1%	21.8%	22.8%	26.2%	16.1%†	20.1%†
Harney	22.8%	22.7%	9.0%†	8.4%†	20.7%	18.5%
Hood River	19.5%	19.7%	9.2%	9.5%†	16.9%	16.9%
Jackson	21.0%	20.7%*	19.7%	21.2%*	15.2%	14.3%*
Jefferson	28.5%	28.7%	14.6%	15.4%	21.4%	20.7%
Josephine	21.7%	19.7%*	19.3%	21.3%*	22.1%	21.4%
Klamath	28.4%	29.4%	19.9%	20.6%	21.9%	21.6%
Lake	28.4%	27.1%	16.8%	19.2%†	21.0%	19.1%
Lane	26.4%	26.5%	17.6%	18.1%	16.8%	16.6%

TABLE A.3. AGE-ADJUSTED AND UNADJUSTED PREVALENCE OF OBESITY, CURRENT SMOKER AND LACK OF PHYSICAL ACTIVITY AMONG ADULTS, BY COUNTY, OREGON, 2008–2011, CONTINUED

	Obese		Current cigarette smoker		Lack of physical activity	
	Unadjusted	Age-adjusted	Unadjusted	Age-adjusted	Unadjusted	Age-adjusted
OREGON	–	24.8%	–	16.3%	–	17.5%
County						
Lincoln	27.5%	26.6%	22.8%	27.4%*	21.3%	20.1%
Linn	30.5%	30.6%*	18.2%	19.0%	24.4%	24.6%*
Malheur	27.7%	27.9%	22.0%	22.9%	19.2%	18.3%
Marion	28.0%	28.0%*	14.2%	14.4%	18.1%	18.0%
Morrow	29.5%	29.7%	14.5%	14.7%	32.0%	31.3%*
Multnomah	22.4%	22.5%*	14.6%	14.5%*	14.9%	15.0%*
Polk	27.4%	27.2%	13.2%	14.2%	16.8%	16.4%
Tillamook	29.1%	27.9%	19.8%	23.0%	17.9%	15.3%
Umatilla	34.4%	34.8%*	20.6%	21.0%*	26.2%	26.2%*
Union	27.4%	28.1%	10.8%	11.6%	16.0%	16.3%
Wallowa	18.3%	18.1%	14.9%†	16.9%†	32.6%	35.1%†
Washington	21.9%	21.9%*	12.7%	12.6%*	16.7%	16.7%
Wheeler	22.6%†	–	12.1%†	–	–	–
Yamhill	34.8%	35.0%*	18.4%	18.5%	28.4%	28.2%*
Gilliam/Sherman/ Wasco	35.2%	35.3%*	13.7%	14.4%	19.6%	18.1%

* Statistically significant difference compared with all other counties (p-value <= 0.05)

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

– This number is suppressed because it is statistically unreliable.

Data source: Oregon BRFSS County Combined Dataset 2008–2011

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

APPENDIX B: DATA SOURCES



The data sources used in this report are listed below.
Data sources are described with brief limitations.

Behavioral Risk Factor Surveillance System (BRFSS)

Description: The BRFSS is a random-digit dialed telephone survey that is conducted year-round among Oregon adults aged 18 years or older. The BRFSS includes questions on health behavior risk factors such as diet, weight control, tobacco and alcohol use, physical activity, preventive health screenings, and use of health care services. The data are weighted to represent all adults aged 18 years and older. A core set of questions is asked annually, and other topics are surveyed on a rotating basis.

Every few years, Oregon conducts additional BRFSS surveys among under-represented races and ethnicities.

The results of these surveys are combined with statewide BRFSS data to provide more stable estimates for chronic diseases and related risk factors among these groups of Oregonians. The most recent race/ethnicity oversamples were conducted in 2010–2011. In addition, BRFSS surveys from 2008–2011 were aggregated to produce more reliable county-level prevalence estimates.

Starting in 2010, Oregon began collecting data from those who use cell phones, causing the method for adjusting (weighting) the data to the demographics of the state to change. This new method is called “raking.” Because of these changes, data prior to 2010 are not directly comparable to the data from 2010 forward. In addition, the national BRFSS also made these changes but did not implement the changes until 2011.

Limitations: BRFSS estimates pertain only to the adult population aged 18 years or older living in households. Respondents are identified through telephone-based methods. The survey started collecting data for cell phones in 2009. Cell phone data were incorporated for analysis in Oregon in 2010. According to a recent publication from the National Center for Health Statistics, in 2011 more than 38% of households in Oregon were wireless-only. Finally, results obtained through BRFSS surveys also are limited in that they represent self-reported responses. Not all questions in the BRFSS have been validated.



Hospital Discharge Dataset

Description: The Hospital Discharge Dataset provides information on hospital discharges from all acute care hospitals in Oregon except two Veterans Administration hospitals. The dataset includes admit and discharge dates, diagnosis and procedural codes, financial charges, primary payer, and patient demographic information.

Limitations: Prior to 2008, the Hospital Discharge Dataset did not include identifying information that would allow us to ascertain when a single person had multiple hospitalizations; therefore, the calculated rate was the number of hospitalizations per the Oregon population rather than number of different people hospitalized per the Oregon population. In addition, prior to 2008, the dataset did not include information on race or ethnicity. Starting in 2008, the data necessary for investigating repeat hospitalizations for chronic diseases and hospitalizations by race/ethnicity were available and reported.

Oregon Health Panel Survey (OHPS)

Description: The Oregon Health Panel Survey was conducted in 2012 among non-institutionalized adults aged 18 years or older. Panel members were recruited using random digit dialing sampling based on landline telephone numbers and/or address-based sampling methodologies. A sample of panel members was then drawn at random for the survey. Topics on the survey include knowledge and attitudes toward colorectal screening, trans fats, sugary drinks, and other tobacco products. The data are weighted to represent all adults aged 18 years and older.

Limitations: OHPS estimates pertain only to the adult population aged 18 years or older living in households.

Oregon Healthy Teens (OHT) Survey

Description: Since 2000, the Youth Risk Behavior Survey (developed by the CDC) and the Oregon Public School Drug Use Survey were combined for Oregon into a single annual survey called Oregon Healthy Teens (OHT) Survey. The sample size varies from 1,600 to 32,000 per year, and the final data are weighted to more accurately represent Oregon eighth- and 11th-graders. The survey assesses health topics such as tobacco and alcohol use, HIV knowledge and attitudes, eating behaviors, nutrition and exercise.

Limitations: One limitation is that participation by school systems in the OHT is voluntary. However, participation rates have been high thus far. Another limitation is that the OHT questionnaire is not currently available in non-English versions except for a Spanish booklet that can be used as a reference when filling out the English version of the survey. A third limitation is that 3% of surveys were eliminated due to combinations of “dubious” answers and another 5% were eliminated because the student did not fill out grade or gender information.

Vital records data (full count data)

Birth Certificate Statistical File

The Birth Certificate Statistical File includes all births occurring in Oregon and births occurring out of state to Oregon

residents. This database includes parental demographic information, conditions of the newborn, congenital abnormalities, medical factors of pregnancy, method of delivery, and complications of labor and delivery. It also includes tobacco, alcohol or illicit drug use during pregnancy. Information about maternal diabetes and gestational diabetes is also included.

Death Certificate Statistical File

The Death Certificate Statistical File includes all deaths occurring in Oregon and deaths occurring out of state to Oregon residents. Data are obtained from death certificates that are collected from the state registrar. The data are used to examine trends in mortality and causes of death. This database includes cause of death, date and place of death, and decedent demographic information. The mortality data analyzed for this report consists of deaths among Oregon residents.

Limitations of birth and death files: The accuracy of the data depends on the accuracy with which the birth attendant, certifying physician or medical examiner describes the circumstances surrounding the birth or the underlying causes of death.

CDC Wonder database

The CDC Wonder database provides National Center for Health Statistics (NCHS) national statistical analysis and reporting of deaths from specific diseases.



APPENDIX C: RELIABILITY AND SUPPRESSION GUIDELINES



In this report, some numbers include a warning that they are potentially unreliable or they are unreliable and suppressed (not shown). In general, reliability refers to the stability of a number being reported.

The guidelines used to gauge reliability differ depending on the type of data used. Some data sources include all events under study (such as births, deaths or hospitalizations). These will be referred to as “full count.” Other data sources are from surveys of randomly selected individuals, adjusted to represent the full population. These will be referred to as “survey.” The text below briefly describes the methods used to determine if the information in this report includes a warning for reliability or is suppressed.

Full count

Determine the number of events (n).

- ▶ $n \geq 12$: Report the estimate.
- ▶ $n \geq 5$ and $n < 12$: Report the estimate and include a warning regarding reliability.
- ▶ $n < 5$: Do not report the estimate and state that it is suppressed.

Survey

Determine the total number of persons surveyed (x) for a particular question and calculate the standard error (SE) for the reported number. Use the SE to calculate a statistic called the relative standard error (RSE). RSE is a measure of the variability of an estimate compared with the estimate itself.





1. Determine if the estimate is being calculated on a full population (i.e., everyone) or a subpopulation (i.e., a smaller group of all people surveyed who share a common trait such as race, county or medical condition).
2. If the full population, determine if the denominator is ≥ 50 . If yes, proceed; if not, suppress.
3. If a subpopulation, determine if the denominator is ≥ 20 . If yes, proceed; if not, suppress.
4. Apply the following logic to each RSE:
 - RSE $< 30\%$: Report the estimate.
 - RSE $\geq 30\%$ and RSE $< 50\%$: Report the estimate and include a warning regarding reliability.
 - RSE $\geq 50\%$: Do not report the estimate and state that it is suppressed.





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