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Surveillance for Health Behaviors of American Indians and Alaska Natives

Findings from the Behavioral Risk Factor
Surveillance System, 1997–2000



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Surveillance for Health Behaviors of American Indians and Alaska Natives

Findings from the Behavioral Risk Factor Surveillance System, 1997–2000

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Abstract

Problem/Condition: In the United States, disparities in risks for chronic disease (e.g., diabetes, cardiovascular disease, and cancer) and human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) are evident among American Indians and Alaska Natives (AI/ANs) and other groups. This report summarizes findings from the 1997–2000 Behavioral Risk Factor Surveillance System (BRFSS) for health-status indicators, health-risk behaviors, and HIV testing and perceived risk for HIV infection among AI/ANs, compared with other racial/ethnic groups in five regions of the United States.

Reporting Period Covered: 1997–2000.

Description of System: BRFSS is a state-based telephone survey of the civilian, noninstitutionalized, adult (i.e., persons aged ≥ 18 years) population. For this report, responses from the 36 states covered by the Indian Health Service administrative areas were analyzed.

Results: Region and sex-specific variations occurred in the prevalence of high-risk behaviors and health-status indicators. For example, the prevalence of current cigarette smoking ranged from 21.2% in the Southwest to 44.1% in the Northern Plains, and the awareness of diabetes was lower in Alaska than in other regions. Men were more likely than women to report binge drinking and drinking and driving. For the majority of health behaviors and status measures, AI/ANs were more likely than respondents of other racial/ethnic groups to be at increased risk. For example, AI/ANs were more likely than respondents of other racial/ethnic groups to report obesity (23.9% versus 18.7%) and no leisure-time physical activity (32.5% versus 27.5%).

Interpretation: The 1997–2000 BRFSS data demonstrate that health behaviors vary regionally among AI/ANs and by sex. The data also reveal disparities in health behaviors between AI/ANs and other racial/ethnic groups. The reasons for these differences by region and sex, and for the racial/ethnic disparities, are subjects for further study. However, such patterns should be monitored through continued surveillance, and the data should be used to guide prevention and research activities. For example, states with substantial AI/AN populations, and certain tribes, have successfully used BRFSS data to develop and monitor diabetes and tobacco prevention and control programs.

Public Health Actions: Federal and state agencies, tribes, Indian health boards, and urban Indian health centers will continue to use BRFSS data to develop and guide public health programs and policies. The BRFSS data will also be used to monitor progress in eliminating racial and ethnic health disparities. Regional Indian health boards, tribal epidemiology centers, and Indian Health Service Area Offices can use the findings of this report to prioritize interventions to prevent specific health problems in their geographic areas. Moreover, tribes and other institutions that promote AI/AN health care can use the report to document health needs when applying for resources.

Introduction

Only 50 years ago, infectious diseases, malnutrition, and infant mortality were the leading health problems for American Indian and Alaska Native (AI/AN) populations (1). Because of advances in sanitation and improved access to food and modern medical care, those problems have been reduced, but not eliminated. Modern diseases (e.g., diabetes) are on the rise. These modern or chronic diseases are in turn related to multiple factors that might be cultural, genetic, socioeconomic, or behavioral (2–4). In this report, we examine different behavioral factors that substantially affect the development of chronic disease among AI/ANs. Tobacco use, once common only in religious ceremonies, now is higher among AI/ANs than any other major racial or ethnic group in the United States (5,6). In an era when subsistence farming and hunting are no longer feasible, traditional patterns of diet and exercise have been superseded by high fat food and a sedentary lifestyle (7). Approximately 25% of AI/ANs live in poverty (8). High rates of alcohol abuse compound both social and health problems (9,10).

The consequences of these changes are evident: heart disease and cancer are now the two leading causes of death, and the prevalence of diabetes and its complications are higher among AI/ANs compared with the general population (9). Chronic renal failure has become so common that, although limited in size, certain Indian Health Service facilities have their own dialysis units. Rates of two other modern diseases, human immunodeficiency virus (HIV) infection and hepatitis C, are beginning to rise among AI/AN communities, and the Indian health-care system might not have the resources to provide adequate treatment (11; J. Redd, M.D., Indian Health Service, Albuquerque, New Mexico, personal communication, 2003).

The Behavioral Risk Factor Surveillance System (BRFSS) provides a reliable mechanism for tracking the behavior patterns that increase the risk for these health problems. Although the sample is limited in size, aggregating states and multiple years can provide adequate data to monitor the causes of the most substantial health disparities for AI/ANs. This report provides a summary of 4 years of survey data for AI/AN respondents to BRFSS.

Methods

Sampling

The methods of BRFSS are published in detail elsewhere (12). Briefly, data are collected monthly through telephone interviews of the adult (persons aged ≥ 18 years) population in

each state by using a multistage design based on random-digit–dialing methods. The samples represent each state's civilian, noninstitutionalized, adult population.

This report is based on data from the 36 states covered by the Indian Health Service (IHS) administrative areas for the years 1997–2000 (9) (Figure 1). Identification as AI/AN was based on response to the question, “What is your race?” During the 4-year period, the total number of respondents was 437,991. Of these, the number who self-identified as AI/AN was 7,862 (1.8%); the 1990 census figure for adults and children for the 36 states is 1.0% for AI/ANs (13).

Questionnaire

BRFSS includes a core set of questions asked in all participating states each year and a set of rotating core questions asked every other year. For this analysis, subjects of the core questions for the years 1997–2000 included obesity, smoking, diabetes awareness, Papanicolaou (Pap) test, general health status, and perceived risk of HIV infection. The HIV test question changed in 1998 and therefore is analyzed only for the years 1998–2000. The physical activity rotating core question was asked in 1998 and 2000. In 1997 and 1999, questions regarding binge drinking and drinking and driving were asked. Because of different wording of the Pap test question and a more restrictive age range for the HIV questions before the year 2000, California data regarding these topics were not comparable with data from other states. Consequently, the Pacific Coast region was excluded from analyses for these questions.

Language Barriers

BRFSS is conducted in English and in Spanish in states in which a substantial proportion of the population is Spanish-speaking. If the interviewer determines that the respondent is not proficient in the available languages, the interviewer ends the call and notes language barrier as the reason for not completing the interview. BRFSS does not conduct interviews in Native American languages and therefore might miss a limited number of respondents who do not speak English or Spanish well (14).

Data Collection and Processing

Data from each participating state are sent to CDC after monthly interviews are completed. CDC staff edit the data. A computer-assisted telephone-interviewing (CATI) system, which permits direct entry of data into a computer file during an interview, was used in all 36 states during 1997–2000, except in Alabama for the first quarter of 1997 and in New

Mexico during 1997–1999. CATI helps reduce errors in data collection by facilitating data coding and entry and by enabling interviewer monitoring.

During 1997–2000 in the 36 surveillance states, the median number of completed interviews per year ranged from a low of 2,311 in 1997 to a high of 3,281 in 2000. The methodology of the Council of American Survey Research Organizations (CASRO) (15) was used to derive median response rates, which ranged from 63% in 1997 to 50% in 2000. Response rates decreased in part as a result of changes in technology (e.g., increased screening through caller identification and answering machines) (12,16) (see Discussion).

Data Weighting and Analysis

CDC staff aggregate the edited monthly data files to create a yearly sample for each state. Each state's yearly sample is weighted to the respondent's probability of selection and to the age- and sex-specific or race-, age-, and sex-specific population from the most current census data (or intercensal estimates) for the state (17,18). These weighted data were used to estimate the prevalence of risk factors for each state's population. Because of the relatively limited sample size of AI/ANs, multiple years of data were aggregated for these analyses to increase the precision of the prevalence estimates. To make comparisons between AI/ANs and non-AI/ANs in the 36 states, prevalence estimates were age-adjusted to the 2000 projected U.S. population (19). SUDAAN, a software package for analyzing complex survey data, was used to calculate the standard errors and the 95% confidence intervals (CI) for the prevalence estimates (20). No statistical testing was performed for comparisons presented in this report; therefore, these findings should be considered descriptive.

Data from the AI/AN respondents were aggregated into five geographic regions* (Figure 1). The number of respondents in each geographic region was as follows: Alaska, 1,497; East, 1,920; Northern Plains, 2,085; Pacific Coast, 912; and Southwest, 1,448; 57% of the total respondents were women.

* The five regions are as follows: **Alaska** = Alaska; **East** = Alabama, Connecticut, Florida, Kansas, Louisiana, Maine, Massachusetts, Mississippi, New York, North Carolina, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, and Texas; **Northern Plains** = Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, South Dakota, Wisconsin, and Wyoming; **Pacific Coast** = California, Idaho, Oregon, Washington; **Southwest** = Arizona, Colorado, Nevada, New Mexico, and Utah.

Results

Health-Status Indicators

Fair or Poor Health Status

Respondents were asked to rate their general health as “excellent,” “very good,” “good,” “fair,” or “poor.” Among AI/AN women, self-perceived fair or poor health status ranged from 18.2% in the Pacific to 26.9% in the East (Table 1). For the total AI/AN population, essentially no difference was observed between men and women in the prevalence of fair or poor health status (23.7% versus 23.9%). Compared with respondents of other racial/ethnic groups (14.6%), AI/AN respondents were more likely to report fair or poor health status (23.8%).

Obesity

In conformity with the World Health Organization guidelines (21), a body mass index (BMI) of ≥ 30 kg/m² for both men and women is considered obese (22). On the basis of self-reported height and weight, a BMI was calculated for each respondent. Alaska reported the highest prevalence of obesity for both AI/AN men and women (26.9% and 31.1%, respectively) (Table 2) (Figure 2). For the total AI/AN population, the prevalence of obesity was approximately identical for both men and women. AI/AN respondents were more likely to report obesity (23.9%) than respondents of other racial/ethnic groups (18.7%).

Awareness of Having Diabetes

Diabetes awareness was defined as the respondent ever having been told by a health professional that he or she has diabetes. Among AI/ANs, respondents in Alaska were less likely to report having been told that they had diabetes than respondents in the other four regions (Table 3) (Figure 3). AI/AN respondents were more likely to report awareness of having diabetes (9.7%) than respondents of other racial/ethnic groups (5.7%).

Health-Risk Behaviors

Cigarette Smoking

Cigarette smoking was defined as the respondent having ever smoked ≥ 100 cigarettes in his or her life and currently smoking. Cigarette smoking was highest in the Northern Plains (44.1%) and Alaska (39.0%) and lowest in the Southwest (21.2%) (Table 4) (Figure 4). For both AI/AN respondents and those of other racial/ethnic groups, the prevalence of cigarette smoking was higher for men than for women. AI/AN respondents were more likely to report cigarette smoking (32.2%) than respondents of other racial/ethnic groups (22.3%).

No Leisure-Time Physical Activity

Respondents were also asked whether they engaged in any exercise, recreation, or physical activity other than regular job duties during the previous month. Among AI/ANs, variation was observed by region and by sex (Table 5). For the total AI/AN population, the prevalence of no leisure-time physical activity was slightly greater for men than women (33.6% versus 31.8%). AI/AN respondents reported a lack of leisure-time physical activity more frequently than those of other racial/ethnic groups (32.5% versus 27.5%).

Binge Drinking

Among AI/AN men, the consumption of ≥ 5 alcoholic beverages on ≥ 1 occasion during the previous month was highest among men in Alaska (30.7%) and the Southwest (30.5%) and lowest among men in the East (19.0%) (Table 6). Men were more likely than women to report binge drinking in all five regions. AI/AN respondents were slightly more likely to report binge drinking than those of other racial/ethnic groups (23.9% versus 22.0% for men; 8.8% versus 7.4% for women).

Drinking and Driving

Drinking and driving was defined as having operated a motor vehicle at least once in the previous month when the respondent had had "perhaps too much to drink." AI/AN men in the Southwest reported the highest prevalence of drinking and driving (9.5%) (Table 7). Similar to binge drinking, men were more likely than women to report drinking and driving in all five regions. AI/AN respondents reported approximately the same prevalence of drinking and driving as respondents of other racial/ethnic groups (2.6% versus 2.4%).

Screening for Chronic Disease

Pap Test

The percentage of AI/AN women with an intact uterine cervix who had never had a Pap test ranged from 12.3% in the East to 4.9% in Alaska (Table 8). AI/AN women were more likely to never have had a Pap test than women of other racial/ethnic groups (10.3% versus 6.1%). The prevalence of AI/AN women having had their last Pap test >3 years ago was highest in the East (25.4%) and lowest in Alaska (8.1%), similar to the pattern of regional variation for having never had a Pap test (Table 8). AI/AN women were more likely to report having had their last Pap test >3 years ago than women of other racial/ethnic groups (21.3% versus 15.3%).

HIV/Acquired Immunodeficiency Syndrome

Perceived HIV Risk. Respondents were asked if their chance of getting infected with HIV was "high," "medium," "low," or "none," as defined by the respondents themselves. Among AI/AN respondents, the prevalence of reporting medium or high perceived risk of HIV infection (versus low or none) ranged from 13.5% for men in the Northern Plains to 6.1% for women in Alaska (Table 9). For the AI/AN population as for other racial/ethnic groups, the prevalence of reporting medium or high perceived risk of HIV infection was slightly greater for men than for women. AI/AN respondents were more likely to indicate that they were at medium or high risk of HIV infection than respondents of other racial/ethnic groups (9.2% versus 6.7%).

HIV Testing. Respondents were also asked whether they had ever been tested for HIV. AI/AN respondents in the Southwest were more likely to report never being tested for HIV infection (58.1%), excluding blood donations, than respondents in other regions (Table 10). The prevalence of never being tested was similar for men and women (50.9% versus 49.6%). Respondents of other racial/ethnic groups were more likely to report never being tested for HIV infection than AI/AN respondents (55.8% versus 50.5%).

Discussion

BRFSS data in this report demonstrate substantial variation in the prevalence of health-status indicators and health-risk behaviors among AI/AN adults and between AI/ANs and persons of other racial/ethnic groups. For example, the prevalence of current cigarette smoking among AI/ANs ranged from a low of 21.2% in the Southwest to a high of 44.1% in the Northern Plains. Sex differences were particularly evident for cigarette smoking and alcohol-related behaviors. Racial/ethnic disparities were substantial for general health status, obesity, diabetes, cigarette smoking, leisure-time physical activity, Pap tests, and perceived risk of HIV infection.

This report is an update of a previous analysis of AI/AN health behaviors by region based on BRFSS data collected during 1993–1996 (23). A direct comparison of the reports is not possible because, unlike this analysis, estimates were not age-adjusted. To overcome this problem, data from the earlier report were reanalyzed and adjusted for age. Minimal changes of ≤ 2 percentage points were determined in certain estimates, but because of the limited sample sizes, definitive trends cannot be determined (Table 11).

Health-related quality of life measures (e.g., self-perceived general health status) identify groups with suboptimal health status and disability (24). They are useful not only in

examining general health status, but in assessing progress towards the Healthy People 2010 goals of increasing years of healthy life and eliminating health disparities (25). In this analysis, a substantial difference exists between the prevalence of fair or poor health status between AI/ANs and respondents of other racial/ethnic groups (approximately 10 percentage points), which is similar to findings in other studies (26,27). Cultural differences in understanding and reporting of self-perceived health status might either increase or decrease health-status differences between racial and ethnic groups (e.g. certain groups might stoically deny health problems or be reluctant to report them to strangers, whereas other groups might be reluctant to report good health [28,29]).

Obesity increases the risk for certain chronic diseases, including cardiovascular disease and diabetes (22,30,31). Moreover, the prevalence of overweight and obesity has increased for the general U.S. population as well as among AI/ANs (32,33). In all five regions and for both sexes, $\geq 20\%$ of AI/ANs reported being obese. Furthermore, these estimates are probably conservative, because respondents tend to underreport weight (34). AI/AN respondents also reported less leisure-time physical activity than other racial/ethnic groups. Physical activity has an inverse relation to obesity, cardiovascular disease, diabetes, and colon cancer (35,36). However, estimates of leisure-time physical activity do not account for work-related physical activity; thus, BRFSS data likely underestimate the total amount of physical activity engaged in by the adult population (37).

AI/ANs suffer from a disproportionate burden of disease and a higher rate of mortality as a result of diabetes than the general population (9,38). The prevalence of awareness of having diabetes is higher for AI/ANs than for respondents of other racial/ethnic groups in all regions except Alaska. Other research has demonstrated that the prevalence of diabetes among AI/ANs is increasing in all regions, including Alaska, and even among those persons aged 15–34 years (39,40). BRFSS data related to awareness of having diabetes estimate only the percentage of adults who know they have diabetes and do not provide an estimate of those who are being treated. Moreover, the percentage of adults who actually have diabetes is likely higher because, in certain cases, the respondents are unaware of their health status regarding this condition. In fact, the National Health and Nutrition Examination Survey III reported that for every two U.S. adults with diagnosed diabetes, one person has undiagnosed diabetes (41). Thus, the burden of diabetes for AI/ANs might be even more substantial than can be estimated.

Among the major racial/ethnic groups in the United States, AI/ANs report the highest prevalence of current smoking (5,6). Similar to findings of earlier studies (42), high rates of

smoking exist in all regions except the Southwest. Although AI/ANs report high rates of smoking, they smoke fewer cigarettes per day than the average smoker (43,44). Tobacco has cultural and spiritual significance among AI/ANs. It is used in sacred ceremonies and for therapeutic purposes (45). These cultural factors should be considered during public health planning. For example, focusing public health interventions on reducing casual and habitual smoking might reduce the incidence of cardiovascular disease and cancer.

AI/ANs have higher alcohol-related mortality rates attributable to chronic liver disease, cirrhosis, and unintentional injury than the general population (9,10). Certain unintentional injuries are motor-vehicle-related and result from driving while impaired by alcohol, riding as a passenger with an alcohol-impaired driver, and pedestrian crashes (46–48). Despite the disparities in alcohol-related morbidity and mortality, only slightly higher rates of binge drinking and drinking and driving were determined for AI/ANs than for other racial/ethnic groups.

AI/AN women in the East were more likely than women in other regions to report never having had a Pap test and having had their last Pap test >3 years ago. Also, AI/AN women received cervical cancer screenings less frequently than women of other racial/ethnic groups. These regional differences (49) and racial/ethnic disparities (50) confirm the findings of previous studies. Early detection and treatment of cervical dysplasia can reduce mortality from cervical cancer. The Healthy People 2010 objectives of 97% of adult women ever receiving a Pap test and 90% receiving a Pap test in the preceding 3 years might be met by increasing knowledge of and reducing barriers to cervical cancer screening for AI/AN women (25,51,52).

Acquired immunodeficiency syndrome (AIDS) incidence rates are higher for AI/ANs than for whites and Asian/Pacific Islanders, but lower than those of blacks and Hispanics (11). Studies that have compared U.S. black, Hispanic, and white adults have found that blacks and Hispanics report higher perceived risk of HIV infection and are more likely to have ever been tested for HIV than whites (53,54). Similar to blacks and Hispanics, AI/ANs reported a slightly higher perceived risk of HIV infection and were more likely to have been tested for HIV (excluding blood donations) than other racial/ethnic groups combined. The data do not indicate why AI/ANs might perceive themselves as being at greater risk for HIV infection or why they are more likely to be tested for HIV than other groups. These differences could be caused by a greater awareness by AI/ANs of their increased risk for AIDS or a result of programs and initiatives (and resources), including provision of HIV counseling and testing, that specifically target minority populations.

The findings in this report are subject to certain limitations. First, BRFSS reaches only persons with telephones. Although telephone coverage in the United States is high, approximately 17% of AI/AN households did not have a telephone in 1998 — a higher percentage compared with other major racial/ethnic groups in the United States (55). Telephone coverage also varies within the AI/AN population. The percentage of households without a telephone was 12% in urban areas and 24% in rural areas in 1998 and 53% on reservations in 1990 (55,56). Furthermore, studies have demonstrated that AI/ANs living in households without telephones might be more at risk for current smoking, infrequent physical activity, and binge drinking than those in households with telephones (57–59). As a result, this analysis is more likely to represent AI/ANs living off-reservation and in urban areas and underestimate the prevalence of certain at-risk health behaviors. However, among AI/ANs, household telephone ownership has increased from an estimated 77% in 1990 to 83% in 1998 (55,60). If this trend continues, respondents to telephone surveys including such minority populations as AI/ANs will be better represented, compared with the general population.

Second, response rates decreased from 63% in 1997 to 50% in 2000 in part as a result of changes in technology (e.g., increased screening though caller identification and answering machines) (12,16). Moreover, in response to telemarketing, families might be less likely to answer their telephones. BRFSS is addressing this decline by exploring other methods for contacting respondents (e.g., mailing advance letters to residents to inform them of the survey and including cellular telephones in BRFSS) (12).

A third limitation is that BRFSS does not collect information regarding tribal affiliation or reservation residency. Aggregating AI/ANs into geographic regions alone does not account for the diversity of health behaviors among different tribes (1,61). Because of the limited sample sizes, certain regional estimates have relatively large confidence intervals. Furthermore, the estimates derived from low-prevalence behaviors (e.g., drinking and driving) are less precise than those based on moderate or high prevalence behaviors and must be interpreted cautiously. Finally, because the estimates were based on self-reported data, they might be subject to recall and social desirability biases.

Despite these limitations, BRFSS has a number of strengths. Unlike national surveys, the number of AI/AN respondents to BRFSS allows for regional estimates, as presented in this report. Moreover, national health-risk estimates from other data sets for the AI/AN population are similar to those for the total respondents in these 36 surveillance states. For example, the Survey of American Indians and Alaska Natives (SAIAN), conducted as part of the 1987 National Medical Expenditure

Survey, interviewed persons living in 1,990 AI/AN households on or near federally recognized reservation land or in Alaska tribal areas and who were therefore eligible to receive IHS services. Data from that survey estimated current smoking at 32.8%, which is similar to the 32.2% reported here (95% CI = 29.9–34.4) (62). Similarly, findings based on data from the 1998 National Health Interview Survey (NHIS), which interviewed 197 AI/AN adults, estimated current cigarette smoking at 40% (95% CI = 30.2–49.8) (63). Estimates for the prevalence of diagnosed diabetes were 9.7% (95% CI = 8.3–11.1) from this analysis, 12.2% (95% CI = 9.8–14.6) from the 1987 SAIAN data (64), and 10.9% from the 1996 IHS national outpatient database (65). A systematic review of the evidence for the reliability and validity of BRFSS data has also demonstrated that the majority of measures are of optimal quality and in certain cases are highly reliable and valid (66). Furthermore, BRFSS is the only source of continuously collected population-based information regarding the health of AI/ANs.

Conclusion

Only limited health behavior data exist for AI/ANs. National health surveys usually cannot derive estimates for the AI/AN population because they comprise a limited percentage of the general population. Occasionally individual tribes collect health behavior data, and although the data might be used internally, often they are not published or disseminated. As demonstrated in this report, health behaviors of AI/ANs can be estimated by region and by sex by aggregating multiple years of BRFSS data. The information in this report can be used to guide federal and state agencies, tribes, Indian health boards, and Indian urban health centers in developing appropriate preventive programs and evaluating progress towards health goals. This report also is useful in documenting racial disparities, a necessary step to garnering the resources to eliminating them.

References

1. Young TK. Recent health trends in the Native American population. In: Sandefur GD, Rindfuss RR, Cohen B, eds. *Changing numbers, changing needs: American Indian demography and public health*. Washington, DC: National Academy Press, 1996:53–75.
2. Durie MH. Health of indigenous peoples depends on genetics, politics, and socioeconomic factors. *BMJ* 2003;326:510–1.
3. Grim CW. Health of American Indians and Alaska Natives: health influence factors in common with other indigenous populations. *BMJ USA* 2003;3:242–3.
4. Bird ME. Health and indigenous people: recommendations for the next generation. *Am J Public Health* 2002;92:1391–2.
5. CDC. Cigarette smoking among adults—United States, 2000. *MMWR* 2002;51:642–5.

6. U.S. Department of Health and Human Services. Tobacco use among U.S. racial/ethnic minority groups—African Americans, American Indians and Alaska Natives, Asian Americans and Pacific Islanders, and Hispanics: a report of the Surgeon General. Atlanta, GA: US Department of Health and Human Services, CDC, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1998.
7. Byers T, Hubbard J. Navajo Health and Nutrition Survey: research that can make a difference. *J Nutr* 1997;127:2075S–7S.
8. Proctor BD, Dalaker J. Poverty in the United States: 2001 [Current population reports]. Washington, DC: US Census Bureau, 2002; publication no. P60-219.
9. Indian Health Service. Trends in Indian health, 1998–99. Rockville, MD: US Department of Health and Human Services, Indian Health Service, 2000.
10. Li G, Smith GS, Baker SP. Drinking behavior in relation to cause of death among US adults. *Am J Public Health* 1994;84:1402–6.
11. Bertolli J, McNaghten AD, Campsmith M, et al. Epidemiology and surveillance issues: surveillance system monitoring HIV/AIDS and HIV risk behaviors among American Indians and Alaska Natives. *AIDS Educ Prev* 2003; (In press).
12. CDC. Public health surveillance for behavioral risk factors in a changing environment: recommendations from the Behavioral Risk Factor Surveillance Team. *MMWR* 2003;52:(No. RR-9).
13. US Bureau of the Census. American Indian and Alaska Native population: 2000 (Census 2000 brief). Washington, DC: US Department of Commerce, Economics and Statistics Administration, 2002; publication no. C2KBR 101-15.
14. US Bureau of the Census. Characteristics of American Indians by tribe and language. In: 1990 Census of Population. Washington, DC: US Government Printing Office, 1994; publication no. 1990 CP-3-7.
15. White AA. Response rate calculation in RDD telephone health surveys: current practices. In: American Statistical Association 1983 proceedings of the Section on Survey Research Methods. Washington, DC: American Statistical Association, 1984:277–82.
16. Holtzman D. Behavioral Risk Factor Surveillance System. In: DiClemente R, Blumenthal D, eds. Community based research. New York, NY: Springer Publishing Co. (In press).
17. Frazier EL, Franks AL, Sanderson LM. Behavioral risk factor data. In: Using chronic disease data: a handbook for public health practitioners. Atlanta, GA: US Department of Health and Human Services, Public Health Service, CDC, 1992:4-1–4-17.
18. Gentry EM, Kalsbeek WD, Hogelin GC, et al. Behavioral risk factor surveys: II. Design, methods, and estimates from combined state data. *Am J Prev Med* 1985;1:9–14.
19. Klein RJ, Schoenborn CA. Age adjustment using the 2000 projected US population [Healthy People 2010 Statistical Notes, no. 20]. Hyattsville, MD: US Department of Health and Human Services, CDC, National Center for Health Statistics, 2001.
20. Shah BV, Barnwell BG, Bieler GS. SUDAAN: software for the statistical analysis of correlated data. User's manual, release 7.5 [Software documentation]. Research Triangle Park, NC: Research Triangle Institute, 1997.
21. World Health Organization. Obesity: preventing and managing the global epidemic: report of a WHO consultation of obesity, Geneva, 3–5 June 1997. Geneva: World Health Organization, 1998.
22. National Heart, Lung, and Blood Institute. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report. Bethesda, MD: US Department of Health and Human Services, Public Health Service, National Institutes of Health, 1998; NIH publication no. 98-4083.
23. Denny CH, Holtzman D. Health behaviors of American Indians and Alaska Natives: findings from the Behavioral Risk Factor Surveillance System, 1993–1996. Atlanta, GA: CDC, 1999.
24. Hennessy CH, Moriarty DG, Zack MM, Scherr PA, Brackbill R. Measuring health-related quality of life for public health surveillance. *Public Health Rep* 1994;109:665–72.
25. US Department of Health and Human Services. Healthy people 2010. 2nd ed. With understanding and improving health and objectives for improving health (2 vols). Washington, DC: US Department of Health and Human Services, 2000.
26. Denny CH, Taylor TL. American Indian and Alaska Native health behaviors: findings from the Behavioral Risk Factor Surveillance System, 1992–1995. *Ethn Dis* 1999;9:403–9.
27. CDC. Measuring healthy days: population assessment of health-related quality of life. Atlanta, Georgia: US Department of Health and Human Services, CDC, 2000.
28. CDC. Quality of life as a new public health measure—Behavioral Risk Factor Surveillance System, 1993 [Current trends]. *MMWR* 1994; 43:375–80.
29. Schechter S, ed. Proceedings of the 1993 NCHS conference on the cognitive aspects of self-reported health status. Hyattsville, MD: US Department of Health and Human Services, Public Health Service, National Center for Health Statistics, 1994 (NCHS working paper; series no. 10).
30. Pi-Sunyer FX. Medical hazards of obesity. *Ann Intern Med* 1993; 119:655–60.
31. National Institutes of Health. Health implications of obesity: National Institutes of Health consensus development statement. *Ann Intern Med* 1985;103:1073–7.
32. Mokdad AH, Serdula MK, Dietz WH, Bowman BA, Marks JS, Koplan JP. Spread of the obesity epidemic in the United States, 1991–1998. *JAMA* 1999;282:1519–22.
33. Will JC, Denny C, Serdula M, Muneta B. Trends in body weight among American Indians: findings from a telephone survey, 1985 through 1996. *Am J Public Health* 1999;89:395–8.
34. Rowland ML. Self-reported weight and height. *Am J Clin Nutr* 1990;52:1125–33.
35. CDC. Physical activity and health: a report of the Surgeon General. Atlanta, GA: US Department of Health and Human Services, CDC, National Center for Chronic Disease Prevention and Health Promotion, 1996.
36. Pan XR, Li GW, Hu YH, et al. Effects of diet and exercise in preventing NIDDM in people with impaired glucose tolerance. The Da Qing IGT and diabetes study. *Diabetes Care* 1997;20:537–44.
37. Ford ES, Merritt RK, Heath GW, et al. Physical activity behaviors in lower and higher socioeconomic status populations. *Am J Epidemiol* 1991;133:1246–56.
38. Gohdes DM, Acton K. Diabetes mellitus and its complications. In: Rhoades ER, ed. American Indian health: innovations in health care, promotion, and policy. Baltimore, MD: The Johns Hopkins University Press, 2000:221–43.
39. Burrows NR, Geiss LS, Engelgau MM, Acton KJ. Prevalence of diabetes among American Indians and Alaska Natives, 1990–1997: an increasing burden. *Diabetes Care* 2000;12:1786–90.

40. Acton KJ, Burrows NR, Moore K, Querec L, Geiss LS, Engelgau MM. Trends in diabetes prevalence among American Indian and Alaska native children, adolescents, and young adults. *Am J Public Health* 2002;92:1485–90.
41. Harris MI, Flegal KM, Cowie CC, et al. Prevalence of diabetes, impaired fasting glucose, and impaired glucose tolerance in U.S. adults. The Third National Health and Nutrition Examination Survey, 1988–1994. *Diabetes Care* 1998;21:518–24.
42. CDC. Prevalence of selected risk factors for chronic disease and injury among American Indians and Alaska Natives—United States, 1995–1998. *MMWR* 2000;49:79–82, 91.
43. Welty TK, Lee ET, Yeh J, et al. Cardiovascular disease risk factors among American Indians. The Strong Heart Study. *Am J Epidemiol* 1995;142:269–87.
44. Gilliland FD, Mahler R, Davis SM. Non-ceremonial tobacco use among southwestern rural American Indians: the New Mexico American Indian Behavioural Risk Factor Survey. *Tob Control* 1998;7:156–60.
45. Rhoades DA, Rhoades ER, Jones CM, Collins RJ. Tobacco use. In: Rhoades ER, ed. *American Indian health: innovations in health care, promotion, and policy*. Baltimore, MD: The Johns Hopkins University Press, 2000:299–310.
46. Campos-Outcalt D, Prybylski D, Watkins AJ, Rothfus G, Dellapenna A. Motor-vehicle crash fatalities among American Indians and non-Indians in Arizona, 1979 through 1988. *Am J Public Health* 1997;87:282–5.
47. Oken E, Lightdale JR, Welty TK. Along for the ride: the prevalence of motor vehicle passengers riding with drivers who have been drinking in an American Indian population. *Am J Prev Med* 1995;11:375–80.
48. Campos-Outcalt D, Bay C, Dellapenna A, Cota MK. Pedestrian fatalities by race/ethnicity in Arizona, 1990–1996. *Am J Prev Med* 2002;23:129–35.
49. Giroux J, Welty TK, Oliver FK, Kaur JS, Leonardson G, Cobb N. Low national breast and cervical cancer-screening rates in American Indian and Alaska Native women with diabetes. *J Am Board Fam Pract* 2000;13:239–45.
50. Blackman DK, Bennett EM, Miller DS. Trends in self-reported use of mammograms (1989–1997) and Papanicolaou tests (1991–1997)—Behavioral Risk Factor Surveillance System. In: *CDC Surveillance Summaries*, October 8, 1999. *MMWR* 1999;48(No. SS-6).
51. Coughlin SS, Uhler RJ, Blackman DK. Breast and cervical cancer screening practices among American Indian and Alaska Native women in the United States, 1992–1997. *Prev Med* 1999;29:287–95.
52. Risendal B, DeZapen J, Fowler B, Papenfuss M, Giuliano A. Pap smear screening among urban Southwestern American Indian women. *Prev Med* 1999;29:510–8.
53. Holtzman D, Mack K, Nakashima AK, Rubinson R. Trends in HIV testing among U.S. adults, Behavioral Risk Factor Surveillance System (BRFSS), 1994–2000 [Abstract TuPeD4945]. Presented at the XIV International AIDS Conference. Barcelona, Spain, July 7–12, 2002.
54. Holtzman D, Bland SD, Lansky A, Mack KA. HIV-related behaviors and perceptions among adults in 25 states: 1997 Behavioral Risk Factor Surveillance System. *Am J Public Health* 2001;91:1882–8.
55. U.S. Department of Commerce. *Falling through the net: defining the digital divide*. Washington, DC: National Telecommunications and Information Administration, U.S. Department of Commerce, 1999.
56. Bureau of the Census. *Housing of American Indians on reservations—equipment and fuels [Statistical brief]*. Washington, DC: US Department of Commerce, Economics and Statistics Administration, 1995; publication no. SB/95-11.
57. Pearson D, Cheadle A, Wagner E, Tonsberg R, Psaty BM. Differences in sociodemographic health status, and lifestyle characteristics among American Indians by telephone coverage. *Prev Med* 1994;23:461–4.
58. Cheadle A, Pearson D, Wagner E, Psaty BM, Diehr P, Koepsell T. Relationship between socioeconomic status, health status, and lifestyle practices of American Indians: evidence from a Plains reservation population. *Public Health Rep* 1994;109:405–13.
59. Peterson DE, Remington PL, Kuykendall MA, Kanarek MS, Diedrich JM, Anderson HA. Behavioral risk factors of Chippewa Indians living on Wisconsin reservations. *Public Health Rep* 1994;109:820–3.
60. Bureau of the Census. *Phoneless in America [Statistical brief]*. Washington, DC: US Department of Commerce, Economics and Statistics Administration, 1994; publication no. SB/94-16.
61. Ericksen EP. Problems in sampling the Native American and Alaska Native populations. In: Sandefur GD, Rindfuss RR, Cohen B, eds. *Changing numbers, changing needs: American Indian demography and public health*. Washington, DC: National Academy Press, 1996:113–29.
62. Lefkowitz, D, Underwood C. *Personal health practices: findings from the Survey of American Indians and Alaska Natives*. Rockville, MD: Agency for Health Care Policy and Research, 1991; publication no. 91-0034.
63. CDC. *Cigarette smoking among adults—United States, 1998*. *MMWR* 2000;49:881–4.
64. Johnson A, Taylor A. *Prevalence of chronic diseases: a summary of data from the Survey of American Indians and Alaska Natives*. Rockville, MD: Agency for Health Care Policy and Research, 1991; publication no. 91-0031.
65. CDC. *Prevalence of diagnosed diabetes among American Indians/Alaskan Natives—United States, 1996*. *MMWR* 1998;47:901–4.
66. Nelson DE, Holtzman D, Bolen J, Stanwyck CA, Mack KA. Reliability and validity of measures from the Behavioral Risk Factor Surveillance System (BRFSS). *Soz Präventivmed* 2001;46:S3–S42.

2003 Behavioral Risk Factor Surveillance System

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FIGURE 1. The 36 states and five geographic regions included in the Indian Health Service administrative areas

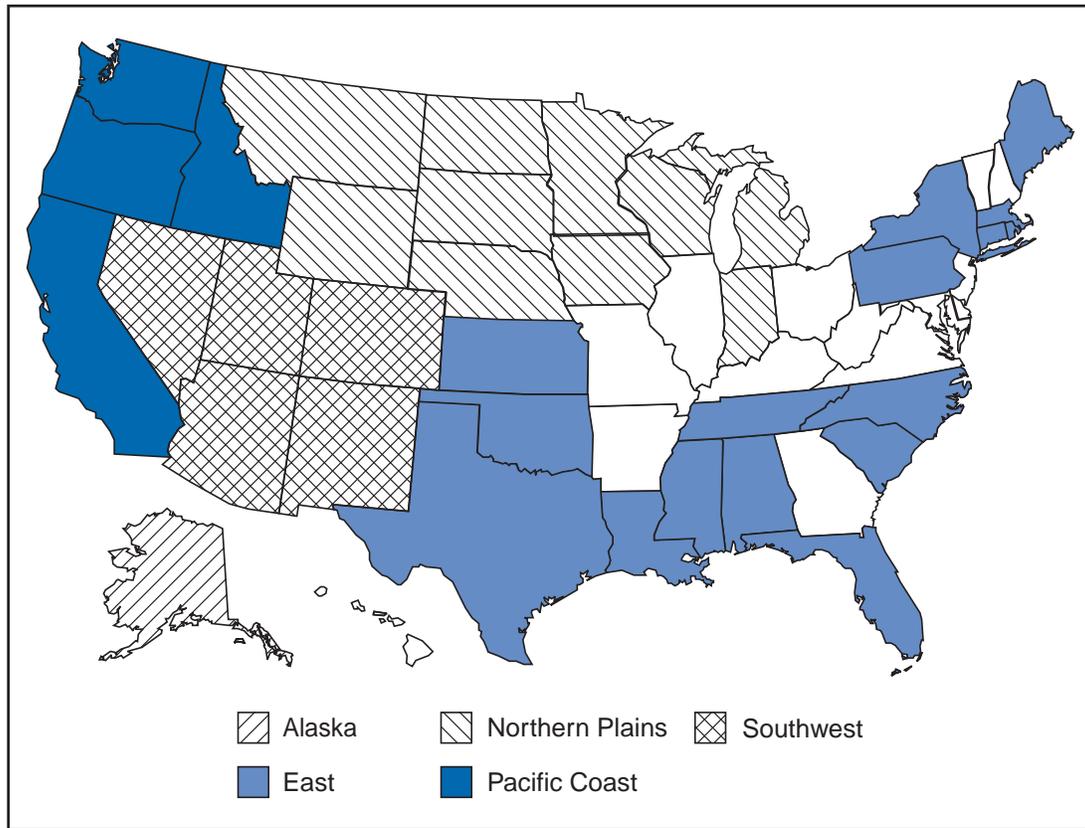
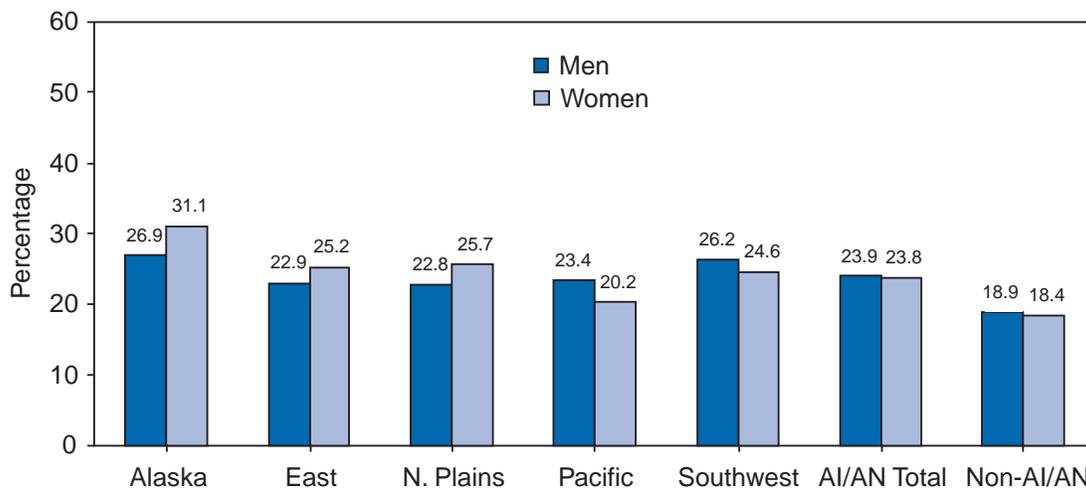
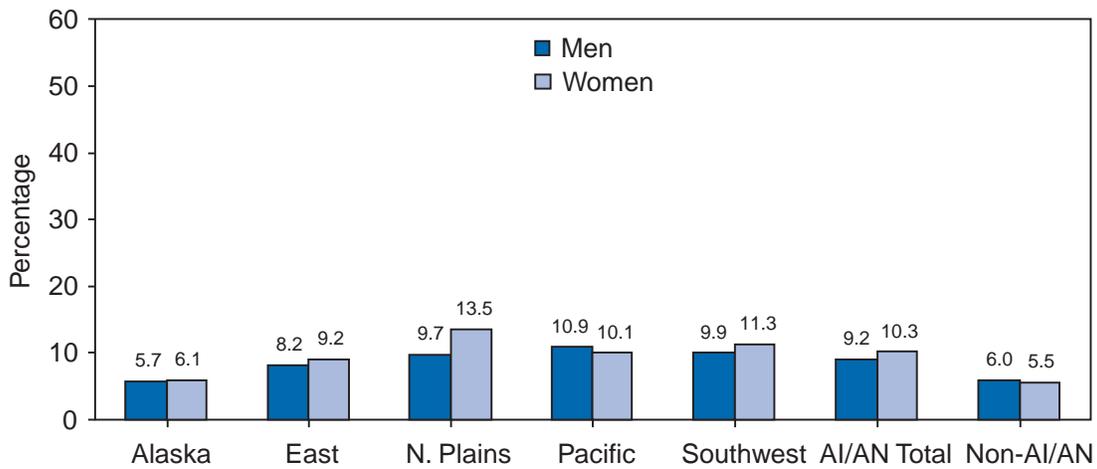


FIGURE 2. Percentage* of American Indian and Alaska Native (AI/AN) respondents who reported being obese,† 1997–2000



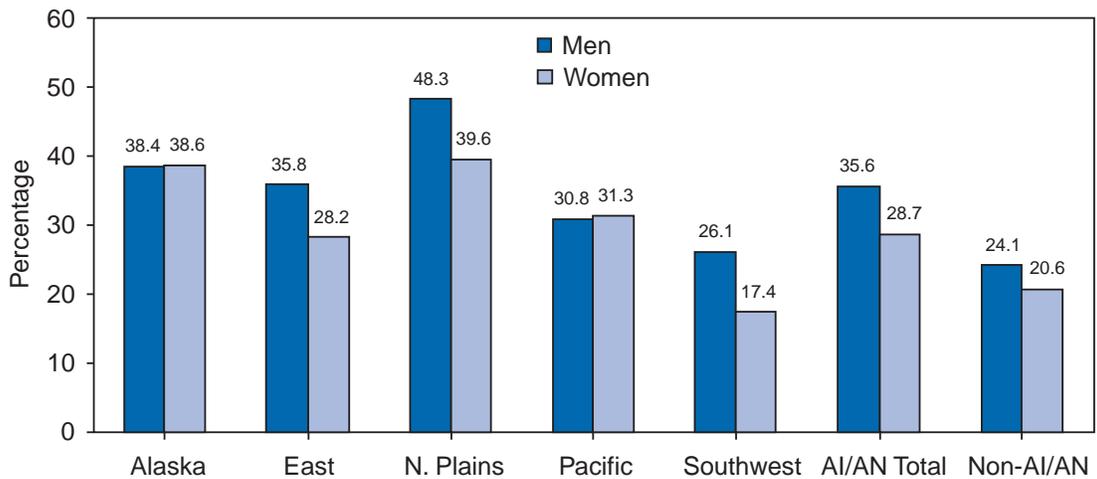
* See Table 2 for 95% confidence intervals.
 † Body mass index ≥ 30.0 kg/m².

FIGURE 3. Percentage* of American Indian and Alaska Natives (AI/ANs) who reported ever having been told by a health professional that they had diabetes, 1997–2000



* See Table 3 for 95% confidence intervals.

FIGURE 4. Percentage* of American Indian and Alaska Native (AI/AN) respondents who reported cigarette smoking,† 1997–2000



* See Table 4 for 95% confidence intervals.

† Includes persons who reported having ever smoked ≥ 100 cigarettes and who currently smoke.

TABLE 1. Percentage of American Indians and Alaska Natives (AI/ANs) who reported “fair” or “poor” health status, by sex and region — Behavioral Risk Factor Surveillance System, 1997–2000

	Both sexes			Men			Women		
	%* [†]	(95% CI) [‡]	No.	%	(95% CI)	No.	%	(95% CI)	No.
Total non-AI/AN (36 States)	14.6	(14.4, 14.7)	424,621	14.0	(13.7, 14.2)	175,580	15.1	(14.8, 15.3)	249,041
Total AI/AN (36 States)	23.8	(21.7, 25.9)	7,797	23.7	(20.5, 26.9)	3,376	23.9	(21.3, 26.4)	4,421
Alaska	20.7	(17.7, 23.8)	1,475	19.7	(15.5, 23.8)	653	21.4	(17.0, 25.7)	822
East	25.6	(22.4, 28.7)	1,897	24.0	(19.2, 28.9)	796	26.9	(23.0, 30.7)	1,101
Northern Plains	24.1	(20.5, 27.6)	2,076	23.8	(18.7, 28.9)	883	25.4	(20.6, 30.3)	1,193
Pacific Coast	21.8	(16.3, 27.3)	907	24.9	(16.7, 33.1)	406	18.2	(11.5, 24.9)	501
Southwest	21.9	(18.0, 25.7)	1,442	20.0	(15.2, 24.9)	638	23.2	(17.8, 28.6)	804

* Weighted and standardized to the 2000 U.S. projected population.

† Confidence interval.

TABLE 2. Percentage of American Indians and Alaska Natives (AI/ANs) who were obese,* by sex and region — Behavioral Risk Factor Surveillance System, 1997–2000

	Both sexes			Men			Women		
	% [†]	(95% CI) [‡]	No.	%	(95% CI)	No.	%	(95% CI)	No.
Total non-AI/AN (36 States)	18.7	(18.5, 18.9)	409,413	18.9	(18.6, 19.2)	173,820	18.4	(18.2, 18.7)	235,593
Total AI/AN (36 States)	23.9	(21.9, 25.9)	7,556	23.9	(20.8, 27.1)	3,339	23.8	(21.2, 26.4)	4,217
Alaska	29.0	(25.6, 32.4)	1,423	26.9	(22.2, 31.6)	644	31.1	(26.2, 36.0)	779
East	23.9	(20.9, 26.9)	1,832	22.9	(18.3, 27.6)	784	25.2	(21.4, 29.0)	1,048
Northern Plains	24.2	(20.8, 27.5)	2,019	22.8	(18.0, 27.5)	879	25.7	(21.2, 30.2)	1,140
Pacific Coast	21.6	(16.5, 26.7)	880	23.4	(16.1, 30.6)	400	20.2	(13.1, 27.4)	480
Southwest	26.4	(21.3, 31.5)	1,402	26.2	(20.0, 32.3)	632	24.6	(18.9, 30.4)	770

* Body mass index ≥ 30.0 kg/m².

† Weighted and standardized to the 2000 U.S. projected population.

‡ Confidence interval.

TABLE 3. Percentage of American Indians and Alaska Natives (AI/ANs) who reported ever having been told by a health professional that they had diabetes, by sex and region — Behavioral Risk Factor Surveillance System, 1997–2000

	Both sexes			Men			Women		
	%* [†]	(95% CI) [‡]	No.	%	(95% CI)	No.	%	(95% CI)	No.
Total non-AI/AN (36 States)	5.7	(5.6, 5.8)	424,989	6.0	(5.8, 6.2)	175,631	5.5	(5.3, 5.6)	249,358
Total AI/AN (36 States)	9.7	(8.3, 11.1)	7,808	9.2	(7.1, 11.4)	3,379	10.3	(8.4, 12.2)	4,429
Alaska	5.8	(3.6, 8.0)	1,479	5.7	(3.1, 8.2)	655	6.1	(2.7, 9.5)	824
East	8.6	(6.6, 10.6)	1,902	8.2	(5.3, 11.0)	797	9.2	(6.4, 12.0)	1,105
Northern Plains	11.7	(9.2, 14.1)	2,073	9.7	(6.3, 13.2)	881	13.5	(9.9, 17.2)	1,192
Pacific Coast	10.6	(6.3, 15.0)	910	10.9	(4.8, 16.9)	408	10.1	(4.2, 16.0)	502
Southwest	10.8	(7.9, 13.7)	1,444	9.9	(6.1, 13.6)	638	11.3	(7.2, 15.3)	806

* Weighted and standardized to the 2000 U.S. projected population.

† Confidence interval.

TABLE 4. Percentage of American Indians and Alaska Natives (AI/ANs) who reported cigarette smoking,* by sex and region — Behavioral Risk Factor Surveillance System, 1997–2000

	Both sexes			Men			Women		
	% [†]	(95% CI) [‡]	No.	%	(95% CI)	No.	%	(95% CI)	No.
Total non-AI/AN (36 States)	22.3	(22.1, 22.5)	424,436	24.1	(23.7, 24.4)	175,459	20.6	(20.3, 20.8)	248,977
Total AI/AN (36 States)	32.2	(29.9, 34.4)	7,790	35.6	(32.0, 39.2)	3,377	28.7	(25.9, 31.5)	4,413
Alaska	39.0	(35.3, 42.6)	1,470	38.4	(33.8, 43.0)	652	38.6	(33.3, 43.9)	818
East	31.9	(28.5, 35.4)	1,898	35.8	(30.2, 41.4)	796	28.2	(24.4, 32.0)	1,102
Northern Plains	44.1	(40.2, 48.1)	2,070	48.3	(42.4, 54.2)	883	39.6	(34.6, 44.6)	1,187
Pacific Coast	30.9	(25.1, 36.7)	909	30.8	(22.8, 38.8)	408	31.3	(23.1, 39.6)	501
Southwest	21.2	(17.8, 24.6)	1,443	26.1	(20.5, 31.6)	638	17.4	(13.3, 21.6)	805

* Includes persons who reported having ever smoked ≥ 100 cigarettes and who currently smoke.

† Weighted and standardized to the 2000 U.S. projected population.

‡ Confidence interval.

TABLE 5. Percentage of American Indians and Alaska Natives (AI/ANs) who reported no leisure-time physical activity,* by sex and region — Behavioral Risk Factor Surveillance System, 1998 and 2000

	Both sexes			Men			Women		
	%†	(95% CI‡§)	No.	%	(95% CI)	No.	%	(95% CI)	No.
Total non-AI/AN (36 States)	27.5	(27.2, 27.8)	225,487	25.4	(24.9, 25.9)	92,640	29.4	(29.0, 29.8)	132,847
Total AI/AN (36 States)	32.5	(29.5, 35.5)	4,167	33.6	(28.9, 38.2)	1,778	31.8	(28.2, 35.5)	2,389
Alaska	30.7	(26.1, 35.4)	748	33.0	(26.2, 39.8)	332	28.6	(22.6, 34.7)	416
East	36.0	(31.5, 40.5)	1,064	36.8	(29.8, 43.7)	439	35.6	(30.2, 41.0)	625
Northern Plains	28.8	(23.6, 33.9)	1,162	24.5	(17.5, 31.6)	488	33.4	(26.0, 40.7)	674
Pacific Coast	30.8	(21.5, 40.1)	416	38.5	(26.2, 50.7)	175	22.4	(12.7, 32.2)	241
Southwest	30.3	(24.2, 36.4)	777	27.8	(20.4, 35.2)	344	33.5	(25.0, 41.9)	433

* No exercise, recreation, or physical activity (other than regular job duties) during the preceding month.

† Weighted and standardized to the 2000 U.S. projected population.

§ Confidence interval.

TABLE 6. Percentage of American Indians and Alaska Natives (AI/ANs) who reported binge drinking,* by sex and region — Behavioral Risk Factor Surveillance System, 1997 and 1999

	Both sexes			Men			Women		
	%†	(95% CI‡§)	No.	%	(95% CI)	No.	%	(95% CI)	No.
Total non-AI/AN (36 States)	14.6	(14.4, 14.9)	197,891	22.0	(21.6, 22.5)	82,056	7.4	(7.2, 7.7)	115,835
Total AI/AN (36 States)	16.7	(14.2, 19.2)	3,595	23.9	(19.8, 27.9)	1,571	8.8	(6.2, 11.4)	2,024
Alaska	20.4	(16.4, 24.4)	706	30.7	(23.9, 37.4)	306	11.1	(6.5, 15.6)	400
East	13.4	(10.0, 16.9)	831	19.0	(13.5, 24.4)	354	6.4	(3.8, 9.0)	477
Northern Plains	18.7	(14.4, 22.9)	903	24.9	(18.5, 31.4)	387	10.4	(6.7, 14.1)	516
Pacific Coast	20.6	(14.1, 27.2)	489	27.2	(18.4, 36.0)	231	11.2	(4.6, 17.8)	258
Southwest	19.2	(13.3, 25.0)	666	30.5	(21.6, 39.5)	293	9.3	(2.8, 15.7)	373

* Consumption of ≥5 alcoholic drinks on at least one occasion during the preceding month.

† Weighted and standardized to the 2000 U.S. projected population.

§ Confidence interval.

TABLE 7. Percentage of American Indians and Alaska Natives (AI/ANs) who reported drinking and driving,* by sex and region — Behavioral Risk Factor Surveillance System, 1997 and 1999

	Both sexes			Men			Women		
	%†	(95% CI‡§)	No.	%	(95% CI)	No.	%	(95% CI)	No.
Total non-AI/AN (36 States)	2.4	(2.3, 2.5)	198,984	3.7	(3.5, 3.9)	82,724	1.1	(1.0, 1.2)	116,260
Total AI/AN (36 States)	2.6	(1.8, 3.5)	3,629	4.0	(2.5, 5.5)	1,591	1.1	(0.5, 1.7)	2,038
Alaska	1.1	(0.4, 1.9)	727	1.8	(0.4, 3.2)	318	0.5	(0, 1.0)	409
East	2.3	(1.1, 3.5)	838	3.2	(1.2, 5.3)	357	1.2	(0.3, 2.0)	481
Northern Plains	3.9	(2.1, 5.6)	907	6.2	(2.8, 9.6)	391	1.2	(0.2, 2.2)	516
Pacific Coast	1.9	(0.1, 3.7)	490	2.8	(0, 6.1)	231	1.1	(0, 2.3)	259
Southwest	4.7	(1.5, 7.8)	667	9.5	(2.4, 16.5)	294	1.2	(0, 3.0)	373

* At least once in the preceding month, operated a motor vehicle after drinking too much alcohol.

† Weighted and standardized to the 2000 U.S. projected population.

§ Confidence interval.

TABLE 8. Percentage of American Indian and Alaska Native (AI/AN) women with an intact uterine cervix who reported not having a Papanicolaou (Pap) test,* by sex and region — Behavioral Risk Factor Surveillance System, 1997–2000

	Never had a Pap test			Last Pap test >3 years ago†		
	%§	(95% CI¶)	No.	%	(95% CI)	No.
Total non-AI/AN (36 States)	6.1	(5.9, 6.3)	162,540	15.3	(15.0, 15.6)	161,513
Total AI/AN (36 States)	10.3	(7.6, 13.0)	3,136	21.3	(17.9, 24.8)	3,118
Alaska	4.9	(0.6, 9.1)	684	8.1	(3.7, 12.6)	677
East	12.3	(8.3, 16.3)	830	25.4	(20.4, 30.4)	823
Northern Plains	7.1	(3.7, 10.4)	961	16.0	(11.3, 20.6)	958
Southwest	7.8	(5.0, 10.6)	661	14.0	(9.9, 18.2)	660

* Data for the Pacific Coast region are excluded because of different wording by California of the question regarding the Pap test.

† Includes women who never had a pap test.

§ Weighted and standardized to the 2000 U.S. projected population.

¶ Confidence interval.

TABLE 9. Percentage of American Indians and Alaska Natives (AI/ANs) aged 18–64 years who reported medium or high perceived risk of human immunodeficiency virus (HIV) infection, by sex and region — Behavioral Risk Factor Surveillance System, 1997–2000

	Both sexes			Men			Women		
	% [†]	(95% CI) [§]	No.	%	(95% CI)	No.	%	(95% CI)	No.
Total non-AI/AN (36 States)	6.7	(6.5, 6.8)	287,290	7.3	(7.1, 7.6)	122,543	6.0	(5.8, 6.2)	164,747
Total AI/AN (36 States)	9.2	(7.8, 10.7)	5,971	10.1	(8.0, 12.3)	2,609	8.1	(6.3, 9.9)	3,362
Alaska	8.0	(6.1, 10.0)	1,274	10.0	(6.6, 13.5)	568	6.1	(4.2, 7.9)	706
East	9.0	(6.9, 11.0)	1,595	9.4	(6.5, 12.4)	684	8.2	(5.6, 10.8)	911
Northern Plains	11.0	(7.6, 14.4)	1,802	13.5	(8.4, 18.6)	771	7.7	(4.1, 11.2)	1,031
Southwest	8.3	(6.2, 10.3)	1,300	8.4	(5.4, 11.3)	586	8.1	(5.2, 11.1)	714

* Data for the Pacific Coast region are excluded because of a more restrictive age range (18–44 years) by California before the year 2000 for the questions regarding HIV.

[†] Weighted and standardized to the 2000 U.S. projected population.

[§] Confidence interval.

TABLE 10. Percentage of American Indians and Alaska Natives (AI/ANs) aged 18–64 years who reported never having been tested for human immunodeficiency virus (HIV) infection, excluding blood donations,* by sex and region — Behavioral Risk Factor Surveillance System, 1998–2000

	Both sexes			Men			Women		
	% [†]	(95% CI) [§]	No.	%	(95% CI)	No.	%	(95% CI)	No.
Total non-AI/AN (36 States)	55.8	(55.5, 56.1)	224,931	56.5	(56.0, 57.0)	95,483	55.0	(54.5, 55.4)	129,448
Total AI/AN (36 States)	50.5	(47.6, 53.4)	4,854	50.9	(46.2, 55.6)	2,121	49.6	(46.3, 53.0)	2,733
Alaska	48.4	(44.2, 52.5)	1,025	50.6	(44.8, 56.4)	466	45.3	(39.7, 50.9)	559
East	49.9	(45.7, 54.2)	1,330	50.4	(43.4, 57.4)	566	49.3	(44.4, 54.1)	764
Northern Plains	46.3	(41.1, 51.4)	1,442	47.7	(40.2, 55.2)	612	44.1	(37.5, 50.7)	830
Southwest	58.1	(53.3, 62.8)	1,057	55.9	(49.2, 62.6)	477	59.2	(53.6, 64.7)	580

* Data for the Pacific Coast region are excluded because of a more restrictive age range (18–44 years) by California before the year 2000 for the questions regarding HIV.

[†] Weighted and standardized to the 2000 U.S. projected population.

[§] Confidence interval.

TABLE 11. Prevalence of selected risk factors for American Indians and Alaska Natives (AI/ANs) collected in periods 1 (1993–1996) and 2 (1997–2000) — Behavioral Risk Factor Surveillance System

	Period 1		Period 2	
	%* [†]	(95% CI) [†]	%	(95% CI)
	1994–1996		1997–2000	
Obesity [§]	22.8	(20.0, 25.7)	23.9	(21.9, 25.9)
Current cigarette smoking [¶]	30.2	(27.5, 33.0)	32.2	(29.9, 34.4)
Awareness of having diabetes**	9.8	(7.3, 12.2)	9.7	(8.3, 11.1)
	1994 and 1996		1998 and 2000	
No leisure-time physical activity ^{††}	31.4	(27.8, 35.0)	32.5	(29.5, 35.5)
	1993 and 1995		1997 and 1999	
Binge drinking ^{§§}	16.3	(13.9, 18.8)	16.7	(14.2, 19.2)
Drinking and driving ^{¶¶}	2.8	(1.4, 4.1)	2.6	(1.8, 3.5)

* Weighted and standardized to the 2000 U.S. projected population.

[†] Confidence interval.

[§] Body mass index ≥ 30.0 kg/m².

[¶] Includes persons who ever smoked ≥ 100 cigarettes and who currently smoke.

** Ever having been told by a health professional that they had diabetes.

^{††} No exercise, recreation, or physical activity, other than regular job duties, during the preceding month.

^{§§} Consumption of ≥ 5 alcoholic drinks on at least one occasion during the preceding month.

^{¶¶} At least once in the preceding month, operated a motor vehicle after drinking too much alcohol.

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