

5. Cardiovascular Disease & Stroke

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Heart disease (also known as cardiovascular disease, ischemic heart disease or coronary artery disease) is the leading cause of death in the United States. AI/AN have similar rates of self-reported and diagnosed heart disease compared to Non-Hispanic Whites (NHW) but higher rates of hospitalization and death. Risk factors for heart disease include smoking, sedentary lifestyle and obesity. Other medical conditions that increase the risk of developing heart disease include hypertension, diabetes and hyperlipidemia. Heart disease is more common in men compared to women and increases with age.

Efforts to prevent heart disease in AI/AN include smoking cessation, dietary counseling, exercise programs and control of blood pressure, blood sugar and cholesterol. The Department of Health and Human Services launched a campaign in 2011 to prevent 1 million heart attacks by 2017- the Million Hearts campaign. Many of the efforts outlined by this campaign to prevent heart disease are tracked by IHS through the Government Performance and Reporting Act. IHS is working to prevent heart disease by setting goals for the control of blood pressure, diabetes, cholesterol, and obesity, and increasing smoking cessation. Concerted effort has led to improvements in all of these risk factors in Oregon Tribes.

Despite efforts at all levels of care, mortality rates for heart disease among AI/AN in Oregon remain significantly higher than for NHW. Hospitalizations for heart diseases are also higher for Oregon AI/AN than for NHW. Heart disease management and assessment is important for heart disease patients to monitor their disease and inform lifestyle and medical interventions. Stroke mortality was similar for AI/AN and NHW. Of adult AI/AN IHS patients with heart disease, 38.1% received a comprehensive cardiovascular disease (CVD) assessment in 2013, which was above the IHS 2013 goal of 32.3% Since 2010, across all IHS Areas, including Oregon, CVD assessment for AI/AN heart disease patients has increased.

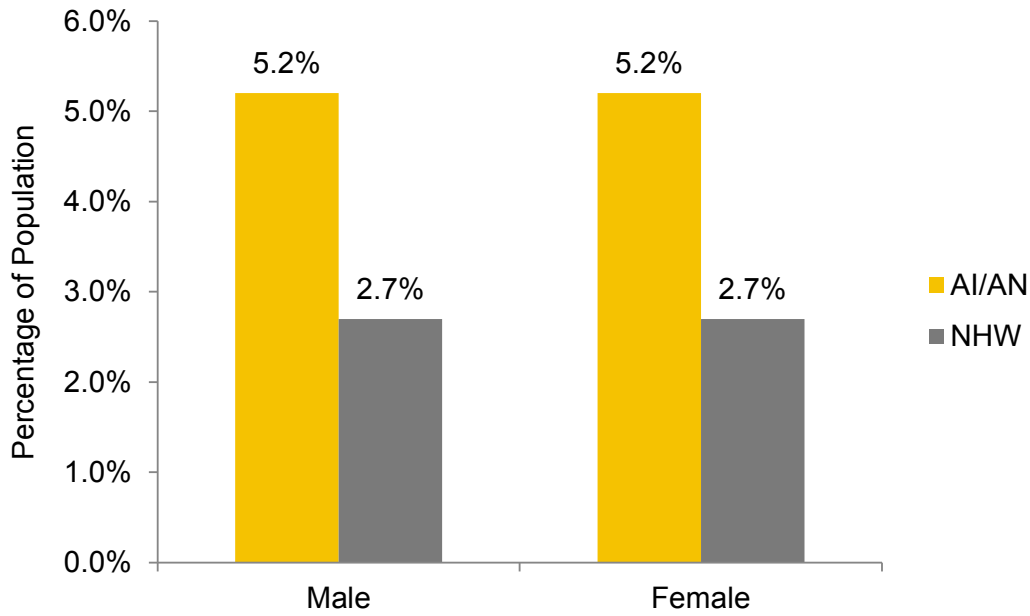
Self-Reported Heart Disease

Figure 5.1 shows the percentage of AI/AN and NHW adults who had ever been told they had angina or coronary heart disease by a health care provider. From 2006-2012, AI/AN and NHW males in Oregon had similar rates of self-reported heart disease (5%). The prevalence of heart disease in AI/AN females was also similar to that in NHW females in Oregon (3%).

Data Source: CDC Behavioral Risk Factor Surveillance System (BRFSS), 2006-2012.

Data Notes: The BRFSS prevalence estimates (shown as a percentage) are weighted to make the survey responses representative of the Oregon population. The sample sizes shown below the figures are the unweighted number of people who answered this question for the indicated years.

Figure 5.1: Prevalence of self-reported heart disease by race and sex, Oregon, 2006-2012.



Sample sizes (n): AI/AN males=372; AI/AN females=502; NHW males=27,667; NHW females=2,349.

Heart Disease Management

IHS has a performance goal for the percentage of adult heart disease patients who receive a comprehensive cardiovascular disease (CVD) assessment. Prior to 2012, IHS measured the percentage of AI/AN patients ages 22 and older with ischemic heart disease who received a comprehensive CVD assessment. In 2013, IHS changed the definition to the percentage of AI/AN patients ages 22 and older with coronary heart disease who received a CVD assessment. A comprehensive CVD assessment includes having the following:

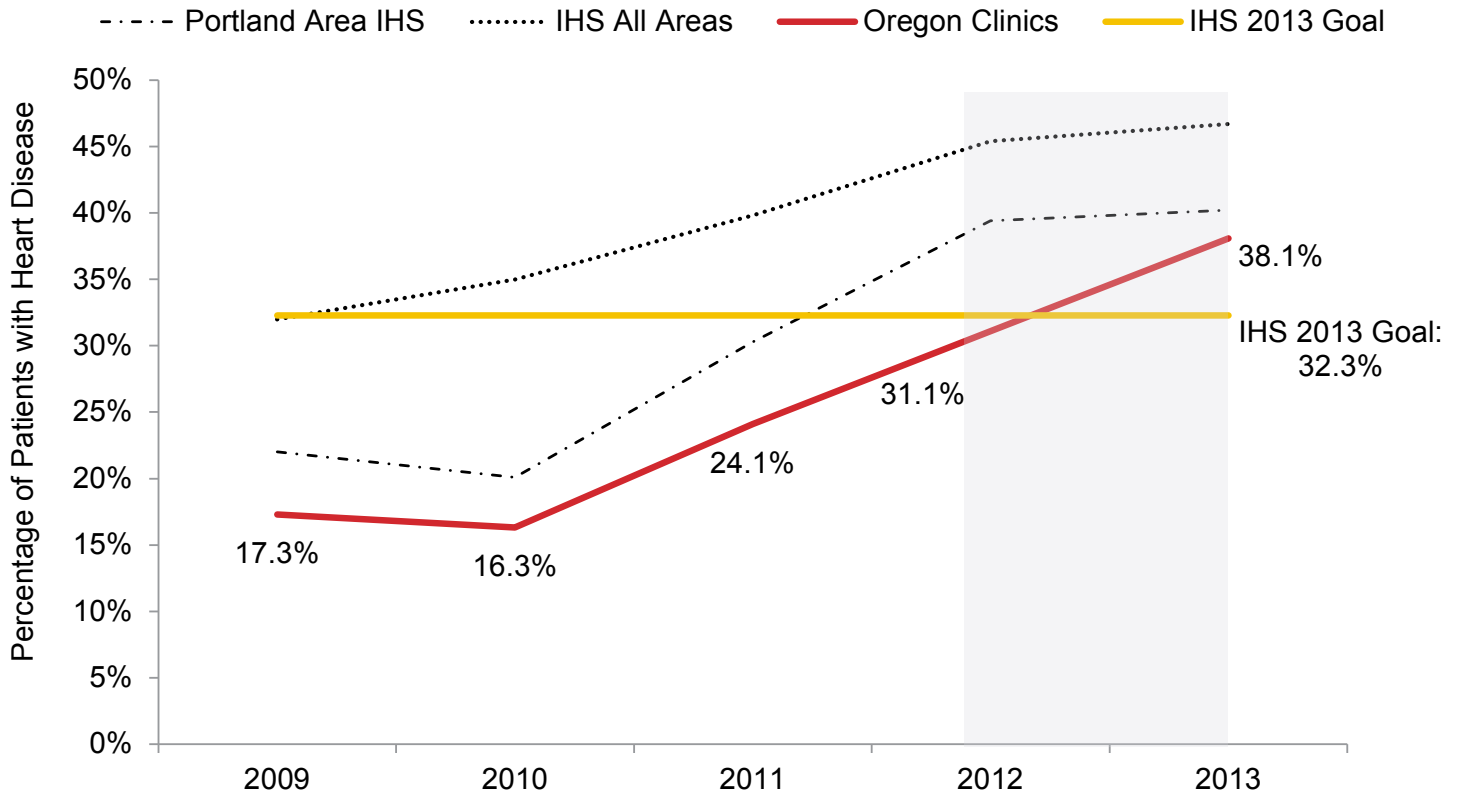
- blood pressure measured at least twice in the past two years;
- low-density lipoprotein (LDL) cholesterol measured in the past year;
- tobacco use screened in the past year;
- BMI calculated in the past year; and,
- lifestyle adaptation counseling (e.g., nutrition counseling, exercise education) in past year.

Since 2010, the percentage of at-risk patients who received a comprehensive CVD assessment has increased for Oregon clinics, the Portland Area IHS, and the national IHS (Figure 5.2). In 2013, all three areas exceeded the IHS goal of 32.3%.

Data Source: Portland Area Indian Health Service.

Data Notes: The shaded area shows the year when the definition for comprehensive CVD assessment changed. Data labels only shown for Oregon clinics. Oregon clinics include non-urban federal and tribal Indian health facilities in Oregon. Portland Area IHS clinics include non-urban federal and tribal Indian health facilities in Idaho, Oregon, and Washington.

Figure 5.2: Percentage of IHS AI/AN patients (ages 22 years and older) with heart disease who received a comprehensive CVD assessment.



Hospitalizations for Hypertension

From 2010 to 2011, there were 31 inpatient hospital discharges for hypertension among AI/AN in Oregon. The percentage of AI/AN hospitalizations with a principal diagnosis of hypertension was similar to that of NHW (Table 5.1). AI/AN of both sexes had slightly lower hospitalization rates for hypertension than their NHW counterparts, though these differences were not statistically significant (Figure 5.3).

Data Source: Oregon state hospital discharge data (Oregon Office for Health Policy and Research), 2010-2011, corrected for misclassified AI/AN race by the IDEA-NW Project.

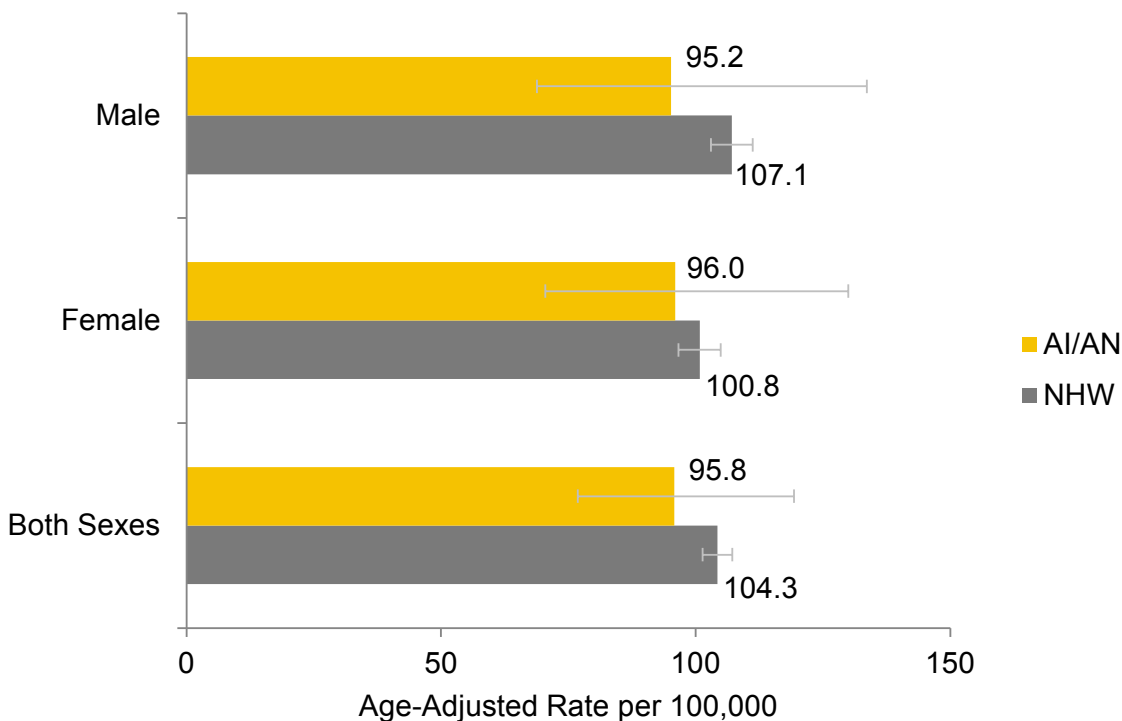
Data Notes: Principal diagnosis codes were categorized using the Agency for Healthcare Research and Quality's Clinical Classification Software. The following level-2 principal diagnosis codes were included: 7.1 (hypertension).

Table 5.1: Inpatient hospital discharges for hypertension by race and sex, Oregon, 2010-2011.

Sex	AI/AN N [†] (%)	NHW N [†] (%)
Male	14 (0.3%)	656 (0.3%)
Female	17 (0.2%)	799 (0.3%)
Both Sexes	31 (0.3%)	1,455 (0.3%)

† N = number of hospitalizations. The percentages were calculated using the total inpatient hospitalizations for each group: AI/AN male (N=4,603), AI/AN female (N=7,015), AI/AN total (N=11,618), NHW male (N=225,270), NHW female (N=303,952), and NHW total (N=529,222).

Figure 5.3: Age-adjusted hospital discharge rates for hypertension by race and sex, Oregon, 2010-2011.



Hospitalizations for Heart Diseases

From 2010 to 2011, there were 700 inpatient hospital discharges for heart diseases among AI/AN in Oregon. The percentage of total hospitalizations that were related to heart diseases was lower for AI/AN compared to NHW (6.0% vs. 9.6% for both sexes, Table 5.2). The age-adjusted hospital discharge rate for heart diseases was higher for AI/AN compared to NHW overall (Figure 5.4). By sex, AI/AN males had hospitalization rates similar to NHW males, while AI/AN females had significantly higher hospitalization rates compared to their NHW counterparts.

Data Source: Oregon state hospital discharge data (Oregon Office for Health Policy and Research), 2010-2011, corrected for misclassified AI/AN race by the IDEA-NW Project.

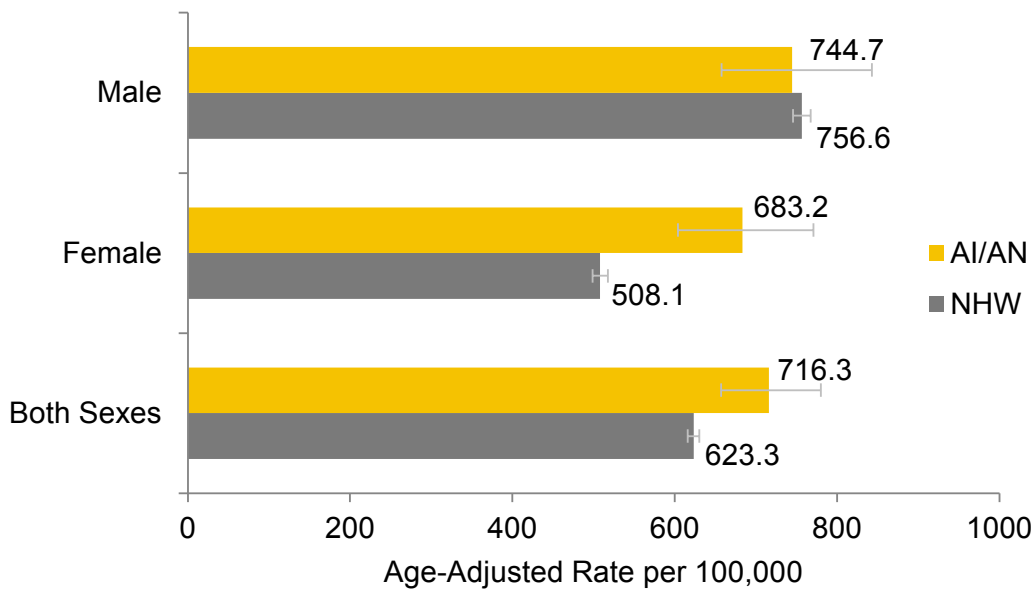
Data Notes: Principal diagnosis codes were categorized using the Agency for Healthcare Research and Quality's Clinical Classification Software. The following level-2 principal diagnosis codes were included: 7.1 (hypertension).

Table 5.2: Inpatient hospital discharges for diseases of the heart by race and sex, Oregon, 2010-2011.

Sex	AI/AN N [†] (%)	NHW N [†] (%)
Male	385 (8.4%)	28,305 (12.6%)
Female	315 (4.5%)	22,655 (7.5%)
Both Sexes	700 (6.0%)	50,960 (9.6%)

† N = number of hospitalizations. The percentages were calculated using the total inpatient hospitalizations for each group: AI/AN male (N=4,603), AI/AN female (N=7,015), AI/AN total (N=11,618), NHW male (N=225,270), NHW female (N=303,952), and NHW total (N=529,222).

Figure 5.4: Age-adjusted hospital discharge rates for diseases of the heart by race and sex, Oregon, 2010-2011.



Hospitalizations for Cerebrovascular Disease

Cerebrovascular disease (which includes stroke) was the principal diagnosis for 1.6% (N=231) of hospitalized AI/AN, which was lower compared to NHW (2.6% of all NHW inpatient hospitalizations, Table 5.3). Hospitalization rates for cerebrovascular disease were similar for AI/AN males and NHW males; for AI/AN females, the hospitalization rate was significantly higher (Figure 5.5).

Data Source: Oregon inpatient hospital discharge data (2010-2011), corrected for misclassified AI/AN race, IDEA-NW Project, NPAIHB.

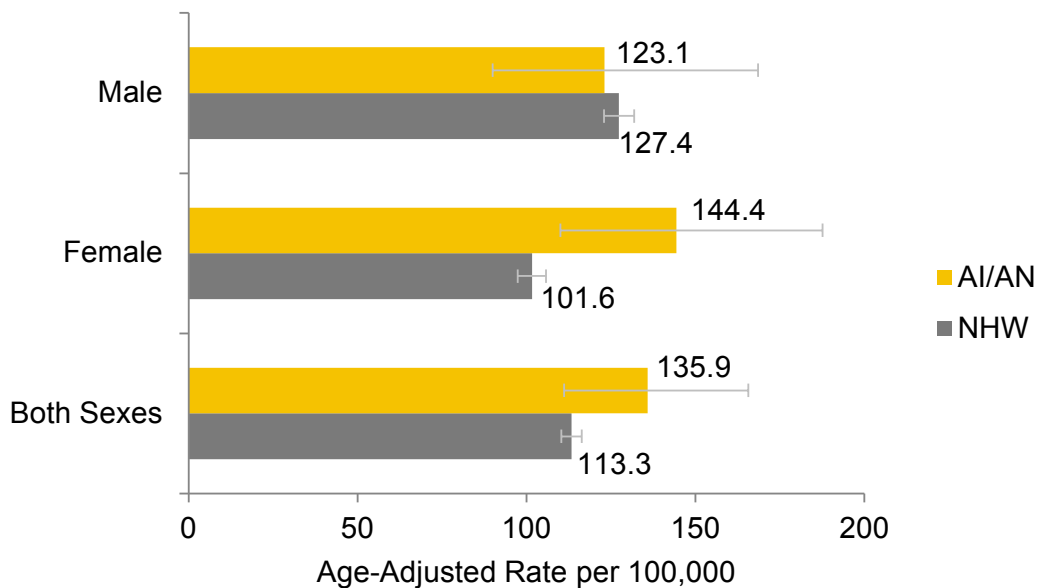
Data Notes: Principal diagnosis codes were categorized using the Agency for Healthcare Research and Quality's Clinical Classification Software. The following level-2 principal diagnosis codes were included: 7.3 (cerebrovascular disease [stroke]).

Table 5.3: Inpatient hospital discharges for cerebrovascular disease by race and sex, Oregon, 2010-2011.

Sex	AI/AN N [†] (%)	NHW N [†] (%)
Male	74 (1.6%)	6,316 (2.8%)
Female	87 (1.2%)	6,408 (2.1%)
Both Sexes	161 (1.4%)	12,724 (2.4%)

† N = number of hospitalizations. The percentages were calculated using the total inpatient hospitalizations for each group: AI/AN male (N=4,603), AI/AN female (N=7,015), AI/AN total (N=11,618), NHW male (N=225,270), NHW female (N=303,952), and NHW total (N=529,222).

Figure 5.5: Age-adjusted hospital discharge rates for cerebrovascular disease by race and sex, Oregon, 2010-2011.



Heart Disease Mortality

Heart disease was the second leading cause of death among Oregon AI/AN. Figure 5.6 shows the age-adjusted death rates for heart disease among AI/AN and NHW in Oregon. Male AI/AN were 38% more likely to die of the disease than females. Compared to NHW, AI/AN heart disease death rates were about 24% higher. Among AI/AN in the Northwest, those living in Oregon had the lowest heart disease death rates.

Data Source: Oregon state death certificates, 2006-2010, corrected for misclassified AI/AN by the IDEA-NW Project.

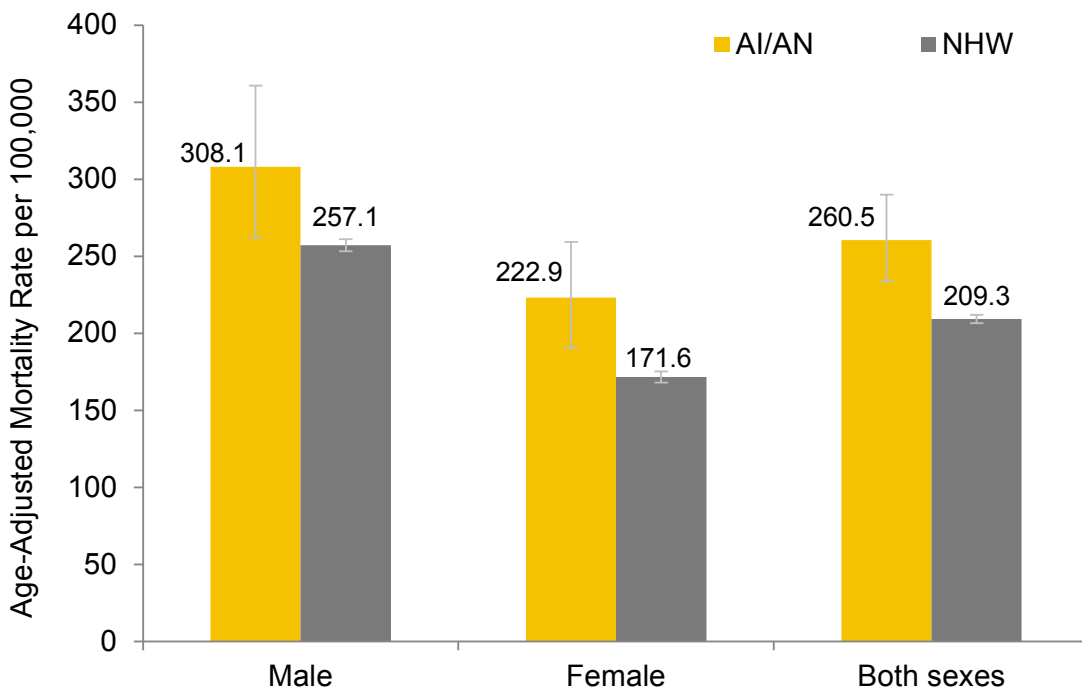
Table 5.4: Age-adjusted heart disease mortality rates by race and sex, Oregon, 2006-2010.

Sex	AI/AN Rate (95% CI)	NHW Rate (95% CI)	AI/AN vs. NHW Rate Ratio (95% CI)
Male	308.1 (262.3, 360.8)	257.1 (253.3, 260.9)	1.2 (1.1, 1.4) [†]
Female	222.9 (190.7, 259.3)	171.6 (167.9, 175.3)	1.3 (1.1, 1.5) [†]
Both Sexes	260.5 (233.5, 289.9)	209.3 (206.6, 212.0)	1.2 (1.1, 1.4) [†]

CI = confidence interval

[†] Indicates a statistically significant difference (p<.05)

Figure 5.6: Age-adjusted heart disease mortality rates by race and sex, Oregon, 2006-2010.



Stroke Mortality

Stroke was the seventh leading cause of death among Oregon AI/AN. Figure 5.7 shows the age-adjusted death rates for stroke among AI/AN and NHW in Oregon. Male AI/AN were about 20% more likely to die of the disease than females. Compared to NHW, AI/AN stroke death rates were about 22% higher, however this difference was not statistically significant. Among AI/AN in the Northwest, those living in Oregon fell in the middle – rates were higher in Washington, but lower in Idaho.

Data Source: Oregon state death certificates, 2006-2010, corrected for misclassified AI/AN by the IDEA-NW Project.

Table 5.5: Age-adjusted stroke mortality rates by race and sex, Oregon, 2006-2010.

Sex	AI/AN Rate (95% CI)	NHW Rate (95% CI)	AI/AN vs. NHW Rate Ratio (95% CI)
Male	55.6 (38.2, 80.0)	44.7 (43.1, 46.2)	1.2 (0.9, 1.7)
Female	46.0 (32.1, 64.3)	40.6 (38.7, 42.4)	1.1 (0.8, 1.6)
Both Sexes	52.1 (40.5, 66.3)	42.6 (41.4, 43.8)	1.2 (1.0, 1.5)

CI = confidence interval

† Indicates a statistically significant difference (p<.05)

Figure 5.7: Age-adjusted stroke mortality rates by race and sex, Oregon, 2006-2010.

