BEHAVIORAL RISKS REPORTED BY AMERICAN INDIAN ADULTS IN NORTH DAKOTA 1996-2002

Prepared for the North Dakota Department of Health by the Department of Community Medicine, School of Medicine and Health Sciences, University of North Dakota

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REPORT PREPARATION

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KEY FINDINGS

From 1996 to 2002, three of four deaths in North Dakota adults were the result of chronic disease (55% of American Indian deaths and 69% of white deaths) or injury (17% of American Indian deaths and 5% of white deaths). These deaths are related to behavioral risks. If behavioral risk patterns were modified, many premature deaths could be prevented.

The prevalence of some conditions and behavioral risks is markedly higher in American Indian adults than in white adults:

- Diabetes (10%, American Indian; 4%, white)
- Obesity (33%, American Indian; 22% white)
- Smoking (46%, American Indian; 21% white)

For most conditions and behavioral risks reviewed in this report, however, the prevalence does not differ significantly for American Indian and white adults. For example:

- High blood pressure (28%, American Indian; 25%, white)
- Asthma (12%, American Indian; 10%, white)
- Binge drinking (29%, American Indian; 22%, white)
- Overweight (38%, American Indian; 38%, white)
- Sedentary lifestyle (29%, American Indian; 22%, white)

Strikingly, American Indian adults were more likely than white adults to report poor health status and lack of health insurance coverage:

- Poor or fair health status (21%, American Indian; 12%, white)
- No health insurance coverage (33%, American Indian; 10%, white)
- No personal doctor (34%, American Indian; 24%, white)

Many prevention opportunities exist to improve the health of American Indians in North Dakota.

INTRODUCTION

This report will document important behavioral risk characteristics and selected health status measures for American Indians adults in North Dakota. The report was prepared in response to a request from the North Dakota Department of Health, and is intended for use by state and local public health personnel, particularly those working with tribal health departments, as well as by tribal leaders and others involved with improving the health of American Indians.

In North Dakota, the leading causes of death for American Indians and for whites are essentially the same (see Section 3). Chronic diseases cause at least 69 percent of deaths in whites and 55 percent in American Indians, while injuries cause 5 percent of deaths in whites and 17 percent of deaths in American Indians. Thus, three of every four deaths for each race are due to chronic disease and injury. While the burden of some specific chronic diseases and injuries differs dramatically between American Indians and whites, the risk characteristics (i.e., actual causes of death), (1) that underlie the burden are the same. In order to develop effective prevention programs, public health and other organizations need to address these risks.

Approximately 5 percent of the North Dakota population is American Indian (31,300 in the 2000 Census). (2) The American Indian population differs from the majority white population with regard to age, geographic distribution and socioeconomic conditions, as well as certain behavioral risks. Compared to whites in North Dakota, American Indians are younger (median age: 22.6 years, American Indian; 37.4 years, white); less urban (live in counties other than Burleigh, Cass, Grand Forks: 83.6%, American Indians; 58.8%, whites); and poorer (household income less than $25,000: 55.1%, American Indians; 34.2%, whites). These characteristics also effect disease and risk patterns; therefore, some data presented in this report will be displayed for persons with these characteristics.

A behavioral risk profile for American Indians in the northern plains states has been published. (3) The findings presented in this report will include selected comparisons to this profile. However, we are unaware of previous descriptions of behavioral risk profiles specific to American Indians in North Dakota. Thus, we will not be able to describe whether or not the risk characteristics described here have changed from earlier years in North Dakota. National health objectives for 2010 have been established for several of the topics described in this report. These objectives are listed in Appendix A.

The purpose of this report is to highlight the behavioral risk characteristics of American Indian adults in North Dakota in order to support intervention and evaluation efforts to improve the health of American Indians.

METHOD

Data for North Dakota presented in this report include the following for the years 1996-2002: Behavioral Risk Factor Surveillance System (BRFSS) data, and death record data.

BRFSS

The methods by which BRFSS data are collected have been published. (4) The data are collected monthly through telephone interviews of adults (aged ≥ 18 years) using a random-digit dial method. Identification of American Indians is based on response to the question "What is your race?" During the period 1996-2002 in North Dakota, 438 BRFSS respondents identified themselves as American Indians; 14,127 as whites.

The BRFSS includes a core set of questions that is asked each year and a rotating set asked in selected years. The questions used for this report are described at the beginning of each section. The years in which the questions were asked also are indicated. The BRFSS interviews in North Dakota are conducted in English, but not in American Indian languages. Therefore, some potential American Indian respondents might have been missed due to a language barrier.

During the time period 1996-2002, the annual number of American Indian respondents ranged from 41 to 99 (median = 57). Because annual estimates of behavioral risks for American Indians would be unstable, we aggregated data for the seven-year period for use in this report for all the years during the seven-year period in which each question was asked.

After the data are collected for North Dakota, they are sent to the U.S. Centers for Disease Control and Prevention (CDC). At CDC, the data are weighted to reflect each respondent's probability of selection in comparison to the age-and-sex-specific population of North Dakota. The weighted data set is then returned to North Dakota. Analyses were performed using SAS software V8.02 (SAS Institute, Cary, NC 25513). A specific SAS procedure (PROC survey means) was used to compute weighted frequencies and 95 percent confidence intervals by taking into account the complex survey design.

Data were aggregated into geographic categories in two ways. (Appendix B) One way used aggregates of counties to distinguish urban from rural. The other way used aggregates of counties to allow comparison of persons living in northwest and southeast counties. Respondents were placed in these categories by the county of residence that each reported.

In most instances, the behavioral risk comparisons are presented as aggregate comparisons; i.e., all American Indian adults compared to all white adults. In some instances, when the number of American Indians responding affirmatively to a particular

question was greater than 50, the race comparisons are stratified by age, sex and other characteristics. (Appendix C)

Death records

North Dakota death records were used to describe the leading causes of death for American Indians and whites from 1996 to 2002. Race codes on the death records were used to identify American Indian (N =1,404) and white (N =39,914) deaths during this period. The ICD codes used to aggregate the deaths into chronic disease and injury categories are listed in Appendix D.

FINDINGS

1. The Respondents

During the time period 1996 to 2002, 438 (3%) BRFSS respondents identified themselves as American Indian and 14,127 as white. Of the North Dakota adults (persons age 20 or older) identified in the 2000 census, 4 percent were American Indian. (2) The American Indian BRFSS adult respondents were systematically younger, less urban and poorer than the white adult respondents (Table 1).

Table 1. American Indian and white adult respondents to BRFSS in North Dakota, 1996-2002

Population Subgroup	Am Indians*	Whites*
TOTAL	438	14127
SEX		
Men	165 (38)	6048 (43)
Women	273 (62)	8079 (57)
AGE (years)		
18-44	280 (64)	6619 (47)
45-64	114 (26)	4217 (30)
65+	40 (9)	3220 (23)
Missing	4 (1)	71 (<1)
EDUCATION		
High school or less	206 (47)	5947 (42)
Some college	169 (39)	4581 (32)
College	63 (14)	3577 (25)
Missing	-	22 (<1)
INCOME (dollars)		
Less than $25,000	245 (56)	4668 (33)
25,000 or more	148 (34)	7952 (56)
Missing	45 (10)	1507 (11)
EMPLOYMENT		
Employed	263 (60)	9163 (65)
Not employed	38 (9)	272 (2)
Student	63 (14)	1390 (10)
Retired	74 (17)	3286 (23)
Missing	-	16 (<1)
GEOGRAPHIC AREAS		
Northwest	169 (39)	3098 (22)
Southeast	140 (32)	7981 (57)
Other/missing	129 (30)	3048 (22)
REGION		
Urban	98 (22)	6556 (46)
Rural	211 (48)	4523 (32)
Other/missing	129 (30)	3048 (22)

* Percentage totals in columns may not equal 100 percent due to rounding.

2. General health status and health insurance coverage

BRFSS questions used to develop this section [Years question was asked]

- (General health status) Would you say that in general your health is: (1) Excellent, (2) Very good, (3) Good, (4) Fair, or (5) Poor, (7) Don't know/Not sure [1996-2002]

- (Poor mental health) Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good? (1) _ _ number of days, (2) none, (7) Don't know/not sure [1996-2001]

- (Health insurance) Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare? (1) Yes, (2) No, (7) Don't know/not sure [1996-2002]

- (Personal doctor) Do you have one person you think of as your personal doctor or healthcare provider? (1) Yes, only one, (2) More than one, (3) No, (7) Don't know/Not sure [2001-2002]

Why are these questions important?
Persons who perceive their own health status as fair or poor are more likely to experience adverse health events, including death, than are persons who perceive their own health status as good or excellent. (5) Persons with health insurance coverage and with a personal physician are more likely to receive health care than are persons without health insurance or without a personal physician. (6)

What do the ND BRFSS data indicate?
American Indian adults were more likely (see NOTE on page 6) than white adults to perceive their health status as fair or poor, report 14 or more poor mental health days in the past month, and not to have health insurance. In addition, American Indians were less likely than whites to report having a personal doctor. (Figure 1, Table 2). Additional information about these factors in subsets of the population (such as sex, age and income groups) is presented in Appendix C.

STATISTICAL SIGNIFICANCE

Some observed differences may be due to chance variation, while other differences can indicate that important underlying issues need to be investigated further. Statistical testing is used to determine the probability that observed differences are due to chance alone.

In this report, the words "more likely" indicate that an observed difference is statistically significant. Readers also will be able to identify statistically significant differences between American Indian and white risk characteristics by noting 95 percent confidence intervals presented on tables throughout the report. If the 95 percent confidence interval for an estimate for American Indians does not overlap the 95 percent confidence interval for an estimate for whites, then the difference between the two race estimates is statistically significant.

For example, Table 2 shows that the percentage of American Indians reporting fair or poor health status (20.7%) differs from the percentage of whites reporting this characteristic (12.3%). This difference is statistically significant because the 95 percent confidence interval for American Indians (16.5% to 24.9%) does not include any percentage within the 95 percent confidence interval for whites (11.7 % to 12.8%); i.e., the 95 percent confidence intervals do

Figure 1: General health status, health insurance coverage and having a personal doctor: American Indian and white adults, North Dakota, 1996-2002

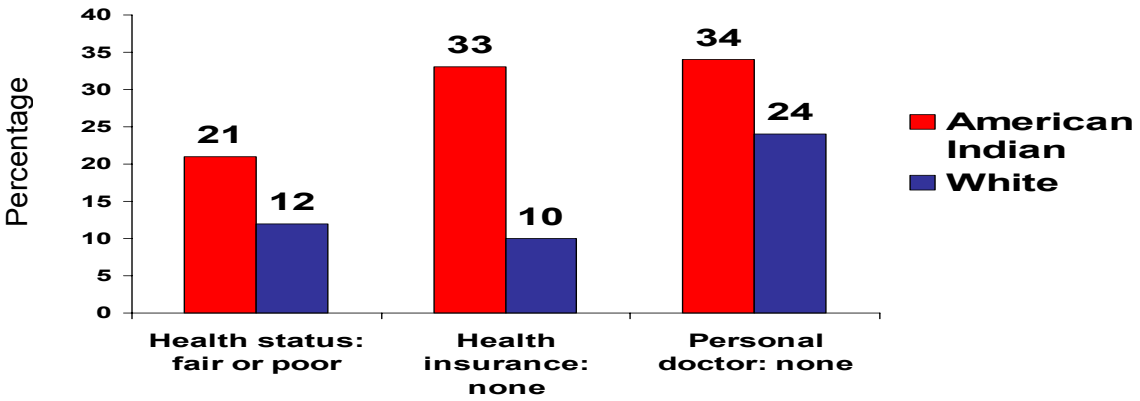


Table 2. General health status, health insurance coverage, and having a personal doctor: American Indian and white adults, North Dakota, 1996-2002

	Percentage (95% conf. interval)	
CHARACTERISTICS	AMERICAN INDIAN	WHITE
Health status: fair or poor	20.7 (16.5-24.9)	12.3 (11.7-12.8)
Poor mental health days: 14+	10.5 (7.2-13.9)	6.2 (5.7-6.6)
Health insurance: none	32.9 (27.7-38.1)	10.1 (9.6-10.7)
Personal doctor: none	33.7 (25.4-42.0)	23.5 (22.1-24.8)

3. Chronic disease

BRFSS questions used to develop this section [Years question was asked]

- (Diabetes) Have you ever been told by a doctor that you have diabetes? (1) Yes, (2) Yes, but female told only during pregnancy, (3) No, (7) Don't know/Not sure [1996-2002]
- (High blood pressure) Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure? (1) Yes, (2) No, (7) Don't know/Not sure [1997-1999, 2001]
- (High cholesterol) [Among respondents who have ever had their blood cholesterol checked] Have you ever been told by a doctor, nurse, or other health professional that your blood cholesterol is high? (1) Yes, (2) No, (7) Don't know/Not sure [1997-1999, 2001-2002]
- (Asthma)Have you ever been told by a doctor, nurse, or other health professional that you had asthma? (1) Yes, (2) No, (7) Don't know/Not sure [2000-2002]
- (Arthritis) Have you ever been told by a doctor that you have arthritis? (1) Yes, (2) No, (7) Don't know/Not sure [2001-2002]

Why are these questions important?
Chronic disease (primarily heart disease, cancer, stroke and diabetes) accounts for at least 55 percent of American Indian and 69 percent of white deaths. (Figure 2, Table 3). Chronic diseases, including asthma and arthritis, also result in considerable disability and illness that require health-care services.

What do the ND BRFSS data indicate?
While the prevalence of high blood pressure, high cholesterol, asthma and arthritis did not differ significantly between American Indians and whites, American Indians were twice as likely to have diabetes compared to whites. (Figure 3, Table 4) Additional information about the American Indian and white populations is presented in Appendix C.

Figure 2: Causes of death for American Indians and whites, North Dakota, 1996-2002

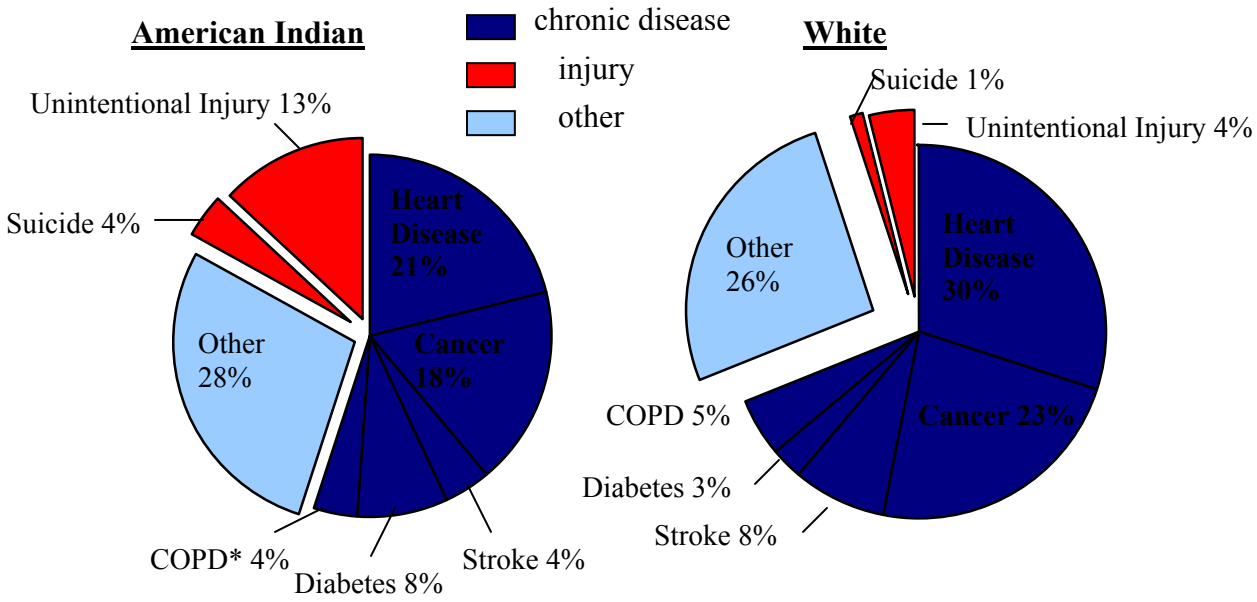


Table 3: Causes of death† for American Indians and whites, North Dakota, 1996-2002

	AMERICAN INDIAN			WHITE		
CAUSE OF DEATH	Number	Percent	Rate‡/1000	Number	Percent	Rate/1000
All	1404	100	98	39,914	100	67
(Chronic Disease)						
Heart disease	294	21	25	11,962	30	20
Cancer	251	18	20	9,157	23	15
Stroke	49	4	4	3,290	8	6
Diabetes	112	8	9	1,243	3	2
COPD*	59	4	6	1,940	5	3
(Injury)						
Unintentional	188	13	7	1,546	4	3
Intentional	55	4	2	470	1	1
(other)	396	28	25	10,306	26	17

* Chronic Obstructive Pulmonary Disease

†See Appendix D

‡ Age-adjusted to 2000 U.S. Standard Population

Figure 3. The prevalence of chronic diseases in American Indian and white adults, North Dakota, 1996-2002

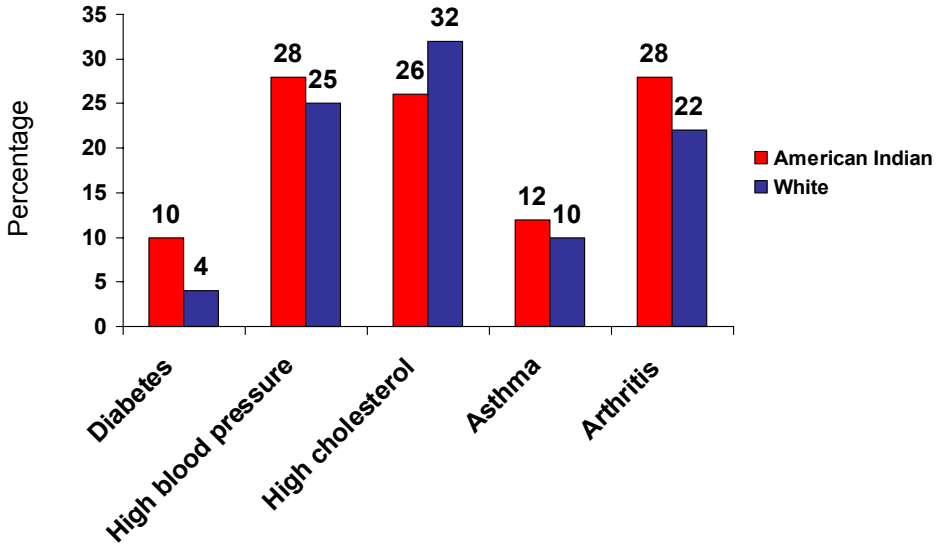


Table 4. The prevalence of chronic diseases in American Indian and white adults, North Dakota, 1996-2002

Percentage (95% conf. interval)

CHRONIC DISEASE	AMERICAN INDIAN	WHITE
Diabetes	10.4 (7.4-13.4)	4.4 (4.0-4.7)
High blood pressure	27.5 (21.1-33.9)	25.0 (24.0-26.1)
Cholesterol: ever tested	64.5 (58.6-70.4)	71.4 (70.4-72.4)
High cholesterol	25.6 (19.2-31.9)	31.9 (30.8-33.1)
Ever had heart attack	6.7 (1.0-12.3)	3.7 (3.1-4.3)
Ever had stroke	2.7 (0.0-6.4)	2.1 (1.7-2.6)
Asthma	11.9 (6.9-16.9)	9.5 (8.7-10.3)
Arthritis	28.1 (17.8-38.5)	21.8 (20.5-23.1)

4. Risk characteristics

BRFSS questions used to develop this section [Years question was asked]

- (Current smoking) [Among respondents who had smoked at least 100 cigarettes in their lifetime] Do you now smoke cigarettes every day, some days, or not at all? (1) Every day, (2) Some days, (3) Not at all [1996-2002]

- (Binge drinking) [Among respondents who had at least one drink in the past 30 days] Considering all types of alcoholic beverages, how many times during the past 30 days did you have 5 or more drinks on an occasion? Number of times [2001-2002]

- (Heavy drinking) [Respondents who reported drinking more than two drinks (men) or more than one drink (women) each day.] On the days when you drank, about how many drinks did you drink on the average? Number of drinks [2001-2002]

- (Overweight/obesity) About how much do you weigh without shoes? _ _ _ Weight, and About how tall are you without shoes? _ /_ _ Height. [Weight and height are then used to calculate the body mass index (BMI). BMI 25-29 is overweight and BMI 30 or more is obese.] [1996-2002]

- (Minimum recommended level of physical activity) [Respondents who reported doing moderate physical activity for 30 or more minutes per day, five or more days per week; or vigorous physical activity for 20 or more minutes per day, three or more days per week during the past month.] Do you do moderate physical activity for at least 10 minutes at a time? How many days per week do you do these moderate activities for at least 10 minutes at a time? On days when you do moderate activities for at least 10 minutes at a time, how much time per day do you spend doing these activities? (repeat for vigorous) [1996, 1998, 2000-2001]

- (No leisure time physical activity) During the past month other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening or walking for exercise? (1) Yes, (2) No, (7) Don't know/Not sure [1996, 1998, 2000-2001]

Why are these questions important?
While chronic disease and injury can be used to account for most deaths for both American Indians and whites, the actual causes of death are risk characteristics that lead to the chronic diseases and injuries. (1) The dominant actual causes of death that burden American Indians with many premature deaths and many years of potential life lost are smoking, poor diet choices, too little physical activity and misuse of alcohol.

What do the ND BRFSS data indicate?
American Indian adults were much more likely to be current smokers than were white adults. (Figure 4) More than half of both American Indian and white adults who were current smokers had tried to quit smoking during the preceding year. However, among those who have ever smoked, the proportion no longer smoking was less for American Indians (34%) than for whites (55%). (Table 5) About one in four adults, both American Indian and white, reported binge drinking within the past 30 days. While the proportion of adults who were overweight did not differ between American Indians (38%) and whites (38%), the proportion of American Indian adults who were obese (33%) was strikingly higher than the proportion of white adults who were obese (22%). Unfortunately, only about half of American Indian and white adults reported achieving the minimum recommended level of physical activity, while one in four reported no leisure time physical activity. (Table 5)

In comparison to the prevalence of risks reported by American Indian adults in 10 northern plains states from 1997 to 2000 (3), the prevalence reported by American Indian adults in North Dakota was similar for current smoking, diabetes, no leisure time physical activity and fair or poor health status. (Table 6) While the difference was not statistically significant, American Indians in North Dakota reported a higher prevalence of binge drinking than did other American Indians in the northern plains. And notably, North Dakota American Indians were more likely to be obese than were other northern plains American Indians.

Figure 4. The prevalence of important risk characteristics in American Indian and white adults, North Dakota, 1996-2002

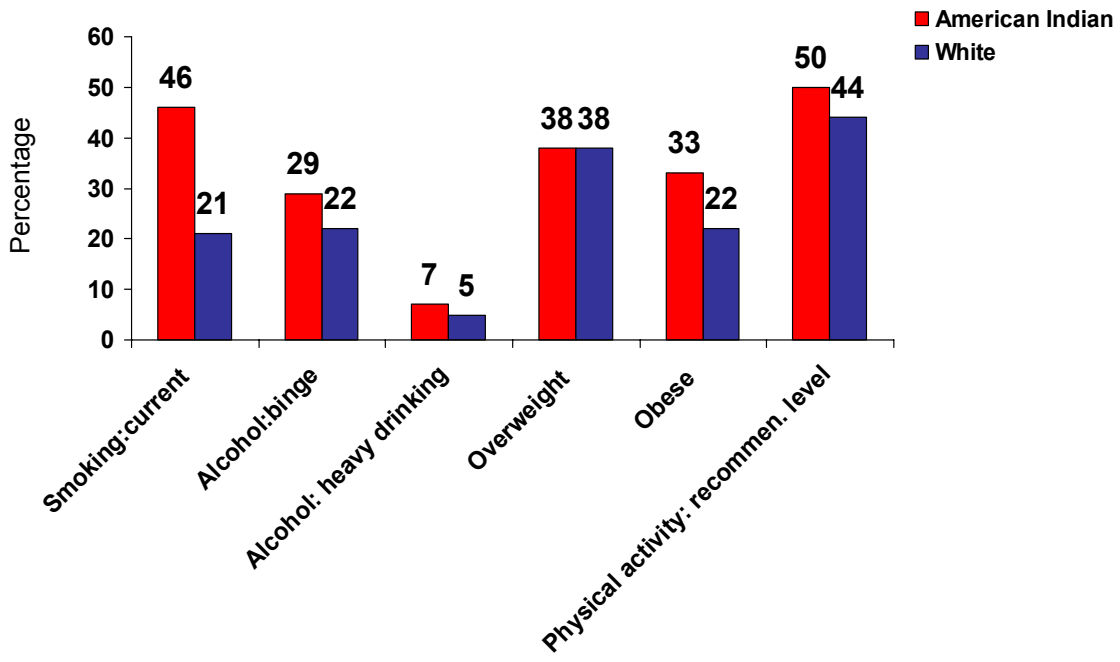


Table 5. Prevalence of important risk characteristics in American Indian and white adults, North Dakota, 1996-2002

Percentage (95% conf. interval)

RISK CHARACTERISTIC	AMERICAN INDIAN	WHITE
Smoking		
Current	45.7 (40.2-51.1)	21.2 (20.4-21.9)
Current, tried to quit in past year	58.6 (50.0-67.2)	51.1 (49.3-53.6)
Former	23.5 (18.9-28.0)	25.4 (24.6-26.2)
Quit ratio*	34%	55%
Alcohol use		
Binge	28.9 (20.2-37.6)	21.7 (20.4-23.0)
Heavy drinking	7.0 (1.4-12.6)	4.8 (4.1-4.5)
Overweight/obese		
Overweight	38.3 (33.1-43.5)	37.9 (36.9-38.8)
Obese	32.9 (27.8-38.1)	22.0 (21.3-22.8)
Both	71.2 (60.9-81.6)	59.9 (58.2-61.6)
Physical activity		
Recommended level	50.3 (41.3-59.3)	43.6 (42.1-45.1)
Sedentary	28.6 (20.4-36.8)	22.2 (20.9-23.4)

*Quit ratio: (former smokers)/(current smokers + former smokers)

Table 6. Prevalence of selected risks reported by American Indian adults in North Dakota (1996-2002) and in 10 northern plains states (1997-2000)

Percentage (95% conf. interval)

RISKS	NORTH DAKOTA	10 STATES *
Smoking: current	45.7 (40.2-51.1)	44.1 (40.2-48.1)
Diabetes: ever told	10.4 (7.4-13.4)	11.7 (9.2-14.1)
Health status: fair or poor	20.7 (16.5-24.9)	24.1 (20.5-27.6)
No leisure time physical activity	28.6 (20.4-36.8)	28.8 (23.5-33.9)
Alcohol use: binge	28.9 (20.2-37.6)	18.7 (14.4-22.9)
Obese	32.9 (27.8-38.1)	24.2 (20.8-27.5)

* IN, IA, MI, MN, MT, NE, ND, SD, WI, WY

5. **Use of prevention services**

BRFSS questions used to develop this section [Years question was asked]

- (Pneumococcal immunization) [For respondents age 65 or older] Have you ever had a pneumonia shot? This shot is usually given only once or twice in a person's lifetime and is different from the flu shot. It is also called the pneumococcal vaccine. (1) Yes, (2) No, (7) Don't know/Not sure [1997, 1999-2002]

- (Influenza immunization) [For respondents age 65 or older] During the past 12 months, have you had a flu shot? (1) Yes, (2) No, (7) Don't know/Not sure [1997, 1999-2002]

- (Mammogram) [For women respondents age 40 or older] A mammogram is an x-ray of each breast to look for breast cancer. Have you ever had a mammogram? (1) Yes, (2) No, (7) Don't know/Not sure [1996-2000, 2002]

  How long has it been since you had your last mammogram? (1) Within the past year, (2) Within the past 2 years (1 year but less than 2 years ago), (3) Within the past 3 years, (4) Within the past 5 years, (5) 5 or more years ago, (7) Don't know/Not sure [1996-2000, 2002]

- (Pap smear) [For women respondents] A pap smear is a test for cancer of the cervix. Have you ever had a pap smear? (1) Yes, (2) No, (7) Don't know/Not sure [1996-2000, 2002]

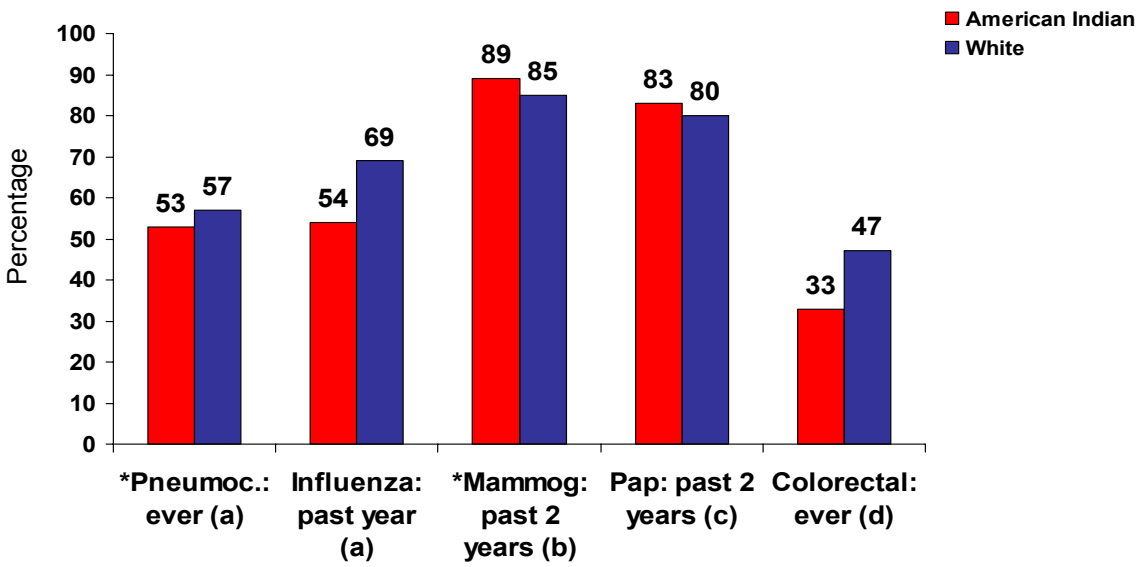
  How long has it been since you had your last pap smear? (1) Within the past year, (2) Within the past 2 years (1 year but less than 2 years ago), (3) Within the past 3 years, (4) Within the past 5 years, (5) 5 or more years ago, (7) Don't know/Not sure [1996-2000, 2002]

- (Colorectal cancer screening) [For respondents age 50 or older] Sigmoidoscopy and colonscopy are exams in which a tube is inserted in the rectum to view the bowel for signs of cancer or other health problems. Have you ever had either of these exams? (1) Yes, (2) No, (7) Don't know/Not sure [1997, 1999, 2001-2002]

Why are these questions important?
Use of immunizations and cancer screening tests can prevent disease and allow early treatment to avoid life-threatening complications. (7-9)

What do the ND BRFSS data indicate?
The results suggest that both immunizations and cancer screenings are received by a similar proportion of American Indians and whites. A smaller proportion of American Indians older than 50 reported ever having had colorectal cancer screening than did whites older than 50. However, this difference was not statistically significant. Because the 95 percent confidence intervals for the American Indian estimates are so broad, comparisons should be made with caution.

Figure 5. Use of prevention services by American Indian and white adults, North Dakota, 1996-2002



(a) age ≥ 65 years; (b) women, age ≥ 40 years; (c) women; (d) age ≥ 50 years

Table 7. Use of prevention services by American Indian and white adults, North Dakota, 1996-2002

	Percentage (95% conf. interval)	
PREVENTION SERVICE	AMERICAN INDIAN	WHITE
Immunization		
Pneumococcal (ever)(a)	53.1 (32.6-73.6)	57.2 (55.0-59.4)
Influenza (past year) (a)	54.2 (33.5-74.9)	68.9 (66.8-70.9)
Mammogram (past 2 years)(b)	89.2 (83.2-95.1)	84.5 (83.2-85.7)
Pap Smear (past 2 years)(c)	83.2(77.4-88.9)	79.6 (78.6-80.7)
Colorectal screen (ever)(d)	32.5 (19.3-45.6)	46.5 (44.8-48.3)

SUMMARY AND RECOMMENDATIONS

From 1996 to 2002, three of four deaths in North Dakota adults were the result of chronic disease (55% of American Indian deaths and 69% of white deaths) or injury (17% of American Indian deaths and 5% of white deaths). These deaths are related to behavioral risks. If behavioral risk patterns were modified, many premature deaths could be prevented.

The prevalence of some conditions and behavioral risks is markedly higher in American Indian adults than in white adults:

- Diabetes (10%, American Indian; 4%, white)
- Obesity (33%, American Indian; 22% white)
- Smoking (46%, American Indian; 21% white)

However, for most conditions and behavioral risks reviewed in this report the prevalence does not differ significantly for American Indian and white adults. For example:

- High blood pressure (28%, American Indian; 25%, white)
- Asthma (12%, American Indian; 10%, white)
- Binge drinking (29%, American Indian; 22%, white)
- Overweight (38%, American Indian; 38%, white)
- Sedentary lifestyle (29%, American Indian; 22%, white)

Strikingly, American Indian adults were more likely than white adults to report poor health status and lack of health insurance coverage:

- Poor or fair health status (21%, American Indian; 12%, white)
- No health insurance coverage (33%, American Indian; 10%, white)
- No personal doctor (34%, American Indian; 24%, white)

In order to improve the health of American Indian and white adults in North Dakota, effective primary and secondary prevention strategies must be demonstrated and widely applied. Persons seeking to improve American Indian health in North Dakota should put particular emphasis in the following areas:

PRIMARY PREVENTION

- Increase adult immunization rate
- Increase physical activity levels
- Decrease the prevalence of obesity and overweight
- Decrease the proportion of persons who binge drink
- Decrease the proportion of persons who begin smoking

SECONDARY PREVENTION

- Increase the proportion of smokers who successfully quit
- Increase the proportion persons who have age appropriate cancer screening

IN ADDITION

- Ways to increase the proportion of American Indians who have a personal doctor should be identified.

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APPENDIX A

[In this appendix, selected national health objectives for 2010 are described.]

National health objectives for 2010* that use Behavioral Risk Factors Surveillance System (BRFSS) data to measure progress: selected indicators pertinent to this report

Objective	Year 2010 target
Reduce **cigarette smoking** by adults (age ≥ 18 years) [Obj. 27.1a]	12%
Reduce the proportion of adults (age ≥ 18 years) who engage in **binge drinking** during the preceding month [Obj. 26.11c]	6%
Reduce the proportion of adults (age ≥ 20 years) who are **obese** [Obj. 19.2]	15%
Reduce the proportion of adults (age ≥ 18 years) who engage in no **leisure-time physical activity** [Obj. 22.1]	20%
Increase the proportion of adults (age ≥ 65 years) who have ever been **vaccinated against pneumococcal disease** [Obj. 14.29b]	90%
Increase the proportion of adults (age ≥ 65 years) who are **vaccinated annually against influenze** [Obj. 14.29a]	90%
Increase the proportion of women (age ≥ 40 years) who have received a **mammogram** within the preceding 2 years [Obj. 3.13]	70%
Increase the proportion of women (age ≥ 18 years) who have ever received a **Papanicolaou test** [Obj. 3.11a]	97%
Increase the proportion of adults (age ≥ 50 years) who have ever received a **sigmoidoscopy** [Obj. 3.12b]	50%

*U.S. Department of Health and Human Services. Healthy people 2010: national health promotion and disease prevention objectives - - - full report with commentary. Washington, D.C.: USDHHS, 2000.

APPENDIX B

In this appendix, the following geographic areas are defined: urban, rural, northwest and southeast.

In Appendix C results are displayed for American Indian and white respondents who lived in these geographic areas.

Counties defined as urban*: Burleigh, Cass, Grand Forks, Morton, Ward

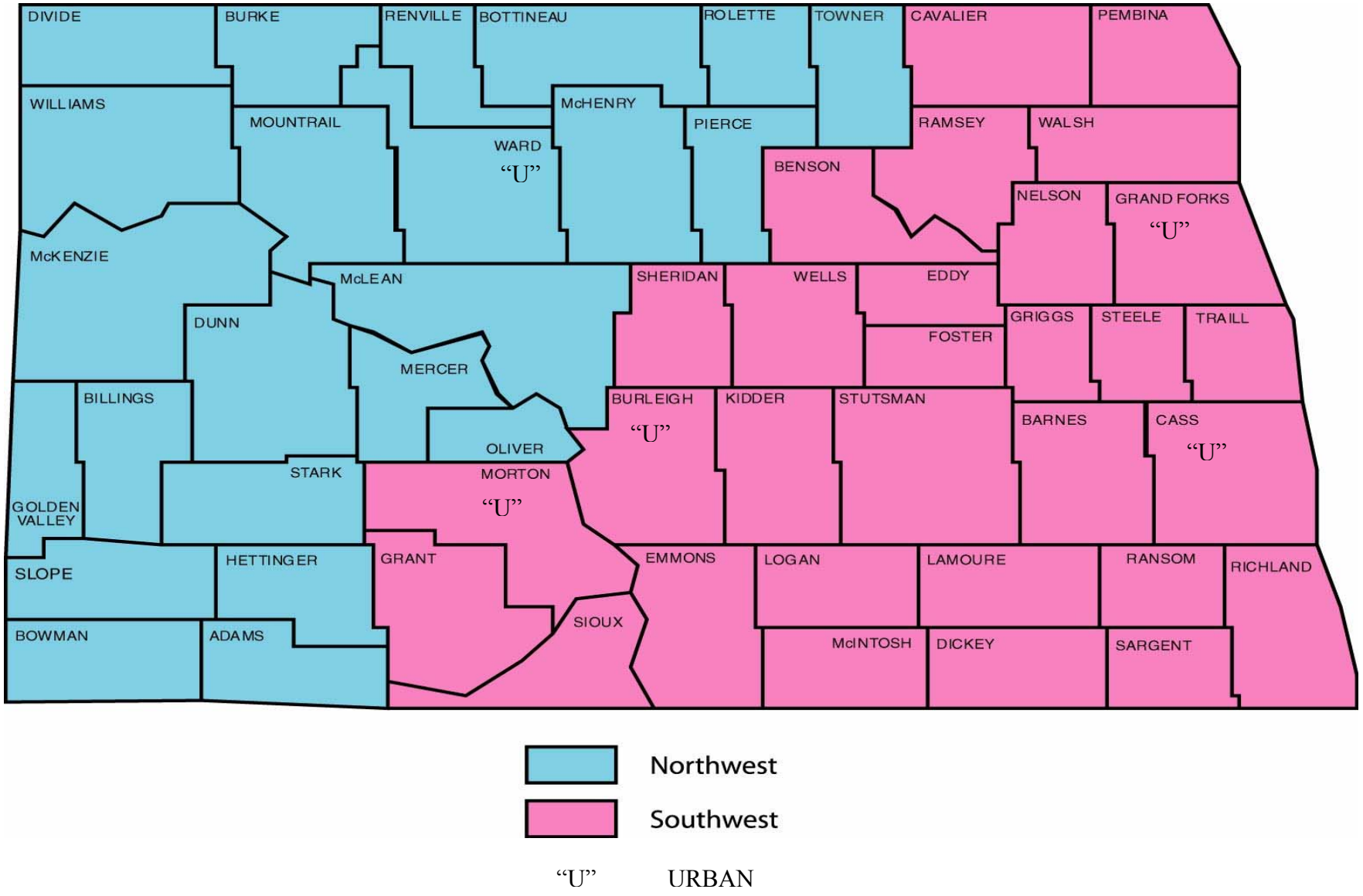
Counties defined as rural*: all other North Dakota counties.

Counties defined as northwest*: Adams, Billings, Bottineau, Bowman, Burke, Divine, Dunn, Golden Valley, Hettinger, McHenry, McKenzie, McLean, Mercer, Mountrail, Oliver, Pierce, Renville, Rolette, Slope, Stark, Towner, Ward, Williams

Counties defined as southeast*: Barnes, Benson, Burleigh, Cass, Cavalier, Emmons, Dickey, Eddy, Foster, Grand Forks, Grant, Griggs, Kidder, Lamoure, Logan, McIntosh, Morton, Nelson, Pembina, Ramsey, Ransom, Richland, Sargent, Sioux, Sheridan, Steele, Stutsman, Traill, Walsh, Wells,

*See map on p. 19.

Appendix B map: Geographic areas used for selected comparisons in the report "Behavioral risks reported by American Indian adults, North Dakota, 1996-2002"



APPENDIX C

This appendix includes tables that show the prevalence of certain risks by sex, age group, education level, income, employment status and selected geographic areas. Only those risks for which 50* or more American Indian respondents reported the risk characteristic have been displayed. The 95 percent confidence interval for each subgroup of American Indians is very wide. Thus, these tables should be interpreted with caution.

The tables in this appendix include:

1. Health insurance: none
2. Diabetes: ever told [*number of respondents = 48]
3. High blood pressure: ever told
4. High cholesterol: ever told
5. Smoking: current
6. Smoking: former
7. Alcohol use: binge drinking
8. Overweight
9. Obese
10. Physical activity: recommended level

Table: Prevalence of **no health insurance** in American Indian and white adults in North Dakota, 1996-2002

Population Subgroup	Am Indians	Whites
TOTAL	133	1368
	32.9% (27.7-38.1)	10.1% (9.6-10.7)
SEX		
Men	34.7% (26.3-43.2)	11.2% (10.3-12.1)
Women	31.4% (25.0-37.8)	9.1% (8.4-9.8)
AGE (years)		
18-44	37.7% (31.2-44.2)	14.6% (13.6-15.6)
45-64	28.9% (18.6-39.3)	8.5% (7.6-9.4)
65+	4.6% (0-10.2)*	1.1% (0.7-1.4)
EDUCATION		
High School or less	33.2% (25.8-40.6)	13.1% (12.1-14.1)
Some college	36.3% (27.6-45.0)	10.3% (9.3-11.3)
College	21.3% (9.3-33.2)	4.7% (3.9-5.6)
INCOME (dollars)		
Less than $25,000	38.3% (31.2-45.4)	19.5% (18.1-20.8)
25,000 or more	21.4% (13.6-29.1)	5.5% (4.9-6.1)
EMPLOYMENT		
Employed	30.4% (24.1-36.7)	10.8% (10.1-11.6)
Not employed	65.9% (49.0-82.7)	40.4% (33.6-47.2)
Student	43.7% (29.1-58.4)	13.9% (11.8-16.0)
Retired	10.3% (3.2-17.3)	2.9% (2.3-3.6)
GEOGRAPHIC AREAS		
Northwest	30.4% (22.2-38.7)	10.6% (9.4-11.9)
Southeast	31.2% (22.0-40.4)	9.7% (8.9-10.4)
REGION		
Urban	29.5% (18.7-40.4)	9.6% (8.7-10.4)
Rural	31.3% (23.9-38.8)	10.5% (9.5-11.5)

* Sample size less than 10.

Table: Prevalence of **diabetes** in American Indian and white adults in North Dakota, 1996-2002

Population Subgroup	Am Indians	Whites
TOTAL	48	714
	10.4% (7.5-13.4)	4.4% (4.0-4.7)
SEX		
Men	8.1% (4.0-12.2)	4.2% (3.6-4.7)
Women	12.4% (8.1-16.6)	4.6% (4.1-5.1)
AGE (years)		
18-44	2.1% (0.9-3.2)*	1.0% (0.8-1.3)
45-64	21.7% (12.6-30.9)	5.7% (4.9-6.4)
65+	46.6% (29.5-63.7)	11.1% (9.9-12.3)
EDUCATION		
High School or less	11.9% (7.5-16.3)	6.2% (5.6-6.9)
Some college	10.7% (5.6-15.8)	3.3% (2.7-3.8)
College	4.1% (0-8.4)*	2.9% (2.3-3.4)
INCOME (dollars)		
Less than $25,000	13.4% (8.8-18.0)	6.3% (5.6-7.0)
25,000 or more	6.1% (2.2-10.0)	3.2% (2.8-3.6)
EMPLOYMENT		
Employed	5.2% (2.6-7.8)	2.4% (2.1-2.7)
Not employed	12.9% (0-26.2)*	2.4% (0.3-4.4)
Student	6.7% (0-14.4)*	2.5% (1.6-3.4)
Retired	33.4% (22.1-44.7)	12.0% (10.8-13.2)
GEOGRAPHIC AREAS		
Northwest	14.4% (8.8-20.1)	5.3% (4.5-6.2)
Southeast	8.0% (3.2-12.8)	4.2% (3.7-4.6)
REGION		
Urban	4.0% (2.3-5.7)*	3.7% (3.2-4.2)
Rural	14.5% (9.3-19.7)	5.7% (5.0-6.4)

*Sample size less than 10.

Table: Prevalence of **high blood pressure** in American Indian and white adults in North Dakota, 1996-2002

Population Subgroup	Am Indians	Whites
TOTAL	67	2051
	27.5% (21.2-33.9)	25.0% (24.0-26.1)
SEX		
Men	29.0% (18.5-39.5)	24.8% (23.3-26.4)
Women	29.3% (18.4-34.2)	25.2% (23.8-26.6)
AGE (years)		
18-44	15.6% (9.1-22.1)	12.1% (10.9-13.3)
45-64	50.4% (35.1-65.6)	31.1% (28.9-33.2)
65+	61.7% (40.9-82.6)	49.7% (47.2-52.2)
EDUCATION		
High School or less	24.9% (15.5-34.4)	31.7% (29.9-33.4)
Some college	32.6% (22.4-42.8)	21.2% (19.4-22.9)
College	17.5% (2.9-32.1)*	18.6% (16.7-20.5)
INCOME (dollars)		
Less than $25,000	28.7% (19.6-37.8)	31.1% (29.1-33.0)
25,000 or more	28.5% (17.7-39.4)	21.6% (20.3-22.9)
EMPLOYMENT		
Employed	21.8% (14.4-29.1)	18.9% (17.8-20.2)
Not employed	26.4% (1.4-51.5)*	20.9% (13.6-28.1)
Student	20.6% (3.6-37.6)*	15.1% (12.3-17.9)
Retired	57.7% (40.6-74.9)	50.0% (47.6-52.5)
GEOGRAPHIC AREAS		
Northwest	31.7% (18.6-44.7)	26.2% (23.8-28.7)
Southeast	21.6% (10.8-32.5)	23.2% (21.7-24.6)
REGION		
Urban	19.8% (6.1-33.4)*	20.1% (18.6-21.6)
Rural	29.7% (18.9-40.5)	30.0% (27.9-32.1)

* Sample size less than 10.

Table: Prevalence of **high cholesterol** in American Indian and white adults in North Dakota, 1996-2002

Population Subgroup	Am Indians	Whites
TOTAL	64	2606
	25.6% (19.2-31.9)	31.9% (30.8-33.1)
SEX		
Men	24.2% (13.8-34.6)	30.6% (28.9-32.4)
Women	26.7% (18.6-34.7)	33.0% (31.6-34.5)
AGE (years)		
18-44	15.0% (8.4-21.6)	18.8% (17.2-20.4)
45-64	38.6% (24.8-52.3)	37.9% (35.9-40.0)
65+	46.6% (25.0-68.1)	43.9% (41.6-46.2)
EDUCATION		
High School or less	25.2% (15.2-35.2)	35.1% (33.3-36.9)
Some college	25.9% (15.8-36.1)	30.9% (28.9-33.0)
College	25.7% (10.1-41.3)	28.2% (26.1-30.2)
INCOME (dollars)		
Less than $25,000	31.6% (21.9-41.3)	34.7% (32.6-36.8)
25,000 or more	17.7% (9.1-26.3)	30.4% (28.9-31.8)
EMPLOYMENT		
Employed	20.8% (13.4-28.3)	27.5% (26.1-28.8)
Not employed	19.4% (0-40.9)*	24.8% (16.4-33.2)
Student	18.9% (2.5-35.3)*	27.1% (23.3-30.9)
Retired	50.7% (32.6-68.8)	45.1% (42.8-47.4)
GEOGRAPHIC AREAS		
Northwest	20.5% (10.2-30.7)	30.5% (28.1-32.8)
Southeast	22.4% (12.1-32.8)	32.5% (30.9-34.0)
REGION		
Urban	25.7% (11.7-39.8)	29.5% (27.8-31.2)
Rural	19.7% (11.3-28.2)	35.2% (33.2-37.2)

* Sample size less than 10.

Table: Prevalence of **current smokers** in American Indian and white adults in North Dakota, 1996-2002

Population Subgroup	Am Indians	Whites
TOTAL	202	3031
	45.7% (40.2-51.1)	21.2% (20.4-21.9)
SEX		
Men	42.0% (33.5-50.5)	23.2% (22.0-24.3)
Women	48.7% (42.0-55.5)	19.3% (18.3-20.2)
AGE (years)		
18-44	50.6% (44.0-57.3)	25.8% (24.6-26.9)
45-64	42.3% (31.4-53.1)	22.1% (20.8-23.5)
65+	11.7% (1.4-22.1)*	8.3% (7.3-9.4)
EDUCATION		
High School or less	46.3% (38.3-54.3)	25.4% (24.1-26.6)
Some college	43.6% (34.8-52.3)	23.3% (21.9-24.6)
College	50.2% (35.7-64.7)	11.3% (10.2-12.4)
INCOME (dollars)		
Less than $25,000	43.5% (36.2-50.8)	26.2% (24.7-27.6)
25,000 or more	48.1% (38.8-57.5)	19.4% (18.4-20.3)
EMPLOYMENT		
Employed	50.8% (43.9-57.8)	24.2% (23.2-25.1)
Not employed	61.2% (42.6-79.7)	40.0% (33.3-46.8)
Student	31.8% (18.7-44.9)	17.7% (15.5-19.8)
Retired	33.1% (19.6-46.6)	11.8% (10.6-13.1)
GEOGRAPHIC AREAS		
Northwest	41.6% (32.5-50.7)	20.6% (19.0-22.1)
Southeast	55.1% (45.6-64.7)	21.6% (20.6-22.6)
REGION		
Urban	45.9% (34.8-57.1)	21.9% (20.8-23.0)
Rural	48.9% (41.1-56.8)	20.4% (19.1-21.6)

* Sample size less than 10.

Table: Prevalence of **former smokers** in American Indian and white adults in North Dakota, 1996-2002

Population Subgroup	Am Indians	Whites
TOTAL	107	3578
	23.5% (18.9-28.0)	25.4% (24.6-26.2)
SEX		
Men	24.8% (17.5-32.1)	30.9% (29.7-32.2)
Women	22.4% (17.0-27.8)	20.1% (19.1-21.1)
AGE (years)		
18-44	16.0% (11.4-20.6)	15.5% (14.5-16.4)
45-64	40.6% (29.7-51.6)	35.3% (33.7-36.9)
65+	47.5% (30.2-64.8)	37.4% (35.5-39.3)
EDUCATION		
High School or less	25.3% (18.5-32.1)	29.0% (27.7-30.3)
Some college	22.9% (15.6-30.3)	23.8% (22.5-25.2)
College	18.4% (6.8-29.9)	21.4% (19.9-22.9)
INCOME (dollars)		
Less than $25,000	26.7% (20.0-33.4)	22.7% (21.4-24.1)
25,000 or more	22.4% (15.1-29.8)	28.1% (26.9-29.1)
EMPLOYMENT		
Employed	22.1% (16.5-27.6)	23.4% (22.4-24.4)
Not employed	23.0% (6.6-39.5)*	20.5% (15.0-26.0)
Student	48.8% (34.3-63.2)	14.9% (12.9-16.9)
Retired	38.6% (24.0-53.2)	38.4% (36.5-40.3)
GEOGRAPHIC AREAS		
Northwest	25.1% (17.1-33.2)	26.3% (24.6-28.1)
Southeast	20.7% (13.3-28.1)	24.9% (23.8-25.9)
REGION		
Urban	20.4% (12.6-28.3)	24.2% (23.0-25.3)
Rural	24.1% (17.4-30.8)	27.0% (25.6-28.5)

* Sample size less than 10.

Table: Prevalence of **binge drinking** in American Indian and white adults in North Dakota, 1996-2002

Population Subgroup	Am Indians	Whites
TOTAL	64	1628
	26.9% (20.5-33.4)	20.2% (19.2-21.1)
SEX		
Men	47.6% (36.2-59.0)	30.2% (28.6-31.8)
Women	10.6% (6.1-15.2)	10.5% (9.5-11.5)
AGE (years)		
18-44	33.9% (25.6-42.1)	31.0% (29.4-32.6)
45-64	11.6% (2.3-20.9)*	13.1% (11.7-14.5)
65+	3.7% (0-11.5)*	3.0% (2.2-3.9)
EDUCATION		
High School or less	25.2% (16.2-34.2)	17.7% (16.2-19.1)
Some college	31.9% (20.8-43.1)	24.1% (22.2-26.0)
College	16.5% (1.0-32.0)*	19.4% (17.6-21.2)
INCOME (dollars)		
Less than $25,000	21.9% (14.4-29.6)	21.0% (19.2-22.8)
25,000 or more	27.9% (15.9-39.9)	20.9% (19.7-22.2)
EMPLOYMENT		
Employed	29.7% (21.3-38.2)	24.7% (23.5-25.9)
Not employed	35.2% (9.7-60.7)*	29.9% (21.8-37.9)
Student	26.9% (9.6-44.3)	20.7% (17.4-24.0)
Retired	7.9% (0-17.3)*	3.8% (2.8-4.7)
GEOGRAPHIC AREAS		
Northwest	29.7% (19.3-40.2)	19.9% (17.9-21.9)
Southeast	24.6% (14.1-35.2)	21.3% (19.9-22.6)
REGION		
Urban	30.0% (16.1-43.9)	23.5% (21.9-25.1)
Rural	26.6% (17.8-35.4)	17.8% (16.4-19.3)

* Sample size less than 10.

Table: Prevalence of **overweight** in American Indian and white adults in North Dakota, 1996-2002

Population Subgroup	Am Indians	Whites
TOTAL	169	5201
	38.3% (33.1-43.5)	37.9% (36.9-38.8)
SEX		
Men	44.8% (36.3-53.4)	47.7% (46.3-49.1)
Women	32.8% (26.5-39.1)	28.4% (27.3-29.5)
AGE (years)		
18-44	38.9% (32.5-45.4)	34.2% (32.9-35.5)
45-64	41.3% (30.4-52.2)	41.3% (39.6-42.9)
65+	25.6% (10.9-40.3)	42.7% (40.8-44.6)
EDUCATION		
High School or less	40.7% (33.1-48.2)	39.6% (38.1-40.9)
Some college	37.2% (28.8-45.6)	35.0% (33.5-36.6)
College	32.7% (19.4-46.0)	38.9% (37.2-40.7)
INCOME (dollars)		
Less than $25,000	38.1% (31.3-45.0)	36.4% (34.8-38.0)
25,000 or more	37.5% (28.4-46.7)	40.1% (38.9-41.3)
EMPLOYMENT		
Employed	38.3% (31.6-45.1)	39.2% (38.1-40.3)
Not employed	51.0% (31.7-70.3)	26.8% (20.7-32.9)
Student	35.4% (21.9-48.9)	26.1% (23.4-28.8)
Retired	33.9% (21.6-46.2)	41.4% (39.5-43.2)
GEOGRAPHIC AREAS		
Northwest	38.2% (29.9-46.6)	37.3% (35.4-39.2)
Southeast	39.8% (30.3-49.3)	37.9% (36.7-39.1)
REGION		
Urban	34.2% (23.8-44.6)	36.6% (35.3-38.0)
Rural	41.0% (33.3-48.8)	39.4% (37.8-41.0)

Table: Prevalence of **obesity** in American Indian and white adults in North Dakota, 1996-2002

Population Subgroup	Am Indians	Whites
TOTAL	151	3245
	32.9% (27.8-38.1)	22.0% (21.3-22.8)
SEX		
Men	26.1% (18.9-33.4)	21.9% (20.8-23.1)
Women	38.6% (31.9-45.3)	22.2% (21.2-23.2)
AGE (years)		
18-44	29.8% (23.8-35.8)	18.4% (17.4-19.5)
45-64	35.8% (25.3-46.4)	28.3% (26.7-29.7)
65+	49.6% (32.4-66.8)	22.2% (20.6-23.8)
EDUCATION		
High School or less	37.5% (29.7-45.3)	24.1% (22.8-25.3)
Some college	28.9% (21.1-36.7)	21.5% (20.2-22.8)
College	28.7% (15.7-41.7)	19.3% (17.9-20.7)
INCOME (dollars)		
Less than $25,000	35.1% (28.0-42.2)	23.2% (21.8-24.6)
25,000 or more	32.1% (23.5-40.7)	21.4% (20.4-22.4)
EMPLOYMENT		
Employed	34.3% (27.8-40.8)	22.0% (21.1-22.9)
Not employed	27.9% (10.8-45.1)	28.3% (22.2-34.3)
Student	26.6% (13.8-39.3)	17.1% (14.9-19.3)
Retired	38.3% (23.9-52.7)	24.2% (22.6-25.8)
GEOGRAPHIC AREAS		
Northwest	39.1% (30.2-48.1)	23.6% (21.9-25.2)
Southeast	31.1% (22.2-39.9)	22.1% (21.1-23.1)
REGION		
Urban	28.9% (19.5-38.3)	20.9% (19.9-22.1)
Rural	38.0% (30.4-45.6)	24.9% (23.5-26.3)

Table: Prevalence of **meets recommended physical activity level** in American Indian and white adults in North Dakota, 1996-2002

Population Subgroup	Am Indians	Whites
TOTAL	84	2227
	50.3% (41.3-59.3)	43.6% (42.1-45.1)
SEX		
Men	56.5% (41.8-71.2)	46.5% (44.1-48.8)
Women	45.0% (34.1-56.0)	40.8% (38.8-42.7)
AGE (years)		
18-44	57.8% (46.9-68.7)	48.7% (46.5-51.0)
45-64	26.2% (12.4-40.1)	42.9% (40.4-45.5)
65+	47.6% (4.7-90.5)*	31.7% (28.7-34.8)
EDUCATION		
High School or less	44.1% (31.7-56.4)	39.6% (37.2-41.9)
Some college	61.4% (46.6-76.2)	43.0% (40.3-45.7)
College	45.7% (20.6-70.7)	49.9% (47.2-52.6)
INCOME (dollars)		
Less than $25,000	44.5% (32.9-55.9)	41.0% (38.1-43.8)
25,000 or more	57.9% (42.1-73.7)	46.3% (44.4-48.2)
EMPLOYMENT		
Employed	57.4% (46.0-68.7)	45.6% (43.7-47.4)
Not employed	25.4% (0-55.6)*	44.5% (33.2-55.7)
Student	51.9% (28.8-75.0)	47.3% (42.3-52.2)
Retired	27.9% (6.2-49.6)*	33.8% (30.6-37.0)
GEOGRAPHIC AREAS		
Northwest	53.6% (41.3-65.8)	42.9% (40.2-45.7)
Southeast	46.7% (33.1-60.4)	43.9% (42.1-45.8)
REGION		
Urban	47.6% (30.1-65.2)	45.4% (43.3-47.4)
Rural	50.9% (40.2-61.7)	41.6% (39.4-43.8)

* Sample size less 10.

APPENDIX D

This appendix includes the ICD codes used to assess the causes of death in North Dakota, 1996-2002.

CAUSE OF DEATH GROUPINGS - ICD-9

(Used from 1978 to 1998)

Short Description	Expanded Description	ICD Codes for group
ALL CAUSES	All causes of death	0000-9999
CANCER	All cancer deaths	1400-2089
DIABETES	Diabetes	250
HEART	Diseases of the heart	3900-3989, 402, 404, 4100-429X
CEREBROVASCULAR	Cerebrovascular disease	430-438
ATHEROSCLEROSIS	Atherosclerosis	440
OTHER ARTERIES	Other diseases of arteries	441-448
FLU/PNU	Influenza/Pneumonia	480-487
COPD	Chronic Obstructive Pulmonary Disease	490-496
CIRRHOSIS	Cirrhosis and Chronic Liver Disease	571
KIDNEY	Nephritis/ Nephrotic Syndrome/ Nephrosis	580-589
ALL ACCIDENTS	All accidental deaths	800-949
SUICIDE	Suicide	950-959

CAUSE OF DEATH GROUPINGS - ICD-10

(Beginning with 1999 causes of death)

Short Description	Expanded Description	ICD Codes for group
ALL CAUSES	All causes of death	A00-Y99
CANCER	All cancer deaths	C00-C97
DIABETES	Diabetes	E10-E14
HEART	Diseases of the heart	I00-I09,I11,I13,I20-I51
CEREBROVASCULAR	Cerebrovascular disease	I60-I69
ATHEROSCLEROSIS	Atherosclerosis	I70
OTHER ARTERIES	Other diseases of arteries	I72-I78
FLU/PNU	Influenza/Pneumonia	J10-J18
COPD	Chronic Obstructive Pulmonary Disease	J40-J47
CIRRHOSIS	Cirrhosis and Chronic Liver Disease	K70,K73-K74
KIDNEY	Nephritis/ Nephrotic Syndrome/ Nephrosis	N00-N07,N17-N19,N25-N27
ALL ACCIDENTS	All accidental deaths	V01-X59,Y85-Y86
SUICIDE	Suicide	X60-X84,X87.0