State of Alaska Epidemiology **Bulletin** Recommendations and Reports

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The Prevalence of Diabetes Among Adult Alaskans

2002-2004

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Summary

In 2004, 21,024 adult Alaskans reported they had been diagnosed with diabetes. This represents a 27% increase in the number of adults who reported diabetes in 2000. Within Alaska, diabetes is more common among older adults and among Asians, African Americans, and Hispanics. Currently, Alaska Natives do not appear to have higher diabetes prevalence than other Alaskans. Alaska adults with diabetes are more likely to have a lower income and to be retired or unable to work than their peers without diabetes. The number of Alaskans with diabetes has been increasing steadily since 1995, and this trend is likely to continue.

Background

The Alaska Diabetes Prevention and Control Program (AKDPCP) has been funded by Centers for Disease Control and Prevention (CDC) since 1986. The primary activities in which the AKDPCP engages are surveillance, coordination, technical assistance, and public awareness. This is the first in a series of reports that present information about the burden of diabetes in Alaska. The purpose of these reports is to provide Alaska-specific diabetes data to healthcare providers and the public.

Methodology

This report describes the prevalence of diabetes in the Alaska adult population. Information in this report is drawn from the Alaska Behavioral Risk Factor Surveillance System (AK BRFSS), the United States (US BRFSS), and the National Health Interview Survey (NHIS).

The Alaska BRFSS is an ongoing random-digit-dialing telephone survey of non-institutionalized Alaska adults, aged 18 and older, that tracks health behaviors and risks in Alaska. The survey is conducted by the Alaska Division of Public Health in collaboration with CDC. The goal of the BRFSS is to estimate in the general population, the prevalence of behavioral risk factors known to be associated with leading causes of morbidity and mortality in adults. The BRFSS has been conducted continuously in Alaska since 1991.

The Alaska BRFSS uses a probability sample drawn from all Alaska households with a phone. At present, 5,000 Alaska adults are surveyed annually comprising 1,000 interviews from each region. Non-urban areas of Alaska are purposely over-sampled. Alaska data are weighted to compensate for the variation between sub-groups and further weighted to adjust the distribution of the sample data so that they reflect the total population of the sampled area. Estimates from the Alaska BRFSS were calculated using software for statistical analysis of correlated data (SUDAAN). The SUDAAN procedure PROC DESCRIPT was used to produce age-adjusted percents and their standard errors.

Diabetes questions have been included in the Alaska BRFSS since 1991 and these data are used by the State of Alaska to estimate the prevalence of diabetes in Alaska. BRFSS respondents are considered to have diabetes if they responded “yes” to the question, “Has a doctor ever told you that you have diabetes?”. Women who indicated that they only had diabetes during pregnancy and respondents with pre-diabetes are not included in this report.

Between 2002 and 2004, 514 AK BRFSS respondents reported they had been told by a doctor that they had non-gestational diabetes. When the total number of respondents is stratified according to categories of interest, in some cases, the denominator was less than 50, making analysis unreliable. For this reason, diabetes data from three successive years are typically aggregated, and reported as a three-year average. Three-year moving averages minimize the annual variations in the data and improve the precision of the prevalence estimates. When possible, Alaska data were age-adjusted to allow for comparability with national data. When data are age-adjusted using the US 2000 Standard Population, compounding factors of different age distributions are removed.

United States BRFSS collects diabetes BRFSS data from every state and reports national rates. These rates do not reflect national averages but are presented as the value for the median state. Confidence intervals are not included in the national estimates reported on the CDC Diabetes Program website, so the statistical significance of apparent differences between Alaska and US BRFSS results cannot be determined.

The National Health Interview Survey (NHIS) is an annual household survey of approximately 120,000 US residents conducted by CDC’s National Center for Health Statistics. The NHIS provides information on the health of the US population, including the prevalence and incidence of disease and the utilization of health care services. Each year a one-sixth sub-sample of NHIS respondents are asked whether any family member has had diabetes in the past 12 months.

The CDC estimates the national prevalence of diabetes (both diagnosed and undiagnosed) using a model that incorporates data from the NHIS and population estimates. The methodology for conducting this survey is quite different from the BRFSS and generates different results. The NHIS is designed to measure US averages, while the US BRFSS uses the median state to represent all of the participating states and territories. Also, the NHIS involves direct participant interaction, while the BRFSS is a telephone survey. Consequently, while the sample size for BRFSS is much larger than the NHIS, the responses, which are based on recall and self-reporting, may be less accurate.

Estimates of the rates of persons with diabetes from the BRFSS and the NHIS are based on the respondents having

accurate information about their diabetes status. About one-third of the people who have diabetes are unaware that they have this disease[1] so these surveys may underestimate its true prevalence.

Alaska Diabetes Prevalence Compared to United States

Using non-age-adjusted BRFSS data, the 2004 prevalence of diabetes is 4.6% among Alaska adults and 7.0% among US adults (age 18 or older)[2] (Figure 1). Because the US BRFSS diabetes prevalence rate reflects the median state and is not age-adjusted, this inhibits making a clear comparison between US and AK BRFSS. However, age-adjusted Alaska BRFSS prevalence estimates can be meaningfully compared to age-adjusted US NHIS prevalence estimates. This comparison indicates diabetes prevalence to be 5.2% in Alaska (2002-2004) and 6.6% in the United States (2003).[3]

Adult Diabetes Prevalence by Age

The prevalence of diabetes increases with age. Alaska's non-age-adjusted prevalence of diabetes is lower than the general US population; this is partly explained by Alaska's younger median age and smaller proportion of older Alaskans. According to the 2000 US Census, the median age in Alaska was 32.4 years while it was 35.3 years in the United States.[4] In 2004, the proportion of Alaska adults in the 65 and older group was about half of the US proportion (8.2% AK vs. 16.7% US).[5] The 2002–2004 averaged estimate of diabetes prevalence among the 65 and older age group was 13.6% (95% CI 11.0% - 16.7%) in Alaska, compared with 16.2% in the United States.[6] In both Alaska and the United States, diabetes is more than twice as prevalent in this age group compared to adults of all ages.

Figure 2 shows the rates of adults with diabetes in Alaska increasing sharply starting with the 45 to 54 age group. The Alaska Department of Labor and Workforce Development predicts that this age group will grow from about 6.5% of Alaskans in 2005 to about 17.2% by 2029[5] (Figure 2).

Adult Diabetes Prevalence by Gender

In Alaska, the prevalence of diabetes is higher among females than males, but this disparity by gender is not statistically significant. Nationally, the prevalence of diabetes is higher among males than females[7] (Figure 3).

Adult Diabetes Prevalence by Race and Ethnicity

In Alaska (2002-2004), the highest age-adjusted BRFSS rates of diabetes by race and ethnicity are found among Asians (10.3%), Hispanics (7.3%), and African Americans (5.8%). These differences are not statistically significant, however (Figure 4). Referencing 2003 US BRFSS data, the highest rates of diabetes by race are found among non-Hispanic African Americans (10.0%).[8]

Adult Diabetes Prevalence by Region

The Alaska BRFSS sample is stratified into five regions based on common demographics. The BRFSS regions are: Anchorage, Fairbanks, Gulf Coast, Southeast, and Rural (Figure 5).

The Alaska BRFSS Gulf Coast region had the largest increase in diabetes prevalence since 2000. There was a minimal change in diabetes prevalence between the 1991–2000 and 2002–2004 periods in the Alaska BRFSS Southeast region. The Rural region continues to have the lowest estimated diabetes prevalence in Alaska; however, the inter-regional differences in the prevalence rates are not statistically significant (Figure 6).

Table 1 provides information on diabetes prevalence by Alaska BRFSS region. Although there are regional and inter-regional differences in the rates between Alaska adults with diabetes and Alaska Native adults with diabetes, these differences are not statistically significant.

Table 1: Diabetes prevalence by Alaska BRFSS region, 2002-2004 with 95% CI

	Among all Alaska adults	Among adult Alaska Natives
Anchorage	4.5% (3.6% - 5.6%)	4.5% (1.7% - 11.7%)
Fairbanks	4.2% (3.3% - 5.2%)	5.3% (2.6% - 10.4%)
Gulf Coast	4.8% (3.9% - 6.1%)	6.9% (4.0% - 11.7%)
Southeast	4.5% (3.6% - 5.7%)	6.1% (3.6% - 9.9%)
Rural	3.2% (2.5% - 4.2%)	3.0% (2.1% - 4.2%)

Income, Education and Employment

Educational Level

In Alaska and in the United States, the prevalence of diabetes has an inverse relationship with educational attainment.[9] Table 2 shows there is a difference in diabetes rates between those who do not have a high school diploma or GED and those who have completed college. This difference is statistically significant for Alaska and although the difference also appears to be significant for the US, supporting data are not available.

Table 2: Diabetes prevalence by educational attainment, BRFSS, Alaska 2002 – 2004 with 95% CI and US 2003

	Alaska	US
Less than high school	6.4% (4.3% - 9.5%)	13.0%
College Graduate	3.2% (2.5% - 4.0%)	4.9%

Employment Status

In Alaska, 47.8% (95% CI 42.3% - 53.4%) of all adults diagnosed with diabetes are not in the workforce compared with 21.6% (95% CI 20.6% - 22.6%) of adults not diagnosed with diabetes. One explanation for this significant difference is the higher prevalence of diabetes among people 65 and over, who are more than likely to be retired. However, not being in the workforce also characterizes about one-third of persons with diagnosed diabetes who are between 18 and 64 years of age. National BRFSS data are not available for comparison.

Table 3: Employment status by diabetes status among adults age 18-64, AK BFRSS 2002 – 2004 with 95% CI

	Diagnosed with diabetes	Not diagnosed with diabetes
Employed	62.1% (55.3%-68.5%)	76.3% (75.2%-77.4%)
Not employed	4.5% (2.8%-7.0%)	6.9% (6.3%-7.6%)
Not in workforce*	33.4% (27.3%-40.2%)	16.8% (15.8%-17.8%)

*Not in workforce includes homemakers, students, and individuals who are retired or unable to work.

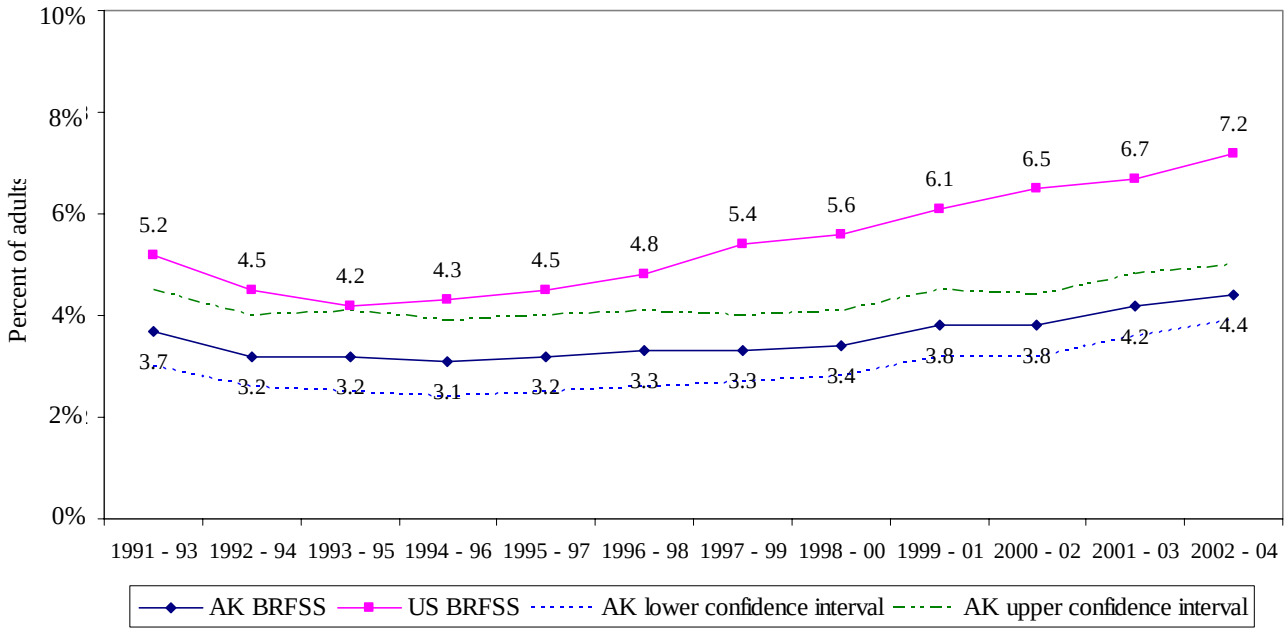
Household Income

As income increases, the prevalence of diabetes diminishes. The prevalence of diabetes appears to be lower in Alaska than in the United States among the middle income groups[10] (Figure 7). The income distribution of the adult Alaska population with diabetes is substantially different than among those not diagnosed with diabetes. Figure 8 shows that a significantly higher proportion of Alaskans diagnosed with diabetes (34%) have annual incomes less than $25,000 than Alaskans who have not been diagnosed with diabetes (22%). (Figure 8)

Diabetes Future Predictions: United States and Alaska

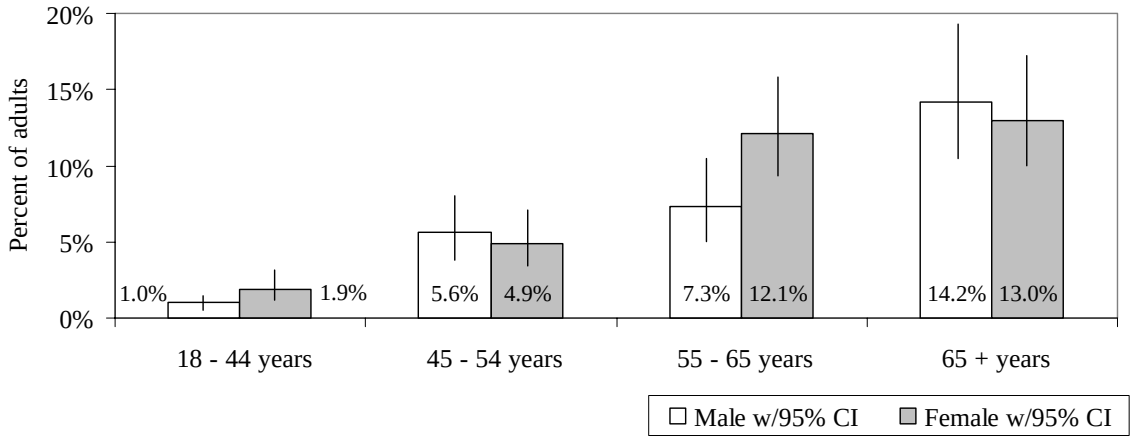
Today, in the United States, there are 18.2 million people with diabetes, a third of whom aren't aware they have the disease. Every year 1.3 million new cases of diabetes are diagnosed in people 20 and older.[11] In the United States, among persons born in 2000, it is estimated that 18% of males and 20% of females will be diagnosed with diabetes by age 60.[12] Given the aging of the Alaska population and the increasing prevalence of diabetes risk factors, it is likely that the prevalence of diabetes in Alaska will increase over the next decade.

Figure 1: Prevalence of diabetes, Alaska BRFSS and U.S. BRFSS, 1991 – 2004



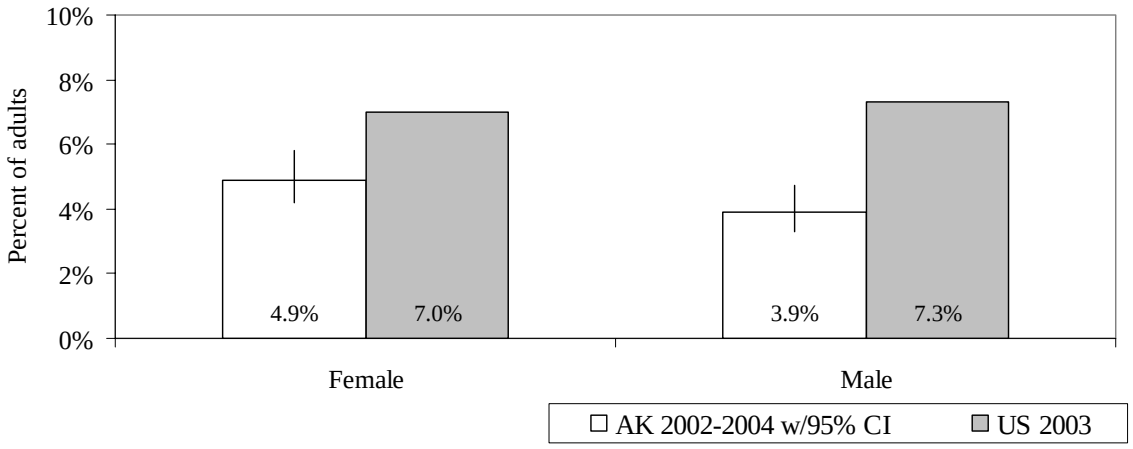
Data in this chart are not age-adjusted
US data are for the BRFSS median state for the mid-point year.

Figure 2: Prevalence of diabetes by gender and age group, Alaska BRFSS 2002 – 2004



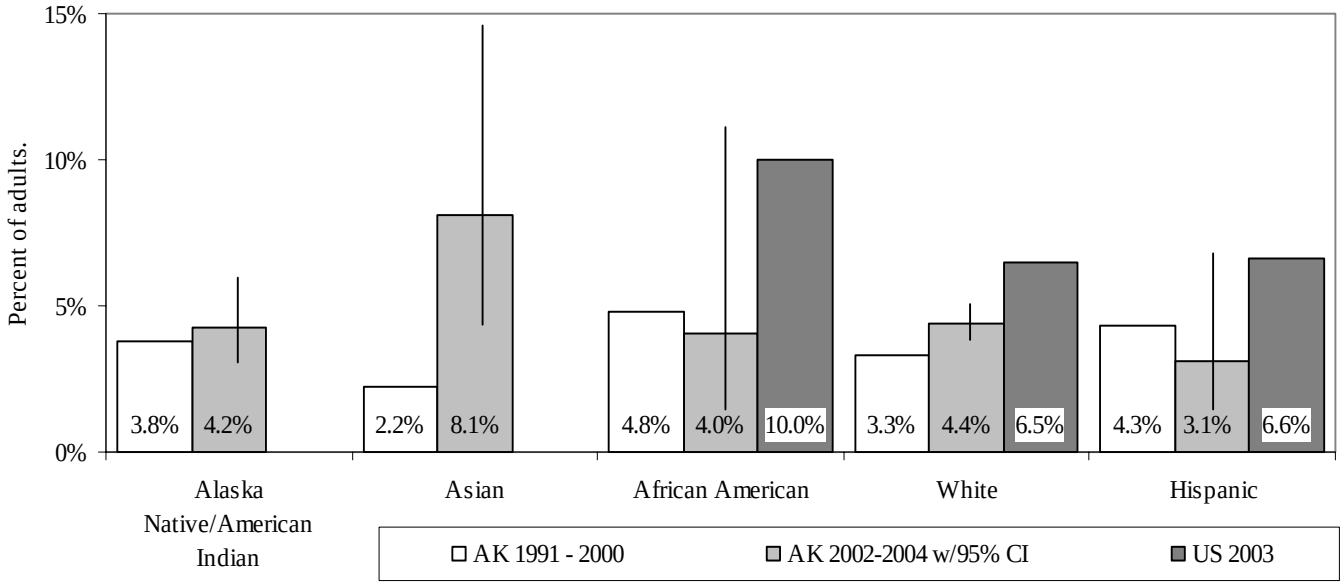
Vertical lines represent 95% confidence intervals

Figure 3: Prevalence of diabetes by gender, Alaska BRFSS 2002 – 2004 and U.S. BRFSS 2003



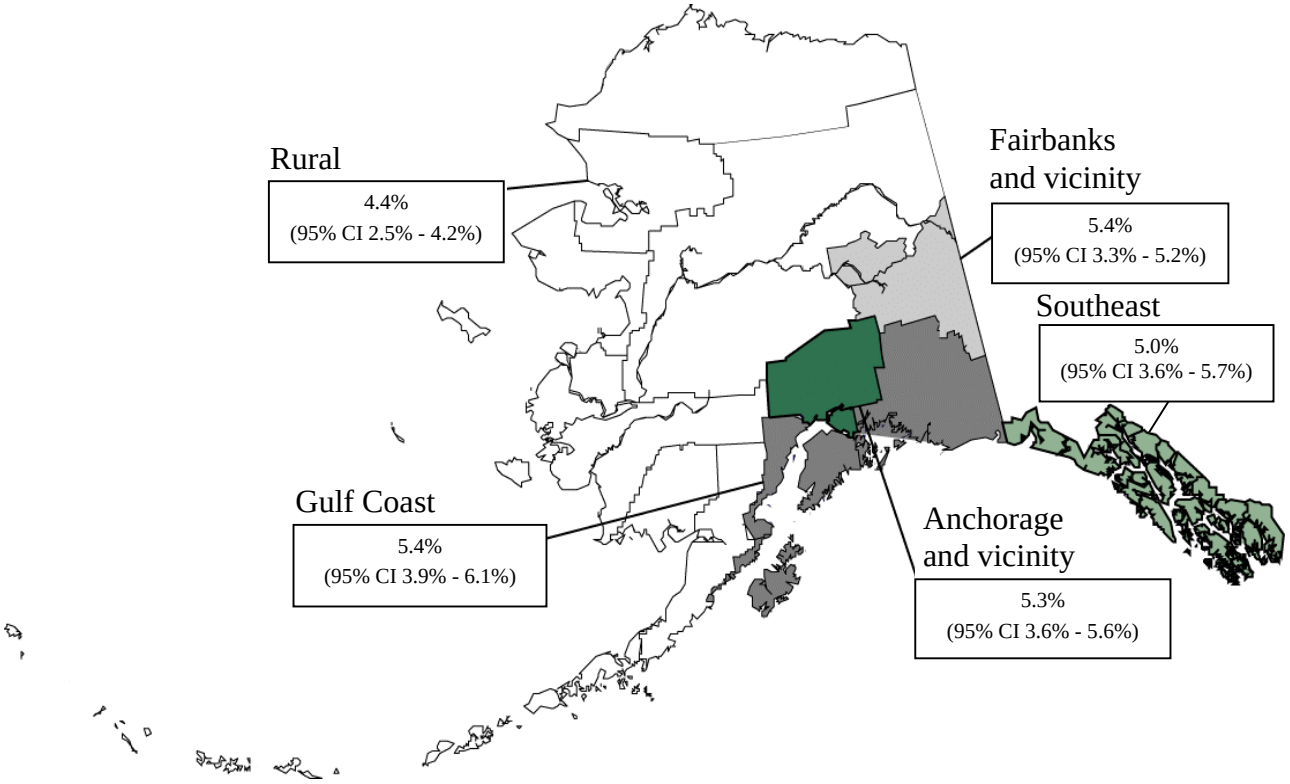
Vertical lines represent 95% confidence intervals

Figure 4: Prevalence of diabetes by race/ethnicity, Alaska BRFSS 1991 – 2000 and 2002 – 2004 and U.S. BRFSS 2003



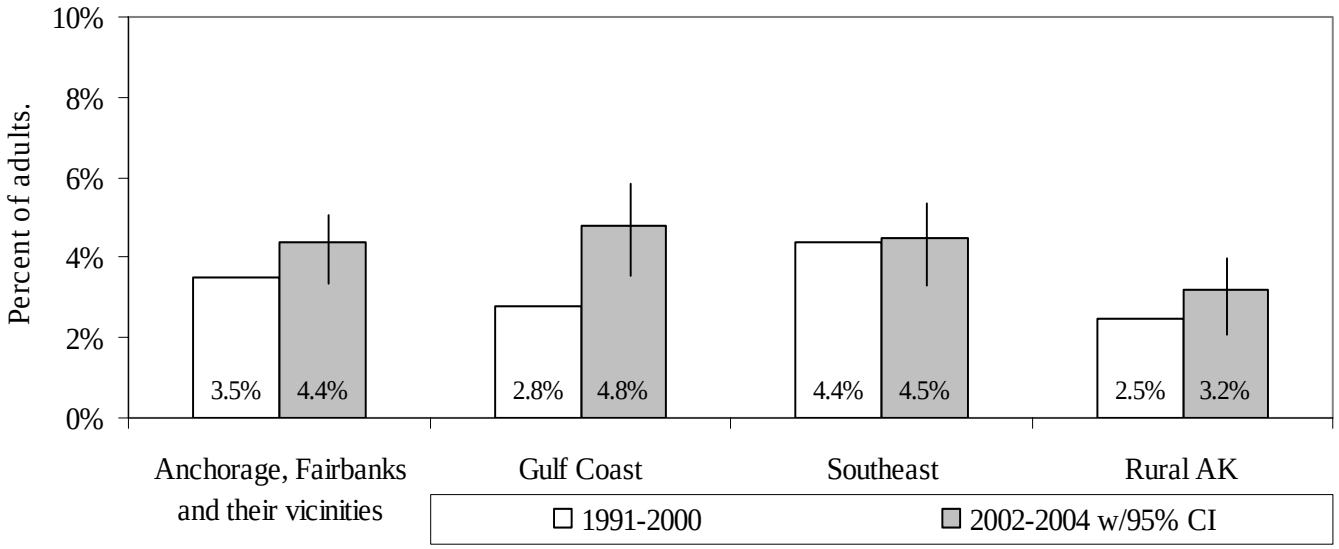
Vertical lines represent 95% confidence intervals

Figure 5: Map of Alaska by AK BRFSS regions with diabetes rates, AK BRFSS 2002 -2004



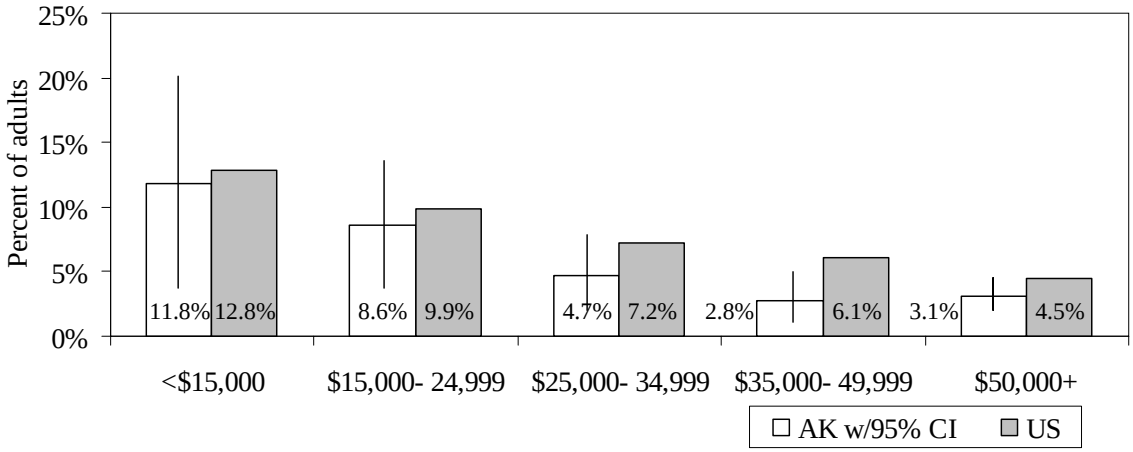
Note: Together, Anchorage, Fairbanks and their vicinities also comprise the AK BRFSS Urban Region.

Figure 6: Prevalence of diabetes by AK BRFSS region, Alaska BRFSS 1991 – 2000 and 2002 – 2004



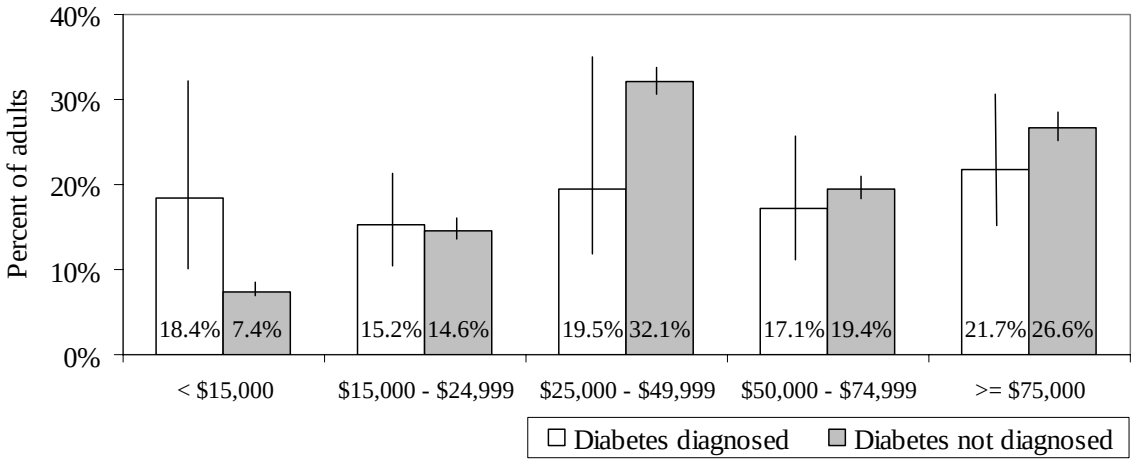
Vertical lines represent 95% confidence intervals.
AK 1991 - 2000 source: Hall LD, Sberna J, Utermohle C. Diabetes in Alaska, 1991-2000: Results from the Behavioral Risk Factor Surveillance System (BRFSS). Alaska Epidemiology Bulletin Recommendations and Reports. Dec 20, 2001; 5(4).

Figure 7: Prevalence of diabetes by income group, Alaska BRFSS 2002 – 2004 and U.S. BRFSS 2003



Vertical lines represent 95% confidence intervals

Figure 8: Income group distribution by diabetes status, AK BRFSS 2002 – 2004



Vertical lines represent 95% confidence intervals

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