

# State of Wyoming



## Department of Health

### The Burden of Cardiovascular Disease in Wyoming

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## **EXECUTIVE SUMMARY**

Cardiovascular disease (CVD), including coronary heart disease and stroke, is the number one cause of death in the state of Wyoming; accounting for almost 29.7% of all deaths in 2007. This total is greater than respiratory diseases, accidents, diabetes, influenza and pneumonia, Alzheimer's disease, suicide, and chronic liver disease combined. Unsurprisingly, the burden of cardiovascular disease on the state of Wyoming in terms of morbidity, mortality, and economics is considerable. This report will examine the burden of cardiovascular disease on the state of Wyoming by utilizing data collected from a variety of sources, including the 2009 United States Census, the Behavioral Risk Factor Surveillance Survey (BRFSS), and discharge data from Wyoming hospitals.

The age-adjusted mortality rate for heart disease for Wyoming in 2008 was 167.56/100,000 persons, which is down from previous years (e.g., 2007 = 168.99/100,000; 2006 = 187.65/100,000). County data was examined over a five-year span (2003-2007) and revealed over this time period that Campbell County had the highest age-adjusted mortality rate at 256.06/100,000 for heart disease, while Crook County had the lowest rate at 104.61/100,000. The age-adjusted mortality rate for stroke in Wyoming in 2007 was 36.09/100,000, which is also down from previous years (2000 = 59.69/100,000). The five-year age-adjusted mortality rate (2003-2007) for Wyoming counties revealed that Sheridan County had the highest mortality rate due to stroke (66.29/100,000), while Crook County had the lowest rates (13.5/100,000). The reduction in age-adjusted mortality rates does not mean that fewer Wyoming adults are having heart attacks or strokes. BRFSS data reflects that in 2001, 4.8% of Wyoming adults were told by a doctor, nurse, or healthcare professional they had a previous heart attack, angina, or coronary heart disease; while in 2009, 6.2% of Wyoming adults reported the same. In 2001, 2.0% of Wyoming adults reported having been told by a doctor, nurse, or healthcare professional that they had a stroke, while in 2009 2.4% of Wyoming adults reported the same. Therefore, the reduction in cardiovascular event deaths in Wyoming adults versus the increase in cardiovascular events may indicate that the medical community in Wyoming is actively keeping people alive who have suffered a cardiovascular event.

The burden of cardiovascular disease is not limited to morbidity and mortality. Between July 2007 and June 2008, a total of 18,746 people were discharged from Wyoming hospitals with either a primary or secondary diagnosis of cardiovascular disease; 1193 people were discharged from Wyoming hospitals with either a primary or secondary diagnosis of stroke; while 6342 people were discharged from Wyoming hospitals with either a primary or secondary diagnosis of diabetes. Heart disease and stroke accounted for more than \$100 million dollars in hospital expenses during this time period. While CVD-related diagnoses accounted for only 35% of the total number of diagnoses, the cost of CVD and related diagnoses accounted for 54% of the total cost of all hospital discharges.

The following major risk factors associated with CVD are also prevalent, with most rising, in Wyoming's population. According to 2009 BRFSS data, high blood pressure affects 26.1% of the adult population, compared to 22.4% in 2001; 29.5% have high blood cholesterol compared to 30.5% in 2001; and 7.0% of Wyoming adults have diabetes compared to 4.5% in 2001. Using the weight and height ratios in the Body Mass Index (BMI), 26% of Wyoming residents are obese (BMI  $\geq$  30) compared to 20% in 2001. Wyoming adults who were overweight or obese in 2009 (overweight or obese is defined by a BMI  $\geq$  25) reached 62.2%,

compared to 55.7% in 2001. Slightly over 22% of all adults in the state did not engage in any leisure time physical activity, and 19.9% were current smokers. Additionally, 16.4% of the state's residents claim they have no healthcare coverage.

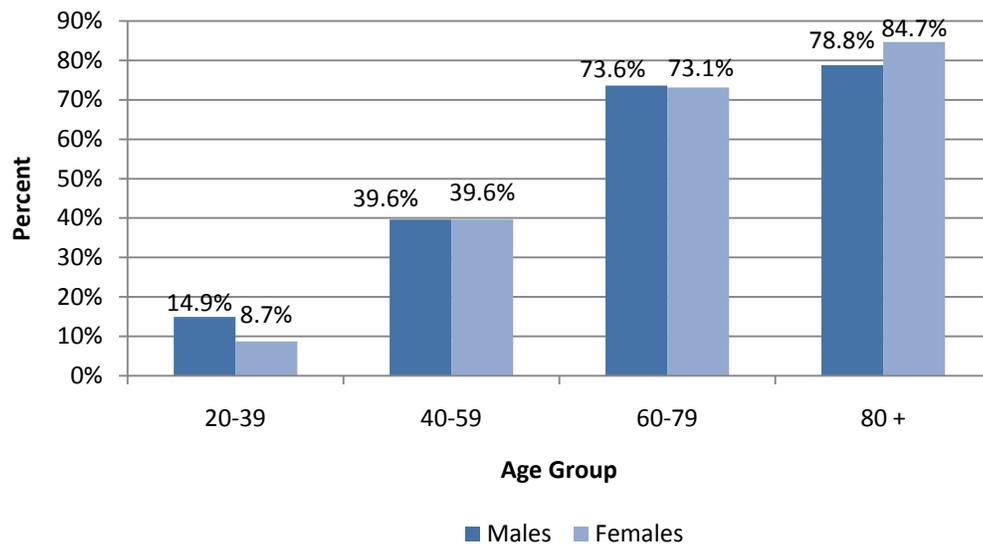
Regardless of these problems, 2009 BRFSS data also indicates that a majority of men and women think they are in good or excellent physical condition. Most know the major signs/symptoms of heart attack and stroke and know to call 911 if they or someone else has a heart attack or stroke. In addition, 60.4% of males and 70.5% of females report eating fewer high fat or high cholesterol foods to lower their risk of heart disease. Thirty-five percent of adults over the age of 35 take a daily aspirin; and of those, almost 80% take the aspirin to prevent heart attack and 67% take aspirin to prevent stroke.

While some behaviors in Wyoming residents are encouraging, a good deal of work is needed to combat some of the major CVD risk factors, including lack of physical activity, increased weight gain, and tobacco use. This report is the first step of many in continuing to shape a more comprehensive program aimed at decreasing the prevalence and incidence of heart disease and stroke in Wyoming's population through education, interaction, and community interventions.

## **INTRODUCTION**

According to the American Heart Association (AHA) and the Centers for Disease Control and Prevention (CDC), cardiovascular disease (CVD), which includes coronary heart disease (CHD), atherosclerosis, and stroke, affects some 81,100,000 Americans.<sup>1</sup> This number is comprised of over 39 million men and over 42 million women.<sup>2</sup> Additionally, over 38 million people with CVD are over the age of 60 (Figure 1).<sup>2</sup> More than one in three people in the United States has some form of cardiovascular disease.<sup>3</sup>

**Figure 1. Prevalence of Cardiovascular Disease in Americans Age 20 and Older, by Age and Sex, U.S. 2003-2006<sup>2</sup>**



## ***WHAT IS CARDIOVASCULAR DISEASE?***

### **Cardiovascular Disease**

Cardiovascular disease (CVD), also known as Total CVD, refers to a wide spectrum of diseases that affect the heart, arteries, brain, and peripheral tissues.<sup>4</sup> Heart attack, stroke, angina, atherosclerosis, congestive heart failure, and congenital cardiovascular defects are a few of the conditions/diseases associated with CVD. The term “cardiovascular disease” encompasses all other heart related diseases, such as coronary heart disease and cerebrovascular disease (i.e., stroke).

### **Coronary Heart Disease**

Coronary heart disease, or CHD, is caused by atherosclerosis, a CVD condition associated with a build-up of plaque in the arteries of the heart. Plaque is a soft fat-like substance found in the blood that adheres to the walls of the arteries.<sup>5</sup> As blood passes through the arteries, more plaque is deposited along the walls until the arteries begin to narrow. This, in turn, restricts the flow of blood through the artery, which results in angina (chest pain), blood

clots, myocardial infarction (heart attack) and sudden death due to cardiac arrest. Risk factors for CHD include high cholesterol and triglyceride levels, high blood pressure, and smoking.

**Stroke**

Stroke, also known as a “brain attack,” occurs when the blood flow to the brain is disrupted. There are two types of strokes: ischemic and hemorrhagic. Ischemic strokes occur when there is a blockage in the cerebral artery that supplies blood to the brain. This blockage most often occurs when a blood clot forms and blocks the blood flow in the cerebral artery. As with the arteries in the heart, plaque builds up in these arteries; narrowing them and increasing the risk for stroke. High cholesterol, which contributes to atherosclerosis, is a major risk factor in this type of stroke. Ischemic strokes account for about 85% of all strokes.<sup>6</sup>

A hemorrhagic stroke occurs when a blood vessel in the brain becomes weak and ruptures, spilling blood into the surrounding area of the brain. The blood accumulates and compresses the adjacent brain tissues.<sup>6</sup> High blood pressure is a major risk factor for this type of stroke because it increases the pressure inside the blood vessels in the brain.<sup>7</sup>

***MAJOR MODIFIABLE RISK FACTORS***

**High Blood Pressure**

High blood pressure is a major risk factor in all cardiovascular diseases. High blood pressure makes the heart work harder than normal, increasing the pressure in veins and arteries.<sup>5</sup> According to the AHA, high blood pressure increases the risk of heart attack, stroke, congestive heart failure, and atherosclerosis.<sup>8</sup> It is estimated that 75.4 million Americans age 20 and older have high blood pressure.<sup>9</sup> Additionally, research has shown that males who have high blood pressure at an early age have a significantly increased risk of cardiovascular disease<sup>10</sup> and stroke<sup>11</sup> later in life. High blood pressure often has no symptoms, and people can go years without realizing they have this condition. High blood pressure can be effectively regulated by diet, medication, and exercise. There are many medical and pharmacological options open to physicians and individuals to treat high blood pressure. Whelton et al. (1998) found that reducing sodium intake and weight loss alone constituted an effective non-medicinal treatment for hypertension in people aged 60-80.<sup>12</sup>

**Table 1. Classification of Blood Pressure (BP) Levels<sup>13</sup>**

Category	Systolic BP (mmHg)		Diastolic BP (mmHg)
Normal	<120	AND	<80
Pre-hypertension	120–139	OR	80–89
Hypertension, Stage 1	140–159	OR	90–99
Hypertension, Stage 2	≥160	OR	≥100

## **High Blood Cholesterol**

There are several types of cholesterol found in the human body. Total Cholesterol, low-density lipoprotein (LDL), and high-density lipoprotein (HDL) are the most commonly measured. Approximately 15% of blood cholesterol comes from a person's diet, while the other 85% is made by the liver. LDL cholesterol is "bad" cholesterol because it is a component of the plaque that is deposited on artery walls.<sup>5</sup> On the other hand, HDL cholesterol is "good" cholesterol because it carries excess cholesterol back to the liver where it is removed from the blood. A high level of LDL or a low level of HDL blood cholesterol increases a person's risk of coronary heart disease and stroke. Table 2 illustrates the levels for classification of the different types of blood cholesterol based on the recommendations from the National Heart Lung and Blood Institute's National Cholesterol Education Program.<sup>14</sup> The American Heart Association estimates that over 102 million American adults have a total cholesterol level higher than the desired upper limit of 200 mg/dL.<sup>15</sup> Additionally, high blood cholesterol in combination with other risk factors (e.g., smoking, high blood pressure) increases an individual's (male or female) risk of CHD, CVD, and all-cause mortality.<sup>16</sup> Eating a diet low in fat and cholesterol, but high in Omega-3 fatty acids, can help reduce this risk .

**Table 2. Classification of Blood Cholesterol Levels<sup>14</sup>**

<b>LDL Cholesterol</b>	<b>mg/DL</b>
Optimal	<100
Near optimal/above optimal	100-129
Borderline high	130-159
High	160-189
Very high	>190
<b>Total Cholesterol</b>	<b>mg/DL</b>
Desirable	<200
Borderline high	200-239
High	>240
<b>HDL Cholesterol</b>	<b>mg/DL</b>
Low	<40
High	>60

## **Nutrition**

Healthy eating habits play an important role in the prevention of heart disease and stroke. The American Heart Association's (AHA) Diet and Lifestyle Recommendations<sup>17</sup> contains three general nutrition recommendations. The first recommendation is to balance caloric intake and physical activity levels to maintain and/or achieve an optimal body weight. The second recommendation is to consume a variety of nutritious foods from all of the food groups (including fresh fruits and vegetables, whole grain-high fiber foods, oily fish, lean meats, and low or no-fat dairy options).<sup>17</sup> The final recommendation of the AHA guidelines recommends two weekly servings of fish such as canned light tuna, salmon, pollock, and/or catfish. These fish are high in omega-3 fatty acids, and are also thought to be lower in mercury. The

consumption of fish high in Omega-3 fatty acids has been associated with a reduced risk of sudden death and death due to coronary artery disease among adults.<sup>18-19</sup> Finally, the recommendations stress avoiding nutrient poor foods such as partially hydrogenated fats, foods and beverages with added sugars, and foods which are high in salt, or dietary cholesterol.<sup>17</sup>

**Physical Inactivity**

Physical inactivity, or lack of exercise, increases the risk for CVD, especially when combined with a diet high in fat and cholesterol.<sup>5</sup> Regular exercise aids in decreasing the amount of cholesterol in the blood, lowering blood pressure, reducing excess weight by burning calories, and enables diabetics to better control their glucose levels. Bijnen, Caspersen, et al. (1998) found that even elderly persons (64-84) could decrease their risk of CVD by as much as 30% simply by increasing their physical activity.<sup>20</sup> Any activity is good whether it is jogging, walking, hunting, or caring for animals. Based on the 2005 Dietary Guidelines, the U.S. Surgeon General recommends that all adults participate in at least 30 minutes of moderate intensity physical activity per day.<sup>21</sup>

**Obesity**

People with excess body weight, especially around the waist area, are at increased risk of high blood pressure, high blood cholesterol, heart disease, stroke, and diabetes.<sup>5</sup> For example, the risk of hypertension is two times higher and the risk of diabetes is three times higher in moderately obese middle-aged men than in their non-obese counterparts.<sup>22</sup> Reducing excess body fat, even as little as 5-10% can reduce blood pressure and cholesterol levels. Andersen, et al. (1999) found that a program consisting of diet and physical activity was as effective as structured aerobic exercise at reducing triglyceride and total cholesterol levels.<sup>23</sup> The body mass index (BMI) weight classifications are listed in Table 3.

**Table 3. Classification of weight by Body Mass Index (BMI)**

Weight Classification	BMI (kg/m <sup>2</sup> )	Obesity Class
Underweight	<18.5	
Normal/Healthy Weight	18.5-24.9	
Overweight	25.0-29.9	
Obesity	30-34.9	I
Obese II	35.0-39.9	II
Extreme Obesity	>40.0	III

**Diabetes**

Diabetes mellitus is a metabolic disease that disrupts the ability of the body to break down and process glucose, a form of sugar that is the body’s main source of energy. This inability to effectively process glucose leads to a myriad of complications including cardiovascular disease, blindness, and kidney disease. Adults with diabetes have heart disease death rates about 2 to 4 times those of people without diabetes. In 2004, heart disease was noted on an estimated 68% and stroke on an estimated 16% of diabetes related death certificates of U.S. residents 65 and older.<sup>24</sup>

## **Tobacco Use**

Smoking is one of the greatest, and most preventable, risk factors associated with CVD, CHD, and stroke. While the number of smokers has decreased in the past three decades,<sup>15</sup> approximately 23% of males and 17% of females over the age of 18 years in the U.S. still smoke.<sup>25</sup> Smoking puts one at risk because the nicotine and carbon monoxide in tobacco smoke inhibits the amount of oxygen in the blood and damages blood vessel walls, making them more susceptible to plaque build-up.<sup>5</sup> Additionally, smoking reduces the amount of HDL or “good” cholesterol in the blood.<sup>5</sup> Tobacco use, especially when other risk factors are present (e.g., diabetes, high blood pressure, high blood cholesterol), greatly increases the risk of coronary heart disease and cardiovascular disease.<sup>26</sup> From 2000-2004 269,655 men and 173,940 women died from smoking-attributable cardiovascular disease.<sup>27</sup> The CDC estimates that from 2001 – 2004, average annual smoking-attributable healthcare expenditures were approximately \$96 billion.<sup>28</sup>

## **Alcohol Consumption**

Some studies have found that moderate alcohol consumption (no more than two drinks/day for men and one drink/day for women) can lower a person’s risk of heart disease and stroke.<sup>29-31</sup> However, excessive alcohol consumption has been associated with increased blood pressure, increased levels of triglycerides, liver damage, increased risk of breast cancer, and physical abuse.<sup>32</sup>

## **Other Factors**

Some risk factors cannot be controlled, but should be taken into account when determining a person’s risk of heart disease:

- **Gender** - Men are at greater risk than women, simply because of their gender. However, this risk disparity diminishes as individuals age.
- **Age** - As people get older they are at greater risk for heart disease and stroke.
- **Ethnicity** - African-Americans are at greater risk than Caucasians because of their predisposition to high blood pressure.
- **Family history** - Having a family history of heart disease increases a person’s risk of developing the disease themselves.

## **WARNING SIGNS**

### **Heart Attack**

Approximately 40% of the 1.1 million heart attacks in the United States end in death each year.<sup>33</sup> While many people think they would know if they were having a heart attack, not all heart attacks are like the ones we see in movies--someone grabbing their chest and collapsing. Rather, many heart attacks start slowly and with mild pain.<sup>33</sup> Table 4 shows the signs and symptoms of a heart attack. If you or someone you know is experiencing any of these symptoms, call 9-1-1 immediately.

**Table 4. Warning signs and symptoms of a heart attack**

#### **Heart Attack**

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- Chest discomfort in the center of the chest that lasts more than a few minutes, or that goes away and comes back
- Discomfort in other areas of the upper body such as pain or discomfort in one or both arms, the back, neck, jaw or stomach
- Shortness of breath with or without chest discomfort
- Breaking out in a cold sweat
- Nausea or lightheadedness

### **Stroke**

Some people may not know the warning signs of stroke, so they may wait to call an ambulance or go to a hospital. The most promising treatment of ischemic strokes is the “clot-busting” drugs such as tissue plasminogen activator (tPA). If given within three hours of symptom onset, these drugs may reduce the effects of stroke and reduce permanent disability.<sup>34</sup> Therefore, everyone should be familiar with the following stroke warning signs (Table 5).

**Table 5. Warning signs and symptoms of a stroke**

#### **Stroke**

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- Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- Sudden confusion, trouble speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, loss of balance or coordination
- Sudden, severe headache with no known cause

### **Mortality**

Cardiovascular disease (CVD) has been the leading cause of death in America every year since 1900, with the exception of 1918.<sup>2</sup> In 2006 alone, 831,272 people in the U.S. died from CVD (1 out of every 2.9 deaths).<sup>1, 35</sup> While CVD is more likely to strike older individuals,

151,000 of CVD deaths in 2006 were people under the age of 65.<sup>1</sup> Even though the death rates from CVD declined 29.2% from 1996 to 2006, the actual number of CVD deaths has declined by only 12.9%.<sup>1</sup>

Coronary heart disease (CHD), which causes heart attacks and angina, is the single leading cause of death in America, accounting for over 425,425 (1 in 6) deaths in 2006.<sup>1</sup> An estimated 1.26 million Americans will have a new or recurrent coronary attack this year, and approximately 426,700 deaths will result from these attacks.<sup>36</sup>

Stroke is the third leading cause of death in the U.S., behind total cardiovascular disease and cancer.<sup>35, 37</sup> In 2006, stroke killed 137,119 people in the U.S.<sup>35, 37</sup> and accounted for 1 in every 18 deaths.<sup>3</sup> It is estimated that over 6 million Americans 20 years of age and older have had a stroke.<sup>3</sup> The American Heart Association estimates that every 40 seconds someone in the United States suffers a stroke, and the National Heart Lung and Blood Institute estimates that every 4 minutes, on average, someone dies of a stroke.<sup>3</sup>

**Table 6. Leading causes of death, U.S. and Wyoming, 2007**

<b>U.S</b>		<b>Wyoming</b>	
Condition	Proportion of all Deaths	Condition	Proportion of all Deaths
Diseases of heart	25.4%	Diseases of the heart	22.5%
Malignant neoplasm	23.2%	Malignant neoplasm	22.1%
Cerebrovascular diseases	5.6%	Chronic lower respiratory diseases	6.8%
Chronic lower respiratory diseases	5.3%	Unintentional injuries	6.9%
Unintentional Injuries	5.1%	Cerebrovascular diseases	4.9%
Alzheimer's disease	3.1%	Diabetes mellitus	3.3%
Diabetes mellitus	2.9%	Influenza and pneumonia	2.7%
Influenza and pneumonia	2.2%	Alzheimer's disease	2.6%
Nephritis, nephrotic syndrome and nephrosis	1.9%	Suicide	2.3%
Septicemia	1.4%	Chronic liver disease	2.0%
All other causes	23.9%	All other causes	23.8%

### **Morbidity**

Not everyone who experiences a heart attack or stroke dies. The AHA estimates that over 17.6 million people in the United States suffer from angina (chest pain caused by coronary heart disease), heart attack, or other forms of coronary heart disease;<sup>36</sup> and more than 6.4 million people have survived a stroke.<sup>37</sup> Stroke is a leading cause of serious, long-term disability in the United States.<sup>38</sup> Additionally, the CDC estimates that approximately 74.5 million Americans suffer from high blood pressure, a major risk factor in CVD, CHD, and stroke.<sup>3</sup> An estimated 3.7 million adults have total serum cholesterol levels greater than 240 mg/dl. The prevalence of

diabetes is also alarming. An estimated 17.2 million have diagnosed diabetes and it is estimated that 6 million more have diabetes, but have not yet been diagnosed.<sup>3</sup> Finally, the CDC estimates that 36,000 babies are born each year with some sort of congenital cardiovascular defect,<sup>3</sup> and between 650,000 and 1,300,000 people in the U.S. have some sort of cardiac defect.<sup>39</sup>

### **Costs**

The cost of treating people with CVD and stroke is enormous. The American Heart Association estimates the total cost of CVD and stroke in 2010 will be \$503.2 billion.<sup>3</sup> This total includes the “direct” costs of treating people with cardiovascular disease (e.g., physician and hospital costs, medication) as well as the “indirect” costs associated with surviving a heart attack or stroke such as lost productivity and rehabilitation. The total costs of coronary heart disease alone will total \$117 billion, with stroke costing an additional \$73.7 billion and hypertensive diseases costing \$76.6 billion. CVD costs more than any other diagnostic group.<sup>3</sup>

## **WYOMING**

### ***POPULATION***

According to the U.S. Census Bureau, the total estimated population of Wyoming was 544,270 in 2009, making it the least populated state in the United States.<sup>40</sup> Only the cities of Cheyenne and Casper were officially designated as metropolitan communities. Wyoming is a very rural state with 17 of its 23 counties being designated as frontier (frontier is defined as having 7 or fewer people per square mile).<sup>41</sup> Wyoming's population is estimated to rise to over 694,000 by the year 2025.<sup>42</sup> With the anticipated increase in the percentage of residents over the age of 65, as discussed in the following paragraph, the prevalence of CVD in Wyoming may increase as well.

The median age for Wyoming residents in 2008 was 36.8 years,<sup>43</sup> which is up from 35.7 in 1998.<sup>43</sup> Approximately 12.3% of Wyoming residents are over the age of 65.<sup>43</sup> The population of Wyoming is aging and subsequently is at increased risk for CVD and related conditions. It is estimated that Wyoming's 65 and older population will more than double between 2000 and 2030. In 2000, 11.7% of the population was 65 years or older, and in 2030 it is estimated that 26.5% will be over 65.<sup>44</sup>

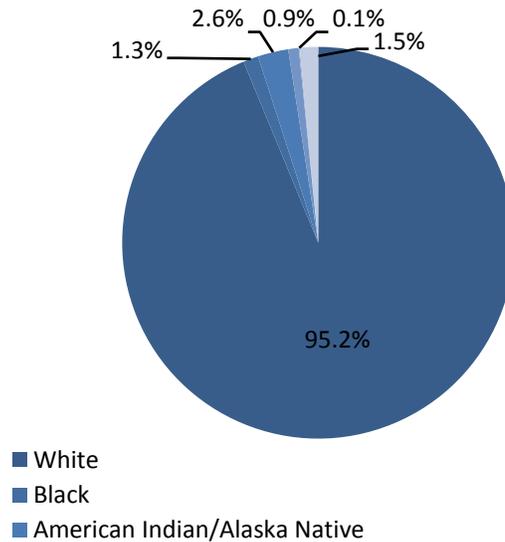
### ***GENDER***

In 2008, the number of males and females in the state were nearly equal with 49.4% females and 50.6% males.<sup>45</sup> The split for adults age 18 and over was almost even with 50.7% male and 49.3% female. However, among adults age 65 and older, there were more females (56.1%) than males (43.9%).<sup>46</sup>

### ***RACE/ETHNICITY***

Wyoming has a homogeneous population, with 95% of the population white (non-Hispanic). The American Indian/Alaska Native is the largest racial minority group in the state (Figure 2).<sup>47</sup> Approximately 8% of the Wyoming's population is of Hispanic/Latino ethnicity.

<sup>43</sup>Figure 2. Wyoming Population by Race, 2009<sup>47</sup>

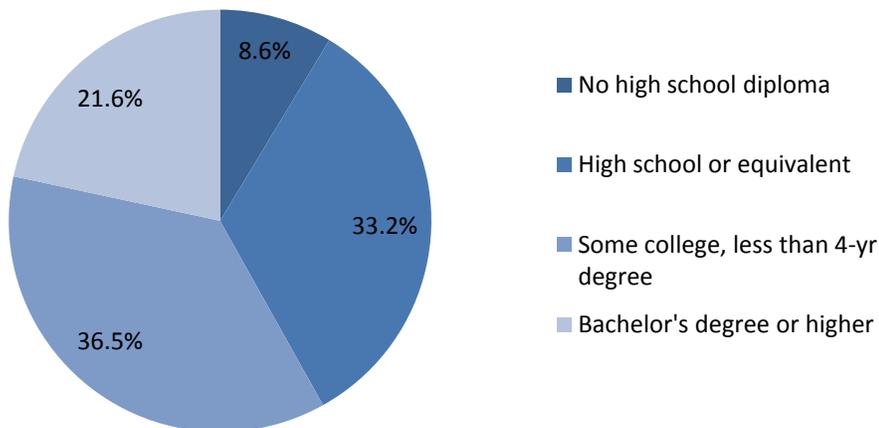


## ***EDUCATION AND INCOME***

Based on data from the 2009 Current Population Survey, 91.3% of Wyoming residents 25 years and older have a high-school diploma; 21.6% hold a Bachelor's degree or higher. Educational attainment among Wyoming adults is illustrated in Figure 3.<sup>45</sup>

In 2008, the median Wyoming household income was \$53,207, which is not statistically different than the median U.S. household income of \$52,029.<sup>48</sup> In Wyoming slightly more than 9% of the population were classified as living below the Federal Poverty Level in the year 2008. This statistic is slightly lower than the U.S. estimate of 13.2%.<sup>49</sup>

**Figure 3. Educational Attainment among Wyoming Adults Age 25 Years or Older, 2008**

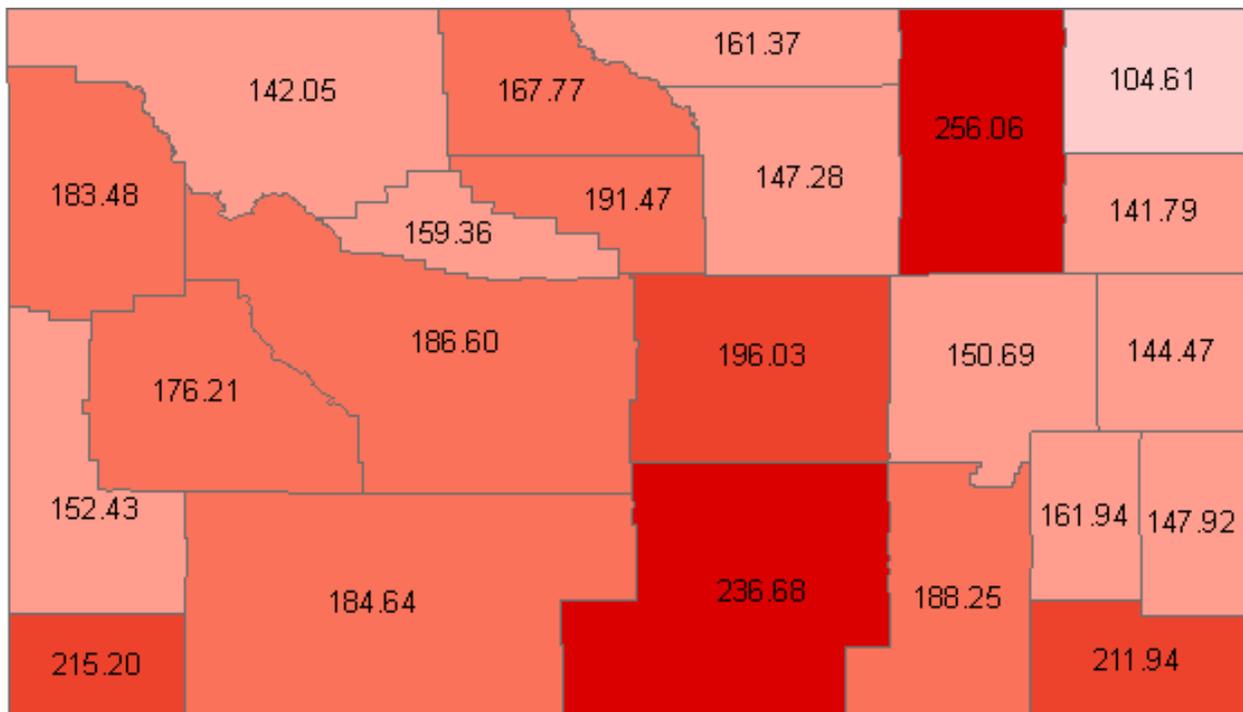


# CARDIOVASCULAR DISEASE IN WYOMING

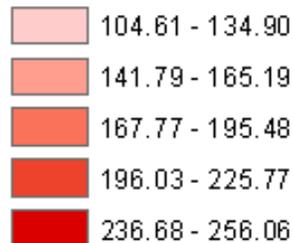
## ***MORTALITY – HEART DISEASE***

As with the United States as a whole, cardiovascular disease is the number one killer of Wyoming residents, accounting for 27.5% of all deaths in 2007. Coronary heart disease was the single greatest cause of death accounting for 22.8% of all deaths in 2007. In 2007, the age-adjusted (U.S. 2000 population standard) mortality rate for heart disease (ischemic, hypertension, and other) in Wyoming was 168.99/100,000. Due to the small population in Wyoming, county data was examined by combining data from 2003-2007 for a five-year age-adjusted rate. Examining this five-year mortality data by county revealed some interesting results (Figure 4). Campbell County had the highest age-adjusted rate (256.06/100,000) and neighboring Crook County had the lowest (104.61/100,000) mortality rate.

Figure 4. Age Adjusted Heart Disease Death Rates by County of Residence, Wyoming 2003-2007



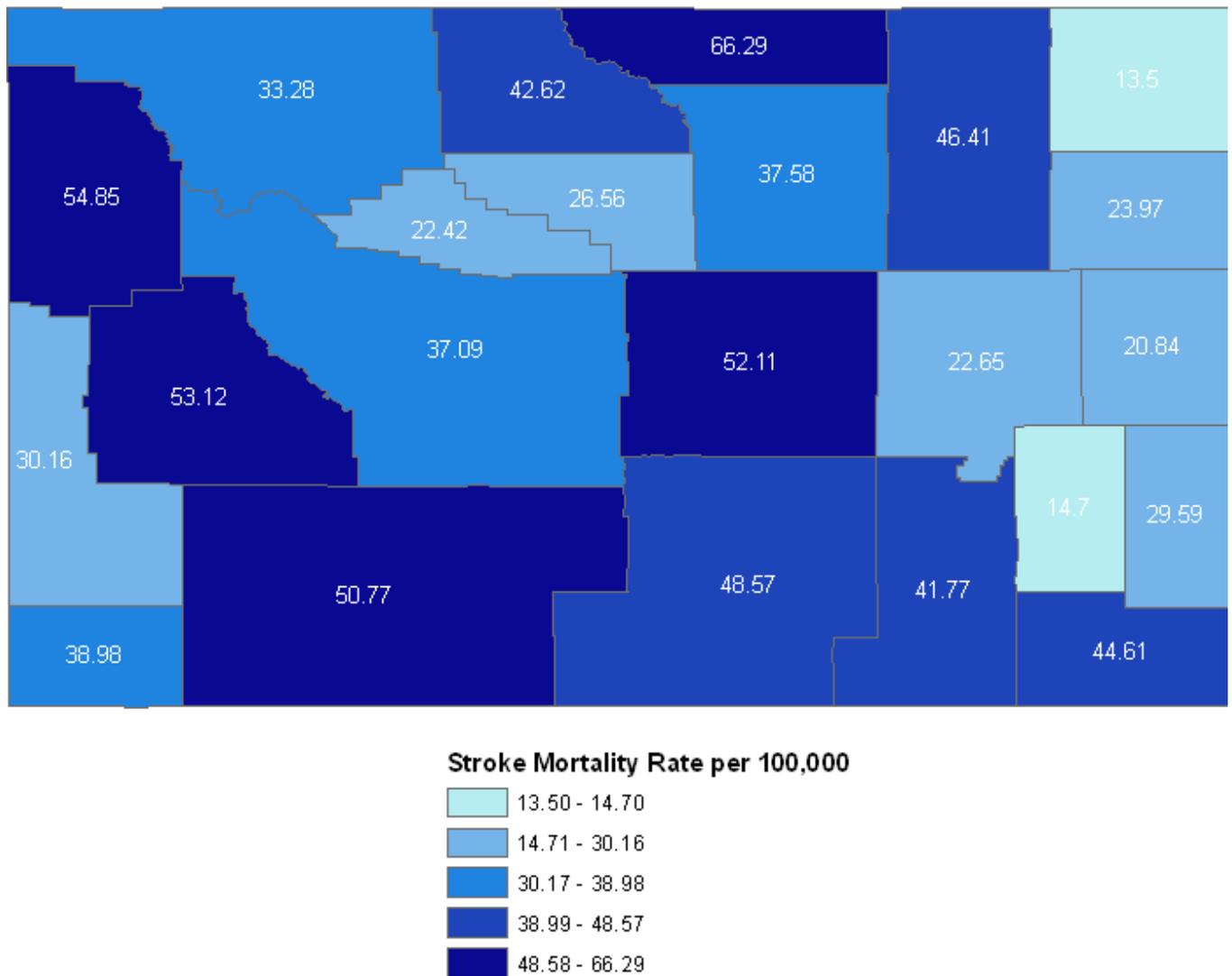
### Heart Disease Mortality Rate per 100,000



## ***MORTALITY – STROKE***

Wyoming’s age-adjusted stroke mortality rate in 2007 was 36.09/100,000. County data was combined from 2003-2007 and is presented in Figure 5. The five-year age-adjusted mortality rates for stroke appear to be more random; Sheridan County had the highest age adjusted rate (66.29/100,00) and Crook County (13.5/100,000) and Platte County (14.7/100,000) had the lowest rates. Although Crook and Platte counties have the lowest rates, the rates are based on a small number of events in a small population, so the data may be unreliable.

Figure 5. Age Adjusted Stroke Death Rates by County of Residence, Wyoming 2003-2007



## ***PREVALENCE DATA***

### **Hospital Discharges**

According to 2008 data from the Healthcare Cost and Utilization Project (HCUP), there were 56,355 total inpatient discharges in the state of Wyoming. The following data are also from the HCUP database.<sup>50</sup>

### **Heart Disease**

Table 7 (below) details hospital discharges, average length of stay, average cost, and an estimated total cost by diagnosis in Wyoming in 2008. The conditions listed are primary diagnoses. Among heart disease related conditions, the most often occurring diagnosis was coronary atherosclerosis, with 977 discharges at a total estimated cost of approximately 35 million dollars. Also, 645 discharges were related to acute myocardial infarction (heart attack) at an estimated cost of over 27 million dollars. Table 8 details the discharges related to heart disease (either primary or secondary diagnoses).

### **Stroke**

Table 7 also illustrates hospital discharges related to stroke. In 2008, there were 519 hospitalizations with a primary diagnosis of acute cerebrovascular disease (stroke) at an estimated cost of over 12 million dollars. Table 8 details the discharges related to heart disease and stroke (either primary or secondary diagnoses).

**Table 7. Hospital Discharges-Primary Diagnosis, Wyoming 2008**

<b>Diagnosis Group</b>	<b>Total Number of Discharges</b>	<b>Length of Stay, Days (mean)</b>	<b>Charges (mean) \$</b>	<b>Estimated Total Cost \$</b>
<b>Heart Disease</b>				
Essential Hypertension	128	2.3	10,279	1,315,712
Hypertension with complications and secondary hypertension	117	4.1	16,526	1,933,542
Coronary atherosclerosis and other heart disease	977	2.8	35,718	34,896,486
Acute myocardial infarction	645	4.3	42,326	27,300,270
Congestive heart failure, nonhypertensive	979	4.6	18,041	17,662,139
<b>Stroke</b>				
Acute cerebrovascular disease	519	4.9	23,265	12,074,535
Transient cerebral ischemia	192	2.1	10,184	1,955,328
• Occlusion or stenosis of precerebral arteries	141	3	21,647	3,052,227

**Table 8. Hospital Discharges-Primary and Secondary Diagnosis, Wyoming 2008**

<b>Diagnosis Group</b>	<b>Total number of discharges</b>
<b>Heart Disease</b>	
Essential Hypertension	12,270
Hypertension with complications and secondary hypertension	1,396
Coronary atherosclerosis and other heart disease	6,246
Acute myocardial infarction	902
Congestive heart failure, nonhypertensive	3,646
<b>Stroke</b>	
Acute cerebrovascular disease	657
Transient cerebral ischemia	252
Occlusion or stenosis of precerebral arteries	335

\*State statistics from HCUP State Inpatient Database 2008, Agency for Healthcare Research and Quality (AHRQ), based on data collected by the Wyoming Hospital Association and provided to AHRQ.

## ***BRFSS SURVEY***

Data concerning the prevalence of cardiovascular disease, including coronary heart disease and stroke in Wyoming is based on the Wyoming Behavioral Risk Factor Surveillance System (BRFSS 2007 and 2008). The BRFSS is a random digit dial telephone survey of adults age 18 and older which is conducted annually by the Centers for Disease Control and Prevention (CDC). The BRFSS is conducted in 50 states, Washington D.C., and in some territories. The results of the survey provide public health decision makers with information concerning specific individual behaviors, as well as information about access to healthcare. Every year adults are asked a series of core questions regarding their behaviors and attitudes towards several health related conditions (e.g., diabetes, cancer, physical activity). Many of these behaviors are directly linked to cardiovascular disease risk. Every other year, respondents are asked specific questions related to their awareness of heart disease and stroke (heart disease and stroke module, 2007). In 2008, a total of 7,999 Wyoming adults were interviewed, and a total of 6,160 Wyoming adults were surveyed in 2007.

## ***BRFSS CORE QUESTIONS***

### **Perceived Physical Health**

In 2009, 87.5% of those surveyed indicated they thought they were in good to excellent health. Gender did not make a significant difference in this perception. Female (86.5%) and male (88.5%) respondents thought they were in generally good health (Table 9).

**Table 9. Perceived physical health status among Wyoming adults by gender, 2008**

	Good or Better	Fair or Poor
Male	88.5% (87.0 - 90.0)	11.4% (9.9 - 12.9)
Female	86.5% (85.2 - 87.8)	13.4% (12.1 - 14.7)
Overall	87.5% (86.5 - 88.5)	12.4% (11.4 - 13.4)

### **Prevalence of Heart Disease and Stroke**

Since 2005, the WY BRFSS consistently includes questions regarding heart attack and stroke. In 2009, 6.2% of Wyoming adults reported having ever been told by a doctor, nurse, or other health professional that they had a heart attack, angina, or coronary heart disease. Significantly more males than females reported a history of heart disease. The prevalence of stroke is lower, with 2.4% of Wyoming adults reporting that they have been told by a doctor, nurse, or other healthcare professional that they had a stroke. There is not a difference in the prevalence of stroke between Wyoming men and women. The combined answers to the previous two questions indicate 7.5% of Wyoming adults reported that they have been told that they had a heart attack, angina, coronary heart disease, or a stroke. Significantly more males than females have reported these conditions (Table 10).

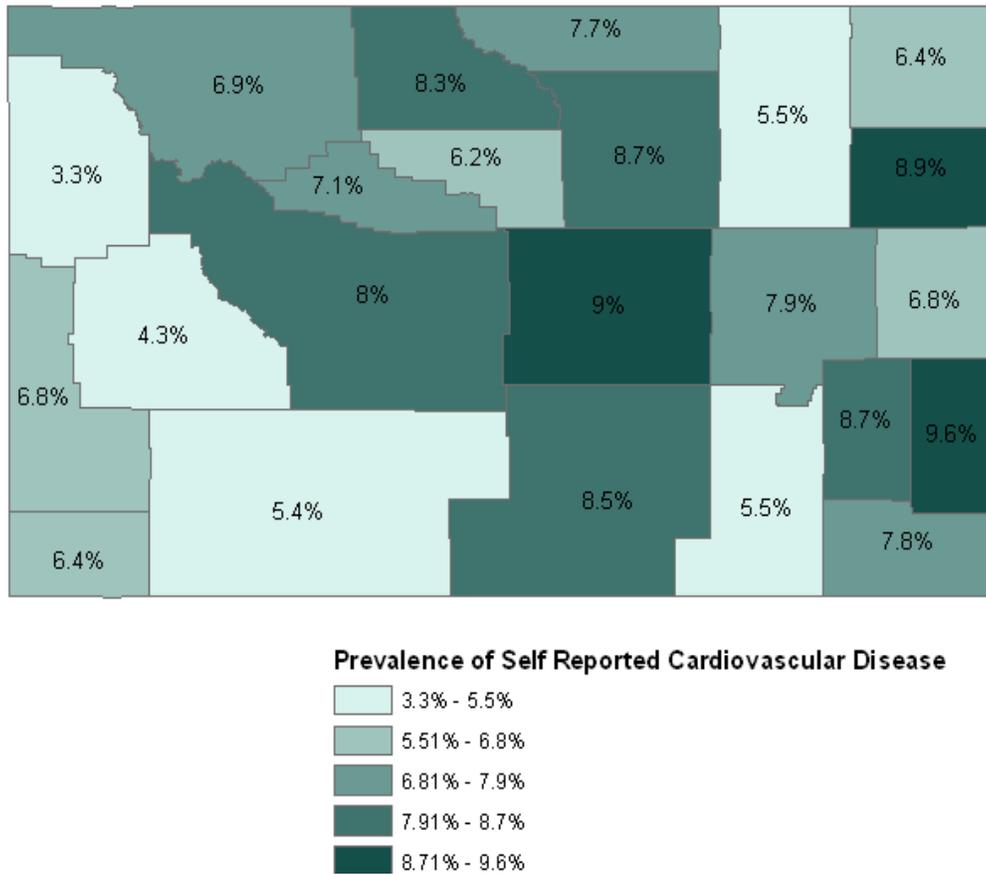
**Table 10. Wyoming adults reporting having ever been told by a doctor, nurse, or other health professional that they had a heart attack, angina, or coronary heart disease, or a stroke by gender, 2009**

Have you ever been told by a health professional that you have or have had:

	Overall	Males	Females
A heart attack, angina, or coronary heart disease	6.2% (5.4 - 7.1)	7.8% (6.4 - 9.5)	4.6% (3.9 - 5.3)
A stroke	2.4% (2.0 - 2.9)	2.4% (1.7 - 3.3)	2.3% (1.9 - 2.8)
Cardiovascular disease (heart disease or stroke)	7.5% (6.7 - 8.5)	8.8% (7.3 - 10.5)	6.2% (5.5 - 7.1)

In order to obtain county level estimates of cardiovascular disease prevalence, three years (2005-2007) of BRFSS data were combined. Figure 6 illustrates the county estimates from 2005-2007 of Wyoming adults who reported having coronary heart disease, angina, a heart attack or stroke. The prevalence ranged from 3.3% in Teton County to 9.6% in Goshen County. The prevalence in Teton County (3.3%) was significantly lower than the state prevalence of 7.0%. No other county prevalence was statistically different than the state prevalence during this time.

Figure 6. Prevalence of heart disease or stroke, by Wyoming County, BRFSS 2005-2007



**Risk Factors**

The latest data concerning the prevalence of hypertension and high cholesterol is from 2009. The prevalence of diabetes is gathered annually. Respondents were asked if a physician or other healthcare professional had ever told them they had high blood pressure, high blood cholesterol, or diabetes; all of which are risk factors for cardiovascular disease. There were significant differences between men and women for high blood pressure (Table 11).

- Overall, 26.1% of respondents indicated they had been told they have high blood pressure. Prevalence of high blood pressure was higher among males (28.5%) than females (23.7%).
- Slightly more than 29% of respondents reported being told they have high blood cholesterol. Prevalence of high blood cholesterol was similar among males (29.6%) and females (29.4%).
- A total of 7.0% of respondents were informed they have diabetes (this does not include women who were pregnant). Prevalence of diabetes was not appreciably different between males (7.4%) and females (6.5%).

**Table 11. Wyoming adults reporting that they have been told by a health professional that they have high blood pressure, high blood cholesterol, or diabetes, 2009**

Have you ever been told by a health professional that you have:

	Male	Female	Overall
High Blood Pressure	28.5% (26.4 - 30.8)	23.7% (22.2 - 25.3)	26.1% (24.8 - 27.5)
High Blood Cholesterol	29.6 % (27.4 - 31.8)	29.4% (27.6 - 31.2)	29.5% (28.1 - 30.9)
Diabetes	7.4% (6.4 - 8.6)	6.5% (6.5 - 8.1)	7.0% (6.3 - 7.7)

Figure 7 illustrates the prevalence of hypertension among Wyoming residents compared to the U.S. averages from 1995-2009. The Wyoming prevalence is slightly lower than the U.S. prevalence; however, it follows a similar increasing trend. Wyoming and the U.S. have not met the Healthy People 2010 goal to reduce the prevalence of hypertension to 16%.

**Figure 7. Prevalence of hypertension among Wyoming and U.S. adults from 1995-2009**

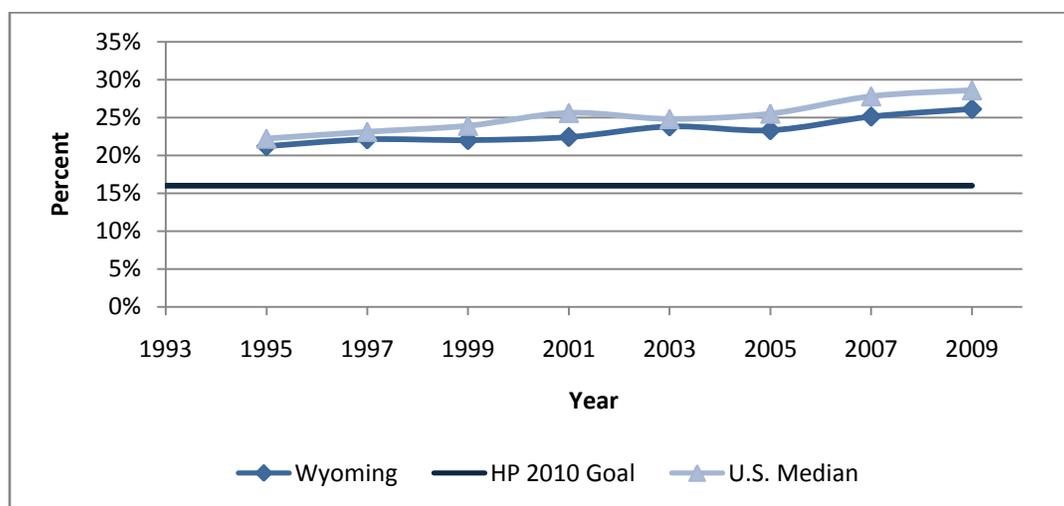
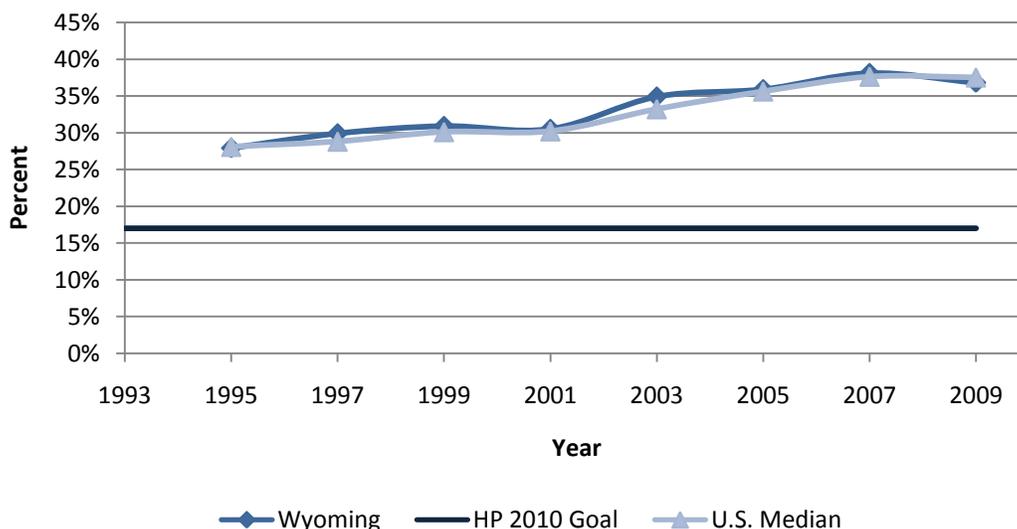


Figure 8 illustrates the prevalence of high blood cholesterol in adults in Wyoming and the U.S. from 1995-2009 among adults who reported having had their cholesterol checked. The prevalence among Wyoming adults is similar to the U.S. prevalence; both have increased since 1995. Neither Wyoming nor the U.S. has met the Healthy People 2010 goal of reducing the prevalence of high blood cholesterol to 17%.

Figure 8. Prevalence of high blood cholesterol among Wyoming and U.S. adults from 1995-2009



### **Cholesterol Tested**

In 2009, respondents were asked if, in the last five years, they had their cholesterol checked. Overall, 75.4% said they had had their cholesterol checked within the last five years, 4.5% said it had been longer than five years, and 19.9% said they had never had their cholesterol checked (Table 12).

Table 12. Cholesterol checked in the last five years by gender among Wyoming adults, 2009

Have you had your cholesterol tested in the last five years?

	Male	Female	Overall
Within last five years	73.6% (70.6 - 76.6)	77.3% (74.9 - 79.7)	75.4% (72.5 - 77.3)
Over five years ago	5.5% (4.3 - 6.8)	3.4% (2.7 - 4.2)	4.5% (3.8 - 5.2)
Never	20.8% (17.8 - 23.7)	19.1% (16.7 - 21.5)	19.9% (18.0 - 21.8)

### **Obesity**

Every year, respondents are asked their height and weight (without shoes), which was used to calculate a BMI score for each individual. In 2009, 62.2% of respondents were classified as overweight or obese. Closer scrutinization of the data indicates 25.4% were classified as being obese. A significantly greater percentage of men (70.6%) than women (53.1%) were classified as being overweight ( $p < 0.0001$ ). There were no significant differences between men (26.2%) and women (24.4%) for obesity (Table 13).

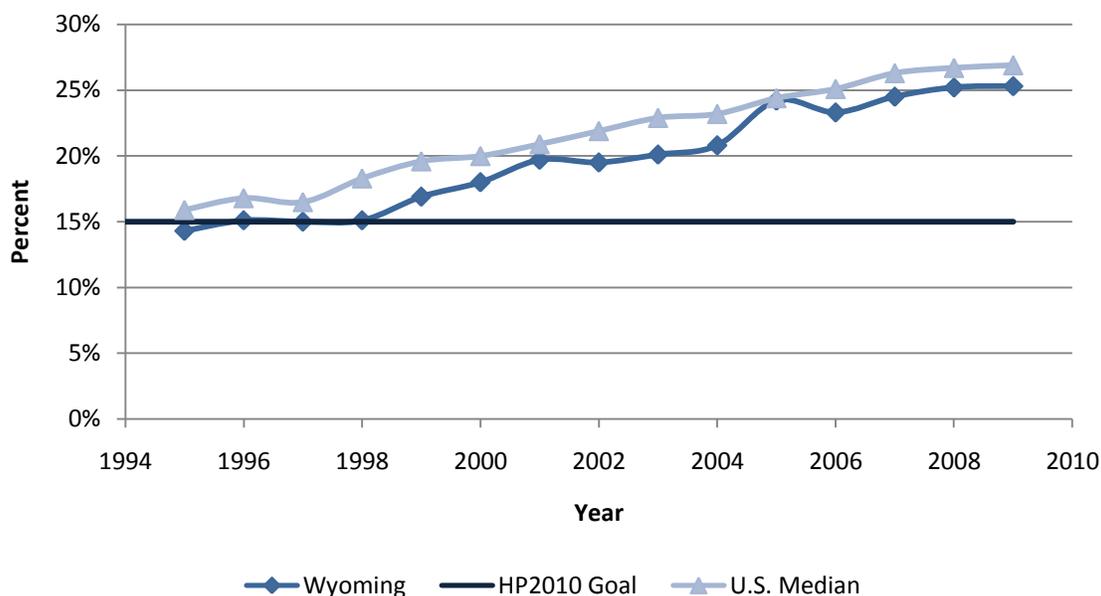
Table 13. Body mass index among Wyoming adults by gender, 2009

Weight-BMI

	Male	Female	Overall
Neither Overweight or Obese	29.3% (26.7 - 31.9)	46.8% (44.5 - 49.1)	37.8% (36.0 - 39.5)
Overweight	44.4% (41.7 - 47.1)	28.7% (26.7 - 30.7)	36.8% (35.1 - 38.5)
Obese	26.2% (23.7 - 28.7)	24.4% (22.3 - 26.4)	25.3% (23.7 - 27.0)

Figure 9 illustrates the prevalence of obesity among adults in Wyoming and the U.S. from 1995-2009. The prevalence has steadily increased from 1995-2009 in both the Wyoming and the U.S. populations. Neither Wyoming nor the U.S. has achieved the Healthy People 2010 goal of reducing the prevalence of obesity to 15%.

Figure 9. The prevalence of obesity among adults in Wyoming and the U.S. 1995-2009



**Access to Healthcare**

When asked about health insurance in 2009, 19.3% of Wyoming adults age 18-64 indicated they had no health insurance. Healthcare coverage did not differ between Wyoming females and males (Table 14). Adults age 65 and older are eligible for Medicare coverage, so the proportion of Wyoming adults age 18 years and older who indicated they were uninsured is slightly lower at 16.3%.

Just over 22% of Wyoming adults were classified as being underinsured, either because they lacked health insurance or reported that in spite of having health insurance they were unable

to see a doctor for needed healthcare at least once in the past 12 months because of cost. Finally, 26.2% of Wyoming adults said they did not have one person they thought of as their personal doctor or healthcare provider. Significantly more men (32.3%) than women (20.0%) indicated they did not have a personal doctor or healthcare provider ( $p < 0.001$ ).

**Table 14. Wyoming adults by gender age 18-64 who reported they did not have any kind of healthcare coverage including health insurance, prepaid plans such as HMOs, or government plans such as Medicaid by gender**

Healthcare Coverage

Overall	19.3%	(17.5 - 21.3)
Males	19.2%	(16.4 - 22.2)
Females	19.4%	(17.1 - 22.0)

**Tobacco Use**

Based on 2009 data, 19.9% of those surveyed in Wyoming indicated they were current smokers; men (20.1%) and women (19.7%). Overall, 54.0% of Wyoming adults have never smoked and 26.0% are former smokers. Significantly more males than females reported they were former smokers. However, significantly more females than males reported they had never smoked (Table 15).

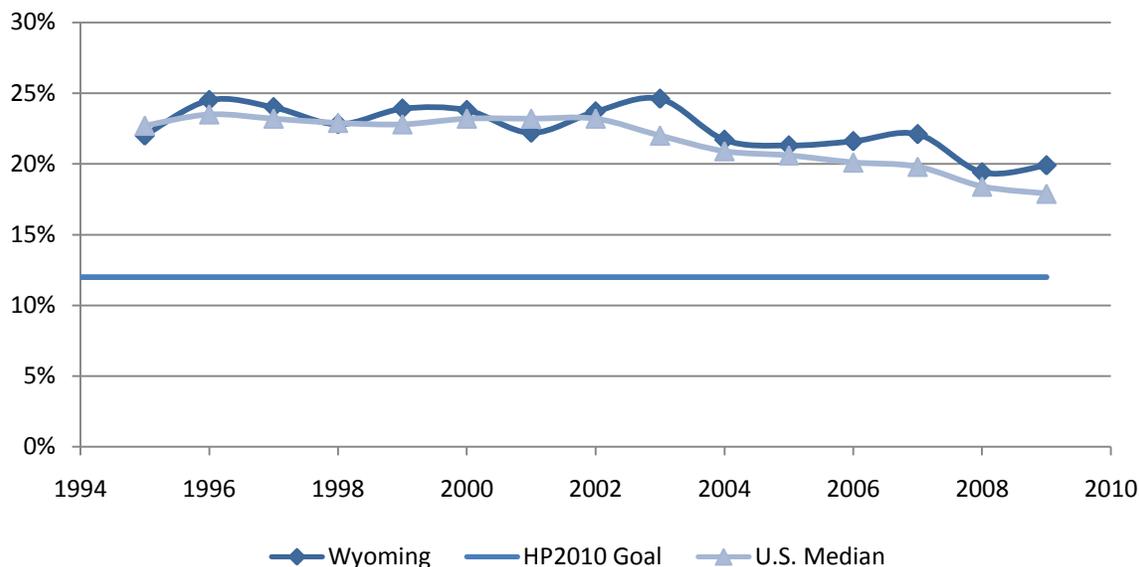
**Table 15. Smoking status among Wyoming adults by gender, 2009**

Do you now smoke cigarettes every day, some days, or not at all?

	Male	Female	Overall
Current Daily Smoker	14.7% (12.7 - 16.7)	15.8% (13.9 - 17.7)	15.2% (13.9 - 16.6)
Current Some Days	5.3% (3.8 - 6.9)	3.8% (3.0 - 4.6)	4.6% (3.7 - 5.5)

Figure 10 illustrates the prevalence of current smoking by year among adults in Wyoming and the U.S. from 1995-2009. The prevalence declined slightly in both populations during this time. However, neither population has met the Healthy People 2010 goal of reducing the prevalence of current smoking to 12%. Additionally, since 2003 the prevalence of smoking in Wyoming adults has been slightly higher than the U.S. prevalence.

Figure 10. Prevalence of current smoking among adults in Wyoming and the U.S. from 1995-2009



### **Alcohol Consumption**

Respondents were asked to indicate how much and how often they drink alcohol. Binge drinking was defined as consuming five or more drinks for men or four or more drinks for women on one or more occasions in the past 30 days. Based on 2009 data, 15.8% of respondents reported binge drinking. Significantly more males (21.3%) were classified as being binge drinkers than females (10.3%, Table 15). To assess heavy drinking, men were asked if they consumed two or more drinks per day, and women were asked if they consumed one or more drinks per day. Significantly more men (7.3%) than women (4.1%) were classified as heavy drinkers (p=0.01).

Table 15. Prevalence of binge drinking among adults in Wyoming by gender, 2009

Binge drinking	Male	Female	Overall
Reported binge drinking	21.3% (18.8 - 23.9)	10.3% (8.8 - 11.9)	15.8% (14.3 - 17.4)
Reported heavy drinking	7.3% (5.6 - 9.4)	4.1% (3.3 - 4.9)	5.7% (4.7 - 6.8)

### **Physical Activity**

Every year respondents are asked if they participated in any leisure time physical activity or exercise. In 2009, 22.5% of those surveyed reported they engaged in no leisure time physical activity. The percentage of men and women who participated in any or moderate physical activities was similar.

Every other year respondents are asked if they meet physical activity recommendations of engaging in moderate activities for 30 minutes a day at least five times a week, or vigorous

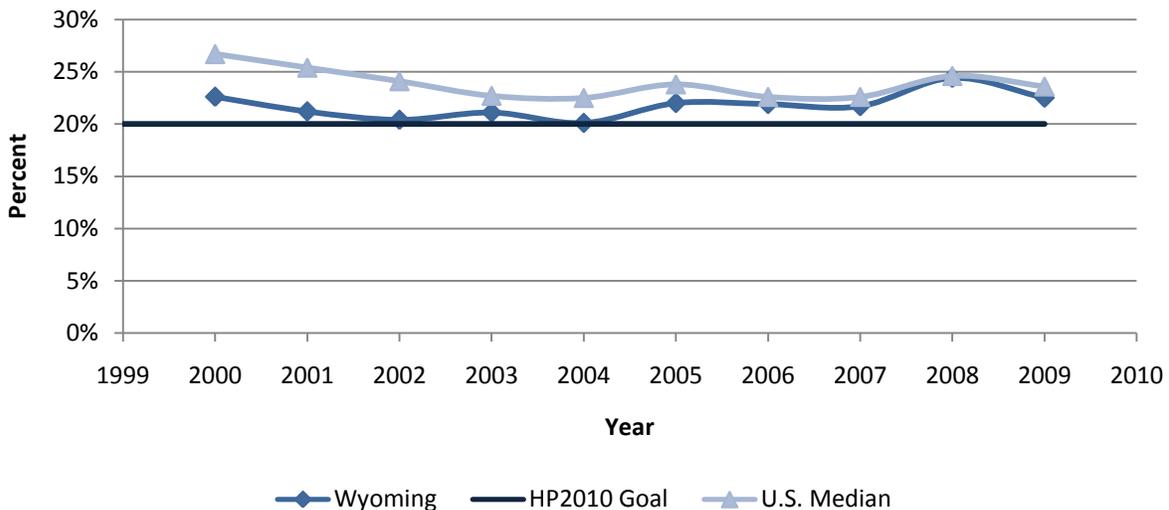
activities for 20 minutes a day at least three times a week. In 2009, 33.9% of Wyoming adults reported exercising at levels that did not meet the physical activity recommendations. Males were more likely to meet recommended levels of physical activity than females (p=0.003, Table 16).

**Table 16. Reported levels of physical activity among Wyoming adults by gender, BRFSS 2009**

Physical Activity	Male	Female	Overall
Meets physical activity recommendations	59.2% (56.4 - 61.9)	55.3% (52.9 - 57.6)	57.3% (55.4 - 59.1)
Insufficient activity	31.3% (28.8 - 34.0)	36.6% (4.3 - 28.9)	33.9% (32.2 - 35.7)
No activity	9.5% (8.1 - 11.)	8.1% (7.2 - 9.3)	8.8% (7.9 - 9.8)

Figure 11 illustrates the percentage of Wyoming and U.S. adults who reported that they do not participate in any leisure time physical activity from 2000 – 2009. The percent is slightly lower among Wyoming adults than the U.S.. However, neither population has met the Healthy People 2010 goal of reducing the percent not participating in leisure time physical activity to 20%.

**Figure 11. Percent of Adults Reporting No Leisure-time Physical Activity, Wyoming and U.S., BRFSS 2000-2009**



## ***BRFSS CARDIOVASCULAR DISEASE MODULE***

### **Symptoms of a Heart Attack**

In 2007, respondents were asked six (Yes/No) questions concerning the signs and symptoms of a heart attack. One of the six heart attack questions actually described a symptom of stroke (trouble seeing), and a respondent had to answer "NO" to this question to be correct.

Overall, the vast majority (88% - 95%) of respondents were able to correctly identify chest pain, pain in the arms or shoulders, and shortness of breath as signs of a heart attack. Slightly fewer respondents (57%-69%) correctly identified pain in the jaw, neck or back, and feeling lightheaded as symptoms of a heart attack (Table 17). Almost 40% of the respondents correctly identified the decoy question concerning stroke symptoms.

Two of the six questions showed a significant difference in the knowledge of symptoms between males and females. More females (58.4%) than males (49.4%) knew that pain in the jaw, neck, or back were symptoms of heart attack. Likewise, more females (92.5%) than males (87.3%) knew that pain in the arms or shoulders were signs of a possible heart attack.

Additional analyses were conducted to determine the number of individuals who correctly answered four, five, or six questions. Only 15% of respondents answered all six questions concerning heart attack symptoms correctly. Over 54% correctly answered five of the six questions correctly and approximately 81% answered at least four of the six questions correctly.

**Table 17. Knowledge of symptoms of heart attack among Wyoming adults, 2007**

Heart Attack Symptoms	Yes
Pain in Jaw, Neck or Back	56.5% (54.7 - 58.2)
Feeling Weak, Light Headed	69.4% (67.7 - 70.9)
Chest Pain or Discomfort	95.0% (94.2 - 95.6)
Pain in Arms or Shoulders	89.4% (88.0 - 90.7)
Shortness of Breath	87.5% (86.1 - 88.8)
Sudden Trouble Seeing is <b>not</b> a symptom of heart attack	39.5% (37.8 - 41.1)

## Symptoms of Stroke

Respondents were also asked six (Yes/No) questions related to the signs and symptoms of stroke. Again, one of the six questions actually described a symptom of a heart attack (chest pain) instead of a stroke and should have received a "NO" answer from respondents to be correct.

A sizable number of respondents (88%-94%) were able to correctly identify three symptoms of a stroke: sudden confusion/trouble speaking; sudden numbness in face, leg, or arm; and sudden trouble walking, dizziness, or loss of balance. Fewer knew that sudden trouble seeing (73%) or sudden headaches with no known cause (61%) were also symptoms of a possible stroke (Table 19).

Four of the six questions answered showed significant differences between male and female respondents. In each case more females answered the question correctly than did males. Specifically, more females knew that sudden confusion or trouble speaking, sudden numbness or weakness of the face, arm, or leg, sudden trouble seeing, and severe headaches with no known cause were signs of a stroke. There was no difference in the responses between men and women for the decoy question about chest pain.

Almost 24% of respondents correctly answered all six questions concerning stroke symptoms. Over 60% were able to answer at least five questions correctly, and 80.7% correctly identified at least four of the six symptoms.

**Table 18. Knowledge of the symptoms of stroke among Wyoming adults, 2008**

Stroke Symptoms	Yes
Sudden Confusion or Trouble Speaking	91.4% (90.1 - 92.5)
Sudden Numbness in Face, Arm, or Leg	94.2% (93.0 - 95.3)
Sudden Trouble Seeing	72.8% (71.1 - 74.4)
Sudden Trouble Walking, Dizziness, Loss of Balance	88.4% (87.1 - 89.6)
Severe Headache w/ No Cause	61.1% (59.4 - 62.8)
Sudden Chest Pain or Discomfort is <b>not</b> a symptom of stroke	42.0% (40.4 - 43.7)

Finally, all respondents were asked, "If you thought someone was having a heart attack or stroke, what is the first thing you would do?" Overall, 85.5% said they would first call 9-1-1, 7.9% said they would take the person to the hospital, and 6% indicated they would do something else.

## ***RISK FACTORS FOR CVD IN WYOMING CHILDREN***

The risk factors for CVD which are present in youth include physical inactivity, obesity, and tobacco use. Two main surveys monitor the health of youth in Wyoming and include information about these risk factors. The surveys are the National Survey of Children's Health (NSCH) and the Youth Risk Behavior Survey (YRBS).

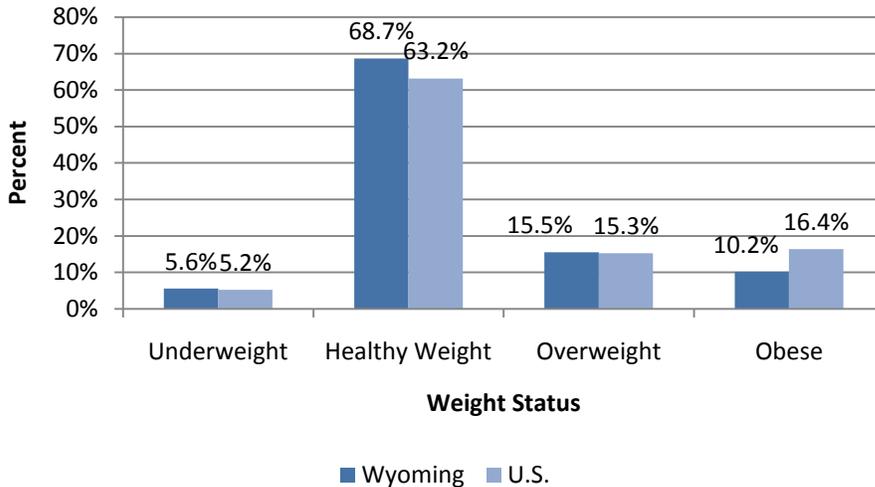
The NSCH is a module of the State and Local Area Integrated Telephone Survey, conducted by the National Center for Health Statistics of the U.S. Centers for Disease Control and Prevention (CDC). The survey is designed to produce national and state-specific prevalence estimates for a variety of health indicators. The respondents were the child's parent or guardian who knew the most about the child's health and healthcare. The survey is conducted for children aged 0-17 years.

The YRBS is conducted in high school and middle schools every other year. The survey monitors priority health-risk behaviors and the prevalence of obesity and asthma among youth and young adults.

### **Weight**

The distribution of weight status of Wyoming children aged 10-17 is illustrated and compared to the distribution of weight status nationwide in Figure 12. A significantly greater proportion of Wyoming children aged 10-17 are of a healthy weight than U.S. children. Additionally a significantly lower proportion of Wyoming children aged 10-17 are obese.

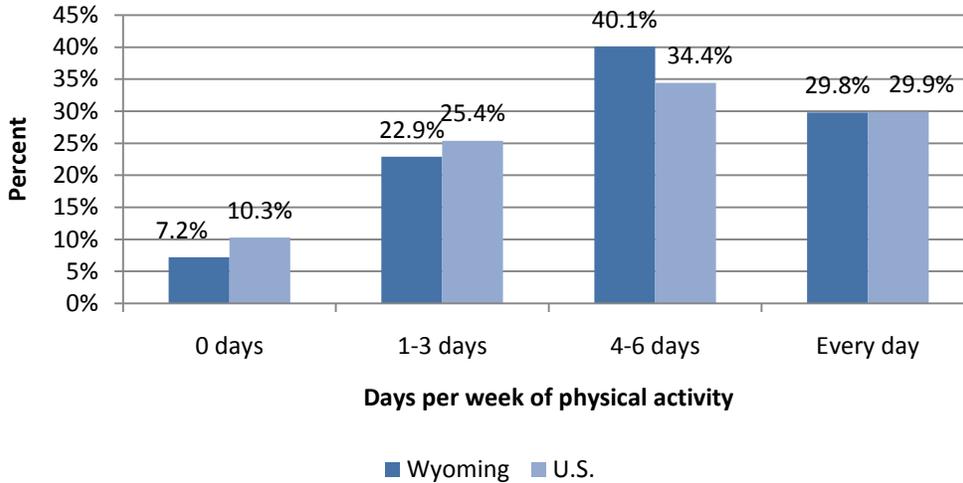
**Figure 12. Weight status based on body mass index of children aged 10-17, Wyoming and U.S., 2007 National Survey of Children's Health**



## Physical Activity

NSCH respondents were asked to report how many days in the week their child exercised or participated in physical activity that lasted at least 20 minutes, and was vigorous enough to cause sweating and hard breathing. Figure 13 illustrates physical activity among Wyoming and U.S. children aged 10-17 years. When compared to U.S. children, significantly more Wyoming children were active 4-6 days per week.

Figure 13. Physical activity level among children aged 10-17 years, Wyoming and U.S., 2007 National Survey of Children's Health



## Tobacco

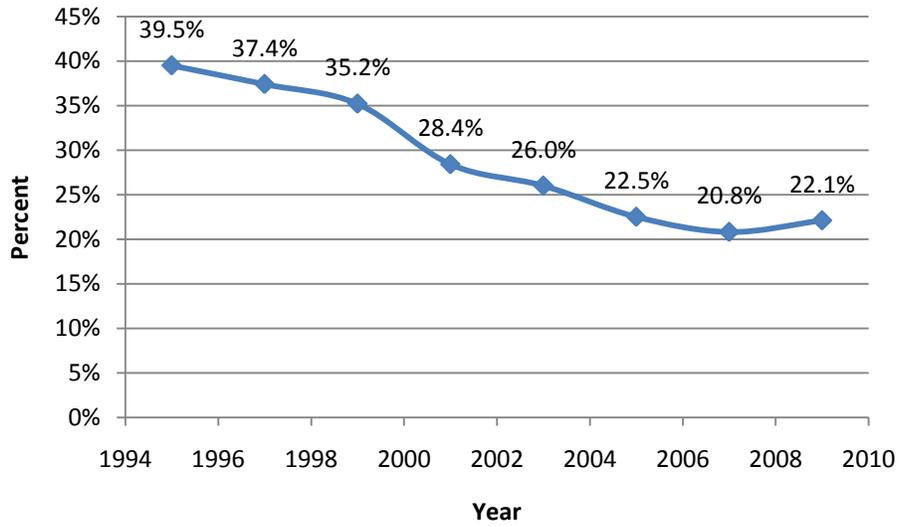
In 2009, the YRBS asked students about tobacco use (Table 19), and 22.1% of Wyoming high school students reported smoking at least one day in the last 30 days. When compared to the U.S. prevalence, this percentage was significantly higher. Additionally, a significantly greater percentage of Wyoming teen smokers reported smoking more than ten cigarettes per day than U.S. teen smokers.

Table 19. Tobacco use among students grades 9 – 12, Wyoming and U.S., 2009 YRBS

	Wyoming	U.S.
Smoked at least 1 day in last 30 days	22.1% (20.2 – 24.2)	19.5% (17.9 – 21.2)
Smoked more than 10 cigarettes per day (among students who currently smoked cigarettes, on the days they smoked during the 30 days before the survey)	13.4% (10.8 – 16.6)	7.8% (6.6 – 9.0)

The percentage of Wyoming students reporting smoking in the last 30 days is higher than the U.S. percentage. However, the Wyoming percentage has decreased since 1995 (see Figure 14).

**Figure 14. Percentage of Wyoming high school students reporting smoking at least one day in the last 30 days, 1995-2009, YRBS**



**WYOMING DEPARTMENT OF HEALTH'S**  
**HEART DISEASE**  
**AND**  
**STROKE PREVENTION PROGRAM**



**Overview:**

The Wyoming Department of Health's Heart Disease & Stroke Prevention Program (HDSPP) was formed in 1996 to address the burdens cardiovascular disease places on the population of Wyoming. The HDSPP is currently funded through the Master Settlement Account (Tobacco Settlement Funds) and is among the nine states not yet federally funded by the Centers for Disease Control and Prevention (CDC). As such, the Wyoming Department of Health's HDSPP works to operate within the key responsibilities expected of an HDSPP funded by the CDC at the capacity building level. The key responsibilities are:

- **Facilitate collaboration among public and private sector partners such as managed care organizations, health insurers, federally funded health centers, businesses, priority population organizations, and emergency response agencies.**
  - Cardiac rehabilitation centers throughout Wyoming
  - Wyoming hospitals – Heart disease and stroke centers
  - Wyoming Department of Health Chronic Disease programs
  - Wyoming Department of Health Emergency Management System
  - Wyoming Department of Health's Wyoming Workforce Wellness Program
  - Wyoming Primary Care Association
  - Wyoming Health Council
  - Wyoming physicians

- **Define the burden of heart disease and stroke and assess existing population-based strategies for primary and secondary prevention of heart disease and stroke within the state.**
  - 2011-2015 Cardiovascular Disease Burden Report
  
- **Develop and update a comprehensive state plan for heart disease and stroke prevention with emphasis on heart-healthy policies development, physical and social environments change, and disparities elimination (e.g., based on geography, gender, race or ethnicity, or socioeconomic status).**
  - Wyoming State Plan for Heart Disease & Stroke Prevention 2008-2010
  - Wyoming State Plan for Heart Disease & Stroke Prevention 2011-2015 in development
  
- **Identify culturally appropriate approaches to promote heart disease and stroke prevention among racial, ethnic, and other priority populations.**
  - Public Service Announcements and Press Releases
  - Governors Proclamation *Heart Health Day*-February 14<sup>th</sup>, 2008
  - Governors Proclamation *Make the Link Day*-February 13<sup>th</sup>, 2009
  - Governors Proclamation *Know Your Risk Day*-February 12<sup>th</sup>, 2010
  - Governors Proclamation *Know Your Blood Pressure Day*-February 12, 2011
  - Collaborate with Miss Wyoming 2010 – Women’s Heart Health
  - Collaborate with Wyoming Heart & Vascular Institute – Red Stocking for Women’s Heart Health
  - Collaborate with Wyoming Department of Health’s Diabetes Prevention and Control Program
  
- **Use population-based public health strategies to increase public awareness of the heart disease and stroke urgency, the signs and symptoms of heart disease and stroke, and the need to call 9–1–1.**
  - Develop and distribute heart attack and stroke signs and symptoms wallet cards. Over 200,000 printed and in circulation since February 2010

In November 2010, the CDC directed state HDSPP’s to focus efforts on the ABCS’s of heart disease and stroke prevention. Efforts to address the ABCS’s include:

- **A**spirin: Increase low dose aspirin therapy according to recognized guidelines
- **B**lood pressure: Prevent and control high blood pressure; reduce sodium intake
- **C**holesterol: Prevent and control high cholesterol
- **S**moking Cessation: Increase the number of smokers counseled to quit and referred to quit lines; increase availability of no or low-cost cessation products

**Services and Programs:**

Books, brochures, and other materials relating to CVD can be obtained for health fairs, community heart health programs, or seminars. The program also assembles heart-healthy educational kits throughout the year.

- Conduct telehealth based education to Wyoming physicians
- Hosted Chronic Disease Conferences May 2008 and May 2010
- Develop and distribute Wyoming Workforce Wellness Toolkit
- Host annual Wyoming Workforce Wellness Summit for Wyoming employers beginning October, 2008
- Conduct annual regional Workforce Wellness Workshops for Wyoming employers
- Provide individual workforce wellness consultation to Wyoming employers

**CVD Coalition**

The CVD Coalition serves as a resource to assist and facilitate state and community level partnerships to improve the cardiovascular health of all Wyoming residents. The CVD Coalition was formed in the year 2000 to serve as an advisory group to the Wyoming Department of Health's Cardiovascular Disease Program. The CVD Coalition is comprised of various state agencies, professional and voluntary groups, and community organizations.

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