

Diabetes and Related Health Factors in North Dakota Adults

An Analysis of North Dakota BRFSS Data

1994-2000



North Dakota Diabetes Control Program



North Dakota Department of Health

John Hoeven, Governor

Dr. Terry Dwelle, State Health Officer



North Dakota Department of Health
Division of Health Promotion
600 E. Boulevard Ave., Dept. 301
Bismarck, N.D. 58505-0200

September 2002

Acknowledgments:

This report is a product of the North Dakota Diabetes Control Program (NDDCP). Located within the North Dakota Department of Health, the NDDCP is funded by a cooperative agreement from the Centers for Disease Control and Prevention, Division of Diabetes Translation.

Suggested Citation:

Kathleen R. Moun, MA; Sherri L. Parsons, MT(ASCP)BB; Sandra D. Adams, MS, RD, CHES. Diabetes and Related Health Factors in North Dakota Adults, The North Dakota Diabetes Control Program, North Dakota Department of Health, Bismarck, ND, 2002.

This publication was prepared by:

North Dakota Diabetes Control Program
Division of Health Promotion
North Dakota Department of Health
600 E. Boulevard Ave., Dept. 301
Bismarck, ND 58505-0200
Telephone: 701.328.2367
Fax: 701.328.2036

This publication was supported by Cooperative Agreement number U32/CCU813559-06 from the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

Copyright information:

All material in this report is in the public domain and may be reproduced or copied without permission; citation as to source, however, is appreciated.

Table of Contents

I. Introduction	1
Data Source	2
Method	2
Variables Included	3
Sample Size	4
Results	4
II. Prevalence	5
Prevalence of Diabetes	6
North Dakota and Nationwide	6
North Dakota: 1994 through 2000	6
Prevalence of Diabetes by Demographic Variables	7
Gender	7
Age	7
Race	8
Income	8
Education	9
Employment	9
III. Diabetes by Related Health Factors	10
Health Status	11
Health Plan	11
General Health	11
Physical Health	12
Mental Health	12
Limited Activities	13
Health Conditions	14
Blood Pressure Checked	14
High Blood Pressure	14
Blood Cholesterol Ever Checked	15
Blood Cholesterol Checked in Past Year	15
High Cholesterol	16
Health-Related Behaviors	17
Smoking	17
Alcohol	17
Fruits and Vegetables	18
Physical Activity	18

Table of Contents (continued)

Immunization	19
Flu Shot in Past Year	19
Pneumonia Vaccine	19
Weight Control.....	20
BMI.....	20
Doctor’s Advice.....	20
Trying To Lose or Maintain Weight.....	21
Weight Control Method.....	21
IV. Diabetes Module	22
Diabetes Module	23
Age at Diagnosis.....	23
Take Insulin and Frequency of Insulin Use.....	23
Frequency of Blood Sugar Monitoring.....	24
Heard of Hemoglobin A1C and Number of A1C Checks	24
Visits to a Health Professional.....	25
Foot Checks	25
Dilated Eye Exam	26
Visual Limitations	26
V. Diabetes and Other Health Factors by Age Group.....	27
Diabetes and Other Health Factors by Age Group	28
Diabetes Module by Age Group	28
Sample Size	29
Age by Use of Insulin	30
Age by Blood Sugar Monitoring	30
Age by Visits to a Health Professional	31
Age by Foot Checks.....	31
Age by Eye Exams.....	32
Age by Visual Impairments	32
Diabetes by Age Group and Related Health Factors	33
Smoking.....	34
Fewer Than Five Fruits and Vegetables	34
Sedentary Lifestyle	35
High Blood Pressure	35
No Flu Shot.....	36
Overweight	36
High Cholesterol.....	37

Table of Contents (continued)

VI. Summary and Conclusions	38
Summary and Conclusions	39
Prevalence by Demographic Variables	39
Distribution Data – Comparing People Who Have Diabetes to Those Who Do Not	40
Health Status	40
Health Conditions	40
Health-Related Behaviors	40
Immunizations	41
Weight Control	41
Diabetes Module	42
Diabetes Module by Age Group	42
Diabetes by Age Group and Related Health Factors	43
Data Tables	44
Table 1: Percentage of People Told by a Doctor That They Have Diabetes	45
Table 2: Prevalence of Diabetes by Demographic Variables	46
Table 3: Diabetes by Health Status	47
Table 4: Diabetes by Health Conditions	48
Table 5: Diabetes by Health-Related Behaviors	49
Table 6: Diabetes by Weight Control	50
Table 7: Diabetes Module	51
Table 8: Diabetes Module by Age Group	53
Table 9: Diabetes by Age Group and Health-Related Factors	54
Appendix A	55
Definitions of Variables Used in Study	55

I. Introduction

Data Source

Data for this study is from the Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is an annual, random sample telephone survey of adult North Dakota residents that asks questions about a variety of health topics. The survey is designed and coordinated by the Centers for Disease Control and Prevention (CDC). Every state and territory, as well as the District of Columbia, has an assigned state coordinator for the BRFSS.

Some modules (groups of survey questions) are part of the core survey and are required for all states. Optional modules also are available; states can choose certain questions from the optional modules or design their own questions.

The North Dakota BRFSS is coordinated by the North Dakota Department of Health.

This study analyzes data from the North Dakota BRFSS for the years of 1994 through 2000, with a focus on diabetes and related health issues. Each year of data is a separate dataset. Because the survey is a sample, it was determined that combining several years of data would be necessary to accumulate a large enough sample size for analysis of data specific to diabetes. Many of the survey questions analyzed were not asked in all seven years. See Appendix A for more information about questions included in each year, as well as combined subsets of years.

Method

Annual data files were received from the North Dakota BRFSS coordinator. Data files were in SPSS or TXT format, and all data files were converted to SAS format. SAS callable SUDAAN was used for the data analysis, the software package recommended by the CDC for analysis of this type of survey data.

BRFSS data is weighted to account for the total adult population in each annual survey.

When more than one year of data is combined, the weight for each record is adjusted using a CDC method. For example, when data for three years is combined, the weight variable for each record is divided by three. This method results in a total weight for the three years of data that is equivalent to the average state adult population during those three years. Confidence intervals and tests for statistical significance were calculated using SUDAAN procedures.

Variables Included

The variables included in this study are arranged by the following categories:

Demographics

- Gender
- Age
- Race
- Education
- Income
- Employment

Health Status

- Health plan
- General health
- Physical health
- Mental health
- Limited activities due to health

Health Conditions

- Blood pressure
- Blood cholesterol
- Diabetes

Health-Related Behaviors

- Smoking
- Alcohol
- Sedentary/active lifestyle
- Servings of fruits and vegetables

Immunization

- Flu shot
- Pneumonia vaccine

Weight Control

- Doctor's advice about weight
- Trying to lose weight
- Trying to maintain weight
- Weight-loss method
- Body mass index

Diabetes Module

- Age at diagnosis
- Insulin use
- Blood sugar monitoring
- Hemoglobin A1C
- Visits to healthcare professional
- Foot checks
- Dilated eye exams
- Visual impairments

See Appendix A for more details about the variables included in this study.

Sample Size

The following tables present the sample sizes, weighted counts and diabetes percentage for each year in the study, as well as for each combination of years used.

BRFSS 1994-2000

Year	Sample	Weighted	Adults with Diabetes		
			Sample	Weighted	Weighted Percent
1994	1,800	461,293	78	16,716	3.6%
1995	1,860	462,835	79	17,139	3.7%
1996	1,811	464,814	61	14,268	3.1%
1997	1,802	470,078	76	16,538	3.5%
1998	1,803	468,106	78	19,608	4.2%
1999	1,981	467,071	107	23,192	5.0%
2000	1,918	462,966	102	24,225	5.2%
1994-2000	12,975	465,309	581	18,812	4.0%

Combinations of Years Used in Study

Subset code	Years	Sample	Weighted	Adults with Diabetes		
				Sample	Weighted	Weighted Percent
a	95, 97, 99	5,643	466,661	262	18,956	4.1%
b	94, 96, 98, 00	7,332	464,295	319	18,704	4.0%
c	95, 97, 99, 00	7,561	465,737	364	20,273	4.4%
d	95, 97, 98, 99	7,446	467,023	340	19,119	4.1%
e	1994-2000	12,975	465,309	581	18,812	4.0%
f	1995-2000	11,175	465,978	503	19,161	4.1%
g	1995-1999	9,257	466,581	401	18,149	3.9%

Results

Two types of results have been calculated: prevalence and distribution.

Prevalence data indicates the percentage of people who have been diagnosed with diabetes or, in other words, the rate of diabetes in a population. Prevalence was calculated for the entire population, as well as by several demographic breakdowns. Distribution data compares people who have diabetes to those who do not on several

variables; for example, the percentage of people who have diabetes receiving a flu shot compared to the percentage of people who do not have diabetes receiving a flu shot.

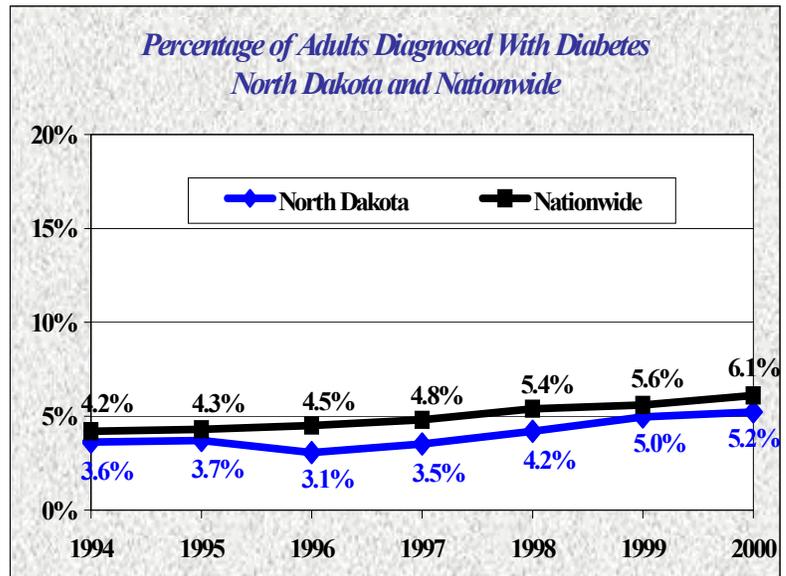
II. Prevalence

Prevalence of Diabetes

North Dakota and Nationwide

The prevalence of diabetes in North Dakota adults increased during the seven years that this study covers. In 1994, the prevalence was 3.6 percent, and in 2000, the prevalence was 5.2 percent.

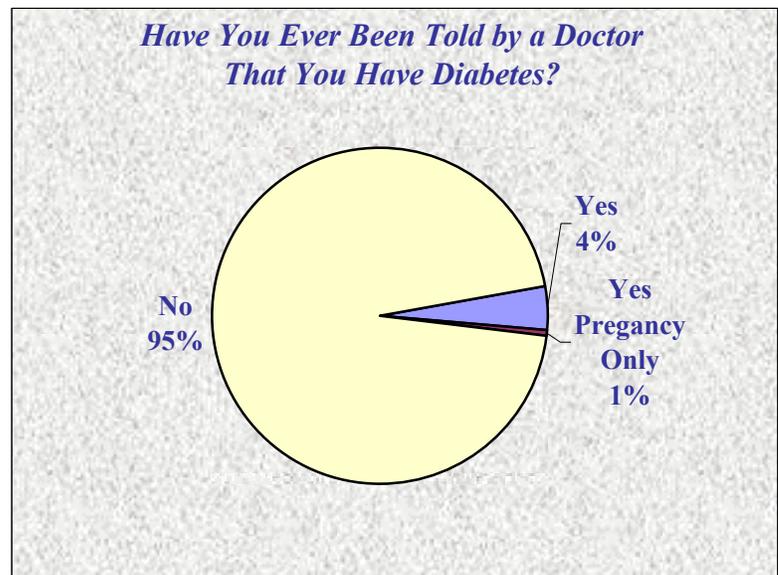
The national rate of diabetes also increased during this same time period, from 4.2 percent in 1994 to 6.1 percent in 2000. The national rate is the median rate of all of the states (including Washington, D.C. and Puerto Rico) for which data was available that year. North Dakota consistently ranks below the median national rate.



North Dakota: 1994 Through 2000

The prevalence rate for the combined seven-year period of 1994 through 2000 was 4 percent.

All respondents were asked if a doctor had ever told them that they have diabetes. Data from 1994 through 2000 indicates that 4 percent of respondents said yes, 1 percent indicated only during pregnancy, and 95 percent responded no.



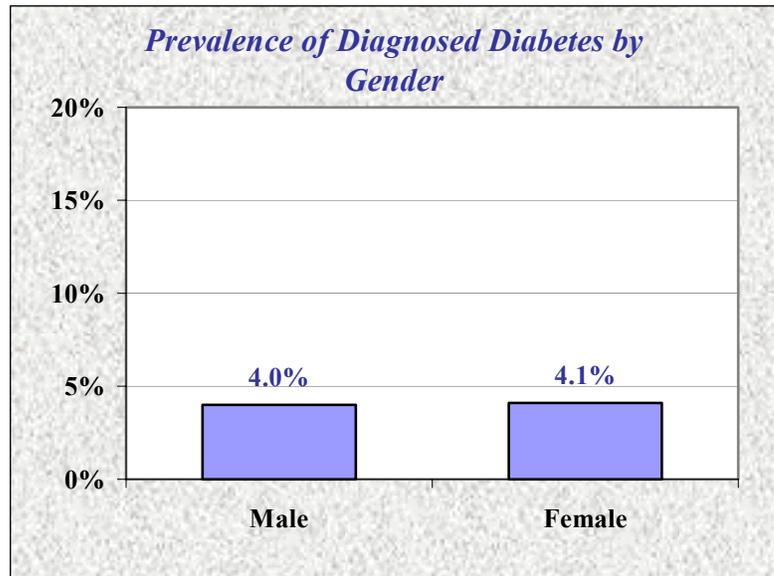
Prevalence of Diabetes By Demographic Variables

The following six charts present prevalence data by various demographic variables.

Percentages and confidence intervals can be found in Tables 1 and 2.

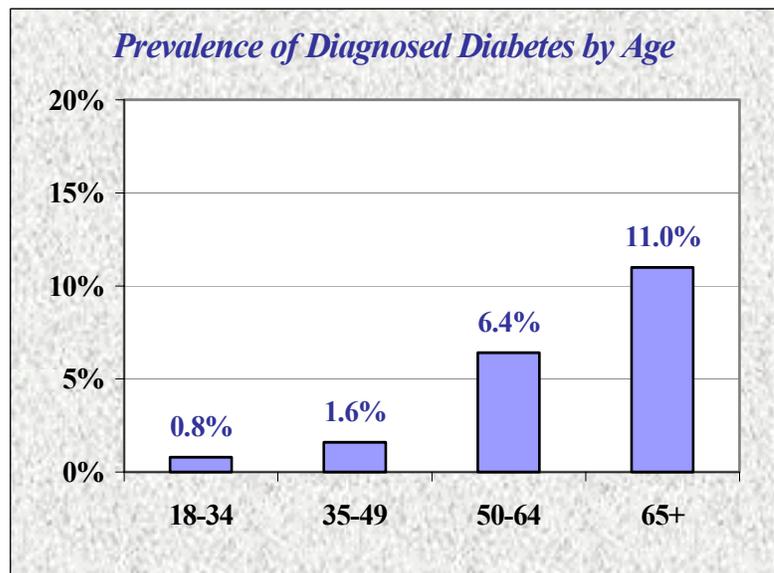
Gender

The prevalence of diabetes is equal between the genders. Four percent of males and 4.1 percent of females have diabetes.



Age

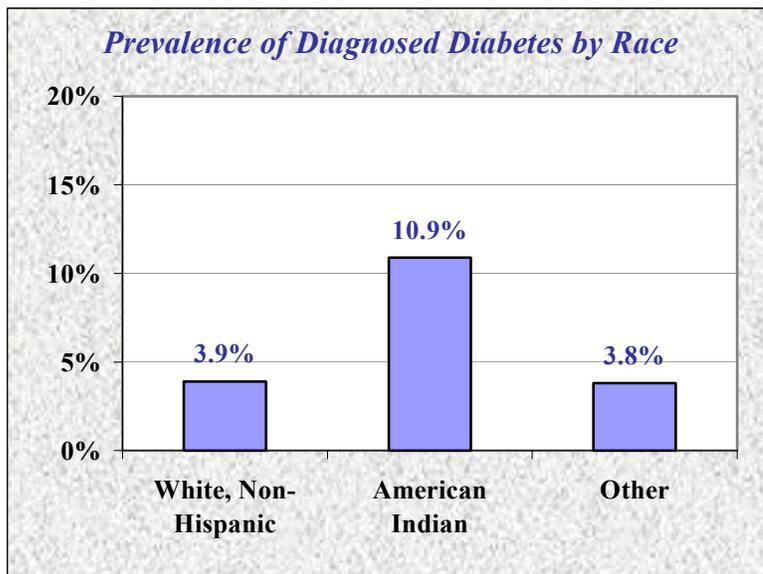
The prevalence of diabetes increases with age. For example, 0.8 percent of people age 18 to 34 have diabetes, 1.6 percent of people age 35 to 49 have diabetes, 6.4 percent of people age 50 to 64 have diabetes, and 11 percent of people age 65 and older have diabetes.



The average age of people who have diabetes is 62, while the average age of people who do not have diabetes is 45. This age difference should be considered when looking at other differences between people who do and do not have diabetes.

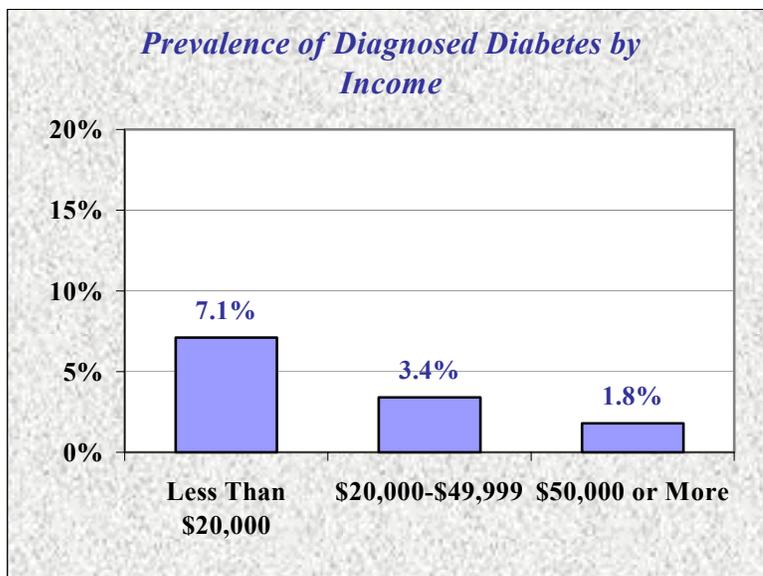
Race

The prevalence of diabetes is higher among American Indians than it is among white non-Hispanics and other races. In fact, 10.9 percent of American Indian adults have diabetes, compared to 3.9 percent of white non-Hispanics and 3.8 percent of people of other races.



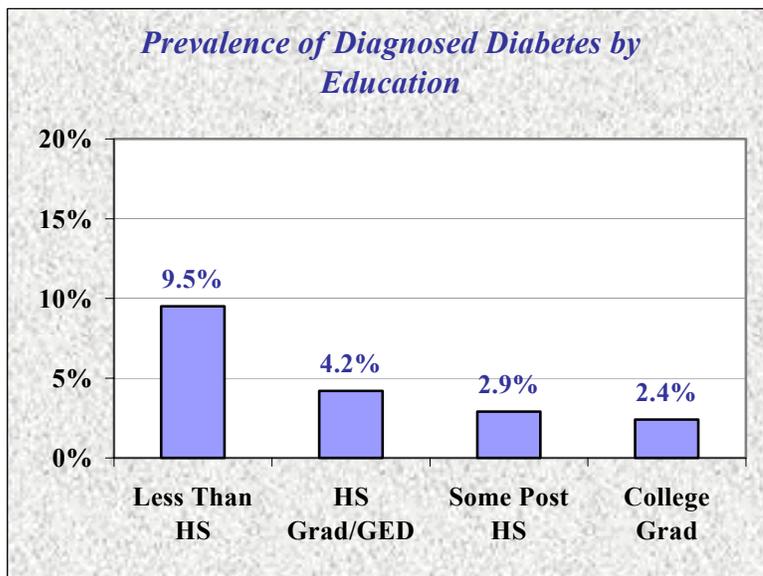
Income

The prevalence of diabetes decreases as income increases. A total of 7.1 percent of people with annual household incomes less than \$20,000 have diabetes, compared to 3.4 percent of people whose incomes are between \$20,000 and \$49,999, and 1.8 percent of people whose incomes are greater than or equal to \$50,000.



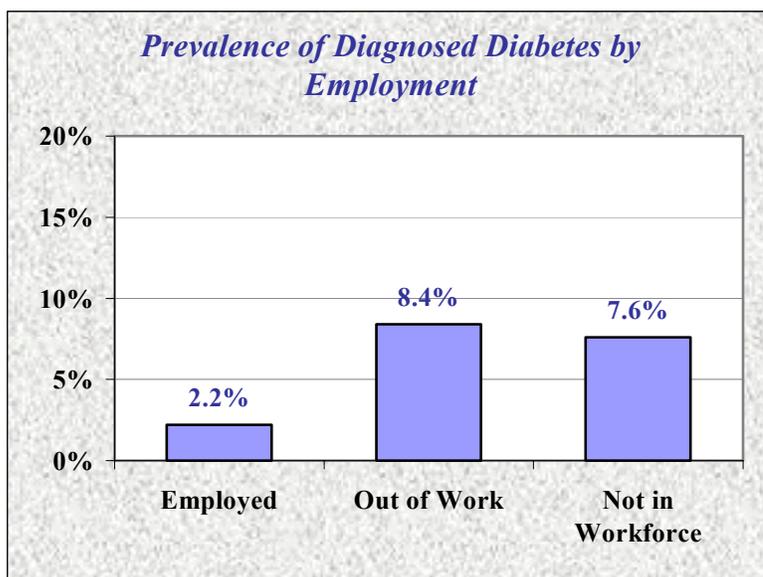
Education

The prevalence of diabetes decreases as education increases. For example, 9.5 percent of people with less than a high school education have diabetes, compared to 4.2 percent of high school graduates, 2.9 percent of people with some post high school education, and 2.4 percent of college graduates.



Employment

The prevalence of diabetes is higher among those who are out of work or who are not in the workforce compared to those who are employed. Among those who are employed, 2.2 percent have diabetes; 8.4 percent of those out of work and 7.6 percent of those not in the workforce have diabetes.



III. Diabetes by Related Health Factors

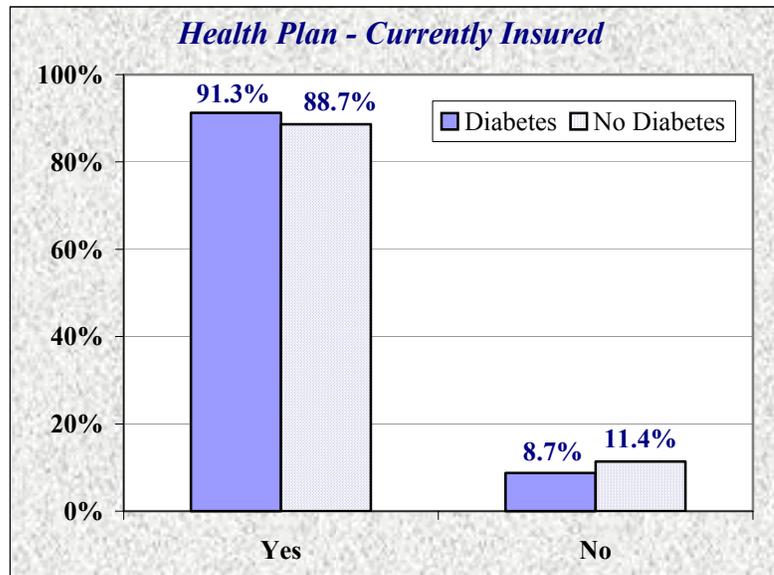
Health Status

The following five charts present distribution data regarding the health status of respondents.

Percentage distributions and confidence intervals can be found in Table 3.

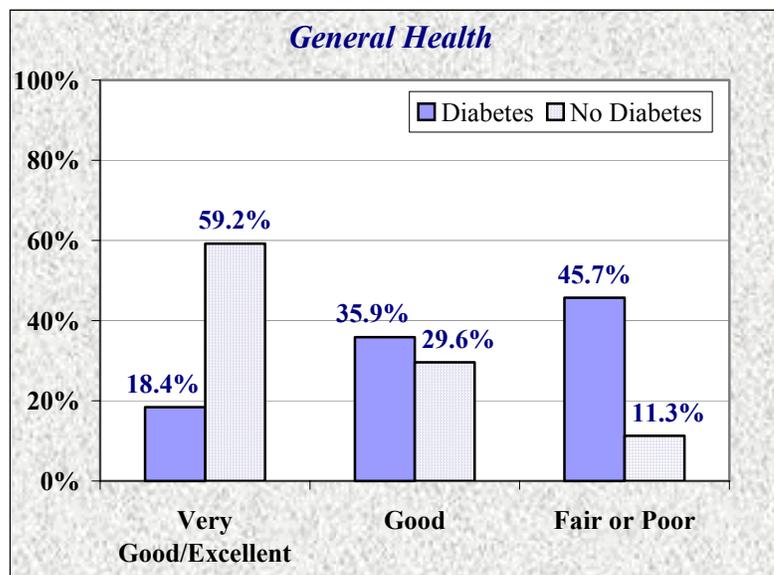
Health Plan

There is no significant difference between people who have and do not have diabetes when it comes to having a health insurance plan. In fact, 91.3 percent of people who have diabetes have a health plan, compared to 88.7 percent of those who do not have diabetes.



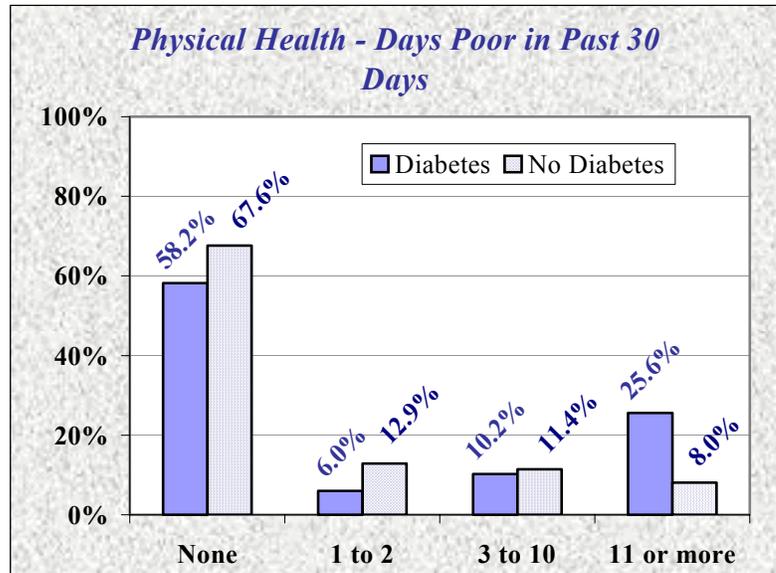
General Health

People who have diabetes are more likely to rate their own general health as fair or poor (45.7%) than are those who do not have diabetes (11.3%). Conversely, people who have diabetes are less likely to rate their own general health as very good or excellent (18.4%) than are those who do not have diabetes (59.2%).



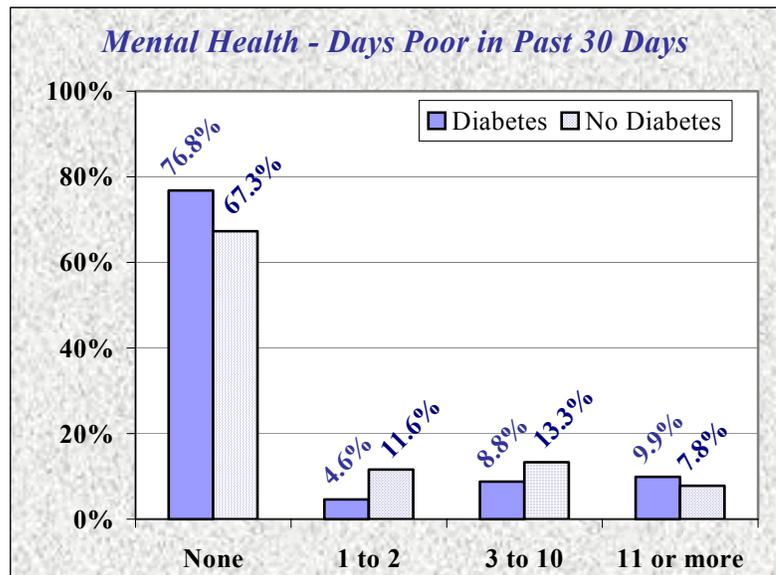
Physical Health

Respondents were asked how many days during the past 30 their physical health was not good. In response, 58.2 percent of people who have diabetes responded “none,” compared to 67.6 percent of those who do not have diabetes. In addition, 25.6 percent of people who have diabetes reported 11 or more days of poor physical health, compared to 8.0 percent of those who do not have diabetes.



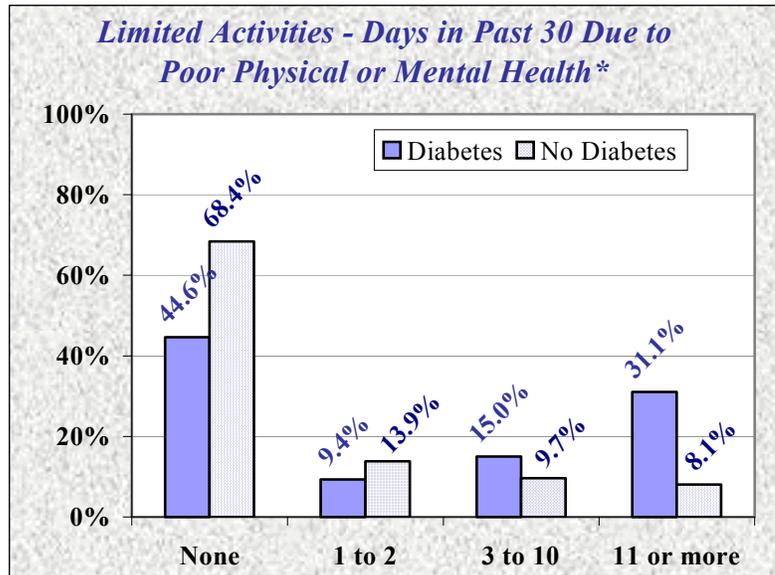
Mental Health

Respondents were asked how many days during the past 30 their mental health was not good. A total of 76.8 percent of people who have diabetes responded “none,” compared to 67.3 percent of those who do not have diabetes. In addition, 9.9 percent of people who have diabetes reported 11 or more days of poor mental health, compared to 7.8 percent of those who do not have diabetes.



Limited Activities

Respondents were asked how many days during the past 30 their activities were limited by poor physical or mental health. Only those who had reported any days of poor physical or mental health were asked this question. Of those, 44.6 percent of people who have diabetes responded “none,” compared to 68.4 percent of those who do not have diabetes. In addition, 31.1 percent of people who have diabetes reported 11 or more days of limited activities, compared to 8.1 percent of those who do not have diabetes.



*** Excludes those who reported no days of poor physical or mental health.**

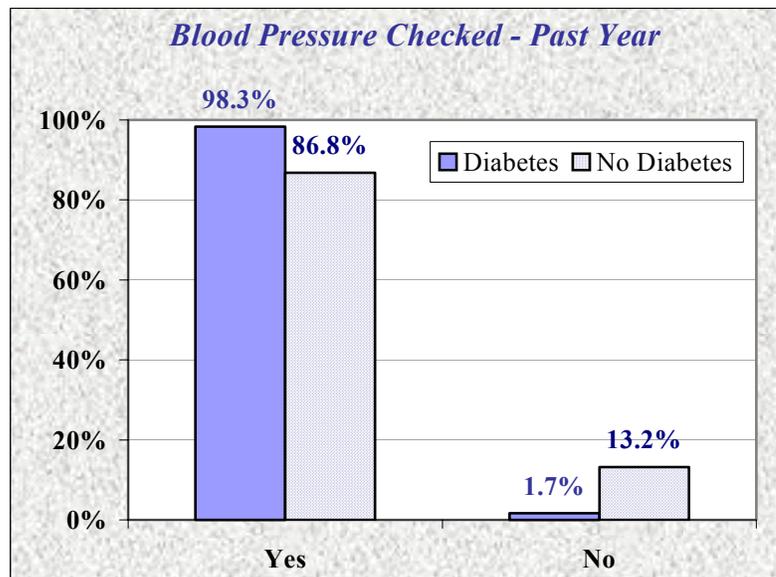
Health Conditions

The following five charts present distribution data regarding the health conditions of respondents.

Percentage distributions and confidence intervals can be found in Table 4.

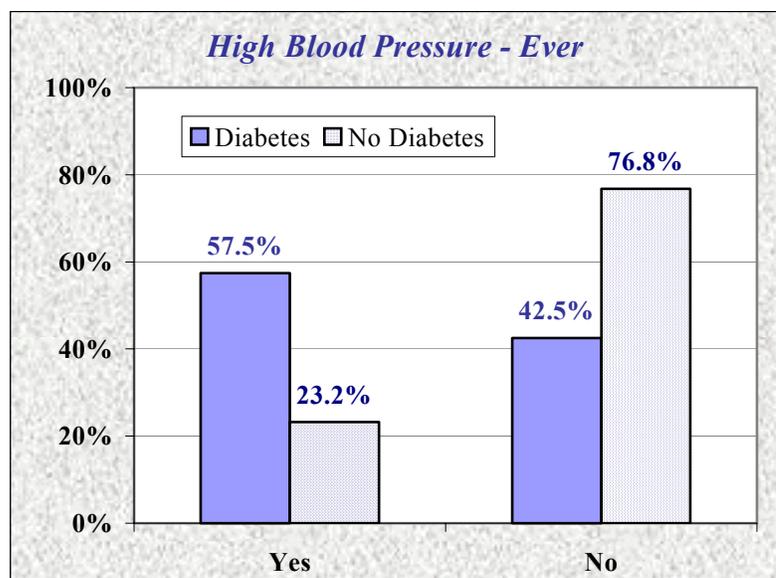
Blood Pressure Checked

Within the past year, 98.3 percent of people who have diabetes had their blood pressure checked, compared to 86.8 percent of people who do not have diabetes.



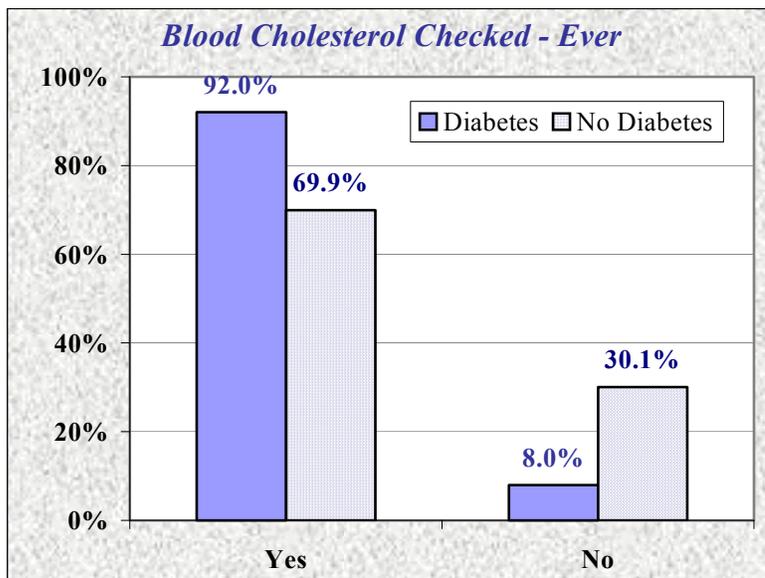
High Blood Pressure

Results of the survey indicate that 57.5 percent of people who have diabetes have been told by a doctor, nurse or other health professional that their blood pressure was high, compared to 23.2 percent of people who do not have diabetes.



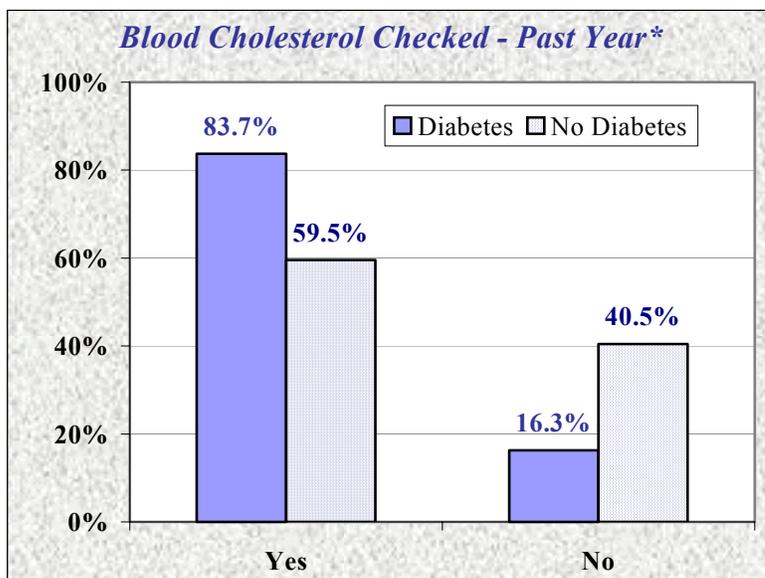
Blood Cholesterol Ever Checked

Of the respondents, 8.0 percent of people who have diabetes have never had their blood cholesterol checked, compared to 30.1 percent of people who do not have diabetes.



Blood Cholesterol Checked in Past Year

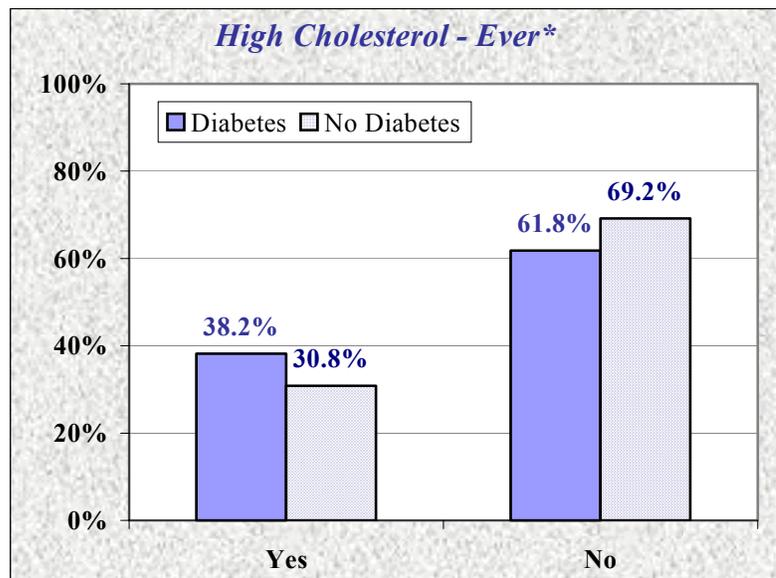
Of those who have ever had their blood cholesterol checked, 83.7 percent of people who have diabetes had their blood cholesterol checked within the past year, compared to 59.5 percent of people who do not have diabetes.



*** Excludes those who reported cholesterol has never been checked.**

High Cholesterol

Of those who have ever had their blood cholesterol checked, 38.2 percent of people who have diabetes have been told by a doctor or other health professional that their blood cholesterol was high, compared to 30.8 percent of people who do not have diabetes.



*** Excludes those who reported cholesterol has never been checked.**

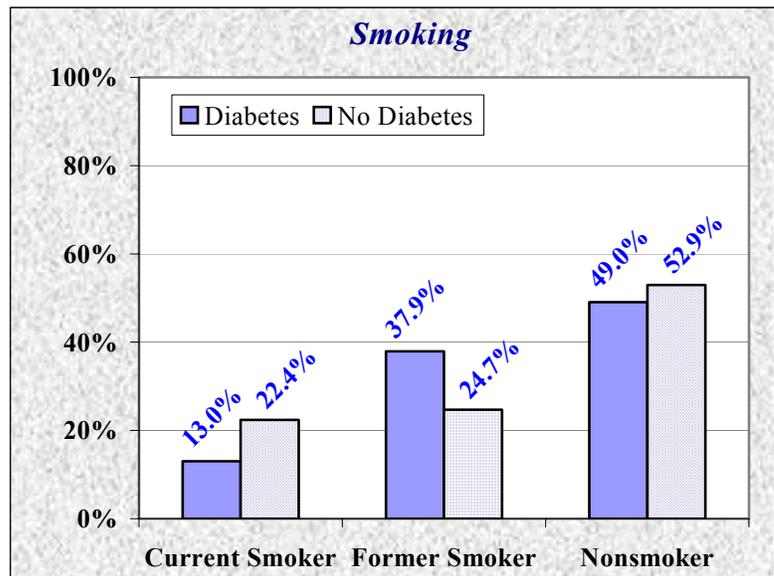
Health-Related Behaviors

The following four charts present distribution data regarding the health-related behaviors of respondents.

Percentage distributions and confidence intervals can be found in Table 5.

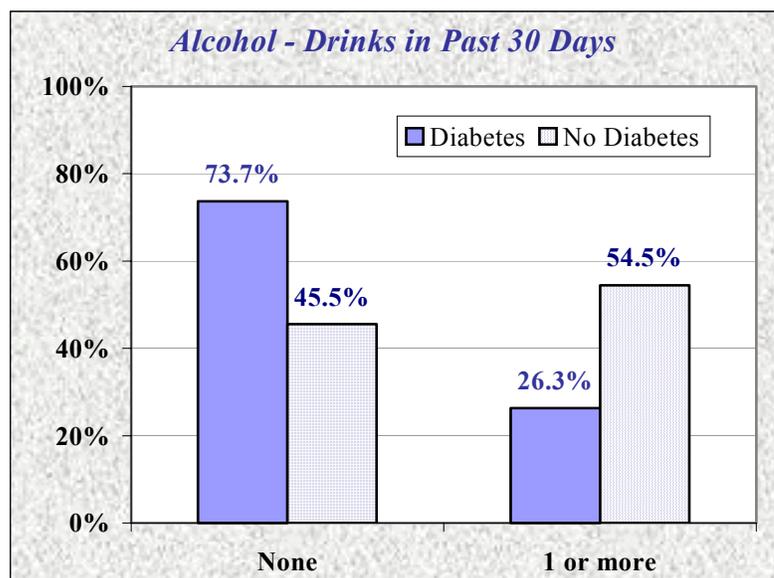
Smoking

People who have diabetes are less likely to be smokers but more likely to be former smokers than those who do not have diabetes. In fact, 13.0 percent of people who have diabetes are current smokers, compared to 22.4 percent of people who do not have diabetes. In addition, 37.9 percent of people who have diabetes are former smokers, compared to 24.7 percent of people who do not have diabetes.



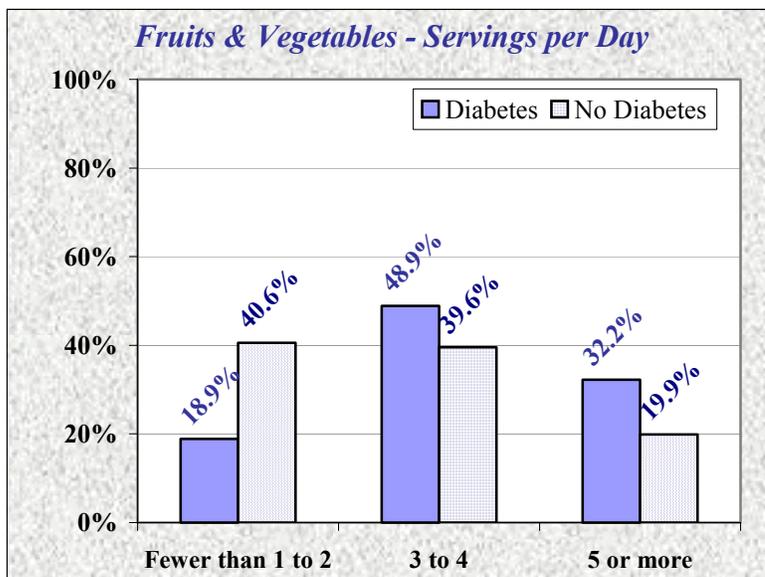
Alcohol

People who have diabetes are less likely to drink alcohol than those who do not have diabetes. For example, 73.7 percent of people who have diabetes had no alcoholic drinks in the past month, compared to 45.5 percent of people who do not have diabetes.



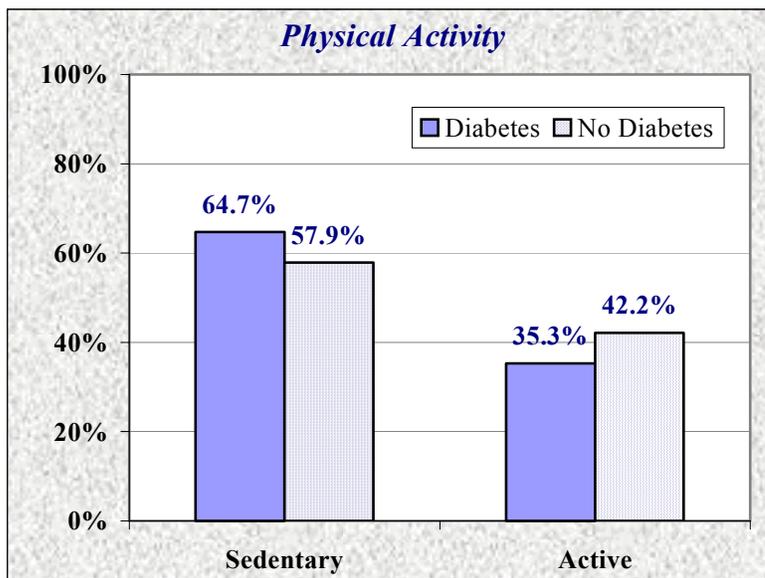
Fruits and Vegetables

People who have diabetes are more likely to consume five or more servings of fruits and vegetables a day than are those who do not have diabetes. In fact, 32.2 percent of people who have diabetes consume five or more servings of fruits and vegetables a day, compared to 19.9 percent of people who do not have diabetes.



Physical Activity

People who have diabetes are more likely to be sedentary than are those who do not have diabetes. Of the respondents, 64.7 percent of people who have diabetes are sedentary, compared to 57.9 percent of people who do not.



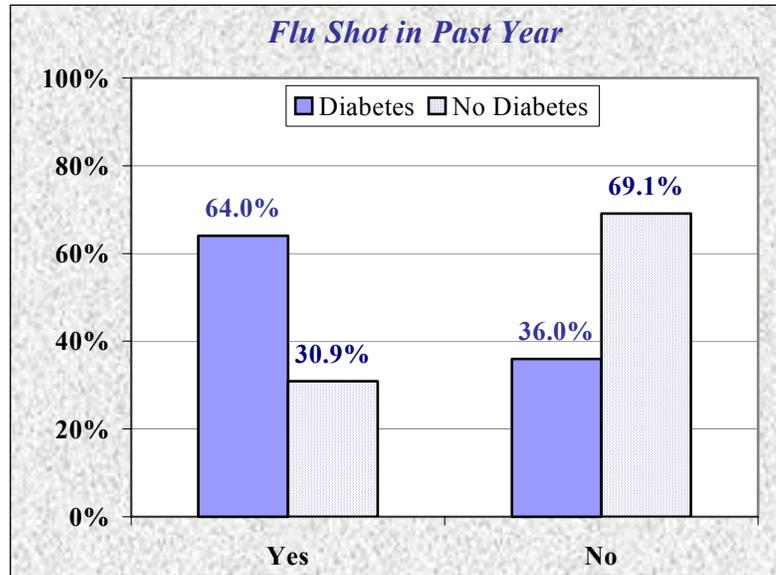
Immunization

The following two charts present distribution data regarding immunization.

Percentage distributions and confidence intervals can be found in Table 5.

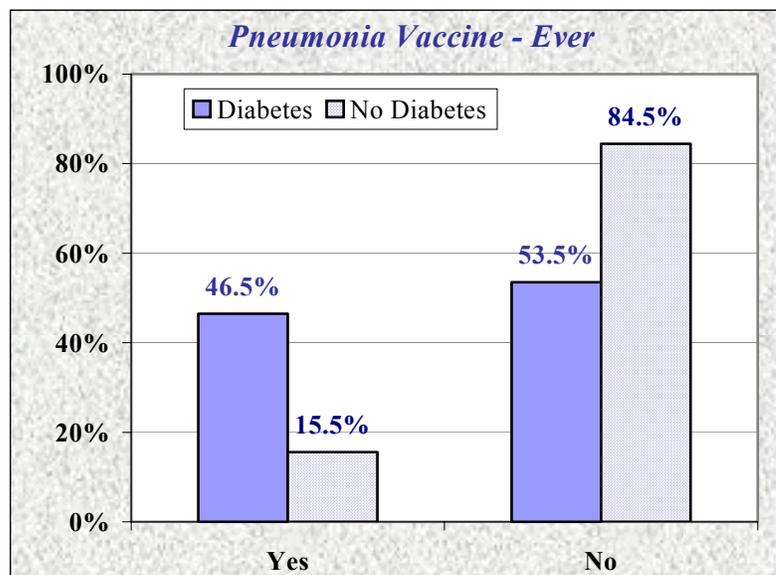
Flu Shot in Past Year

People who have diabetes are much more likely to have received a flu shot in the past year than are those who do not have diabetes. Data shows that 64.0 percent of people who have diabetes received a flu shot in the past year, compared to 30.9 percent of people who do not have diabetes.



Pneumonia Vaccine

People who have diabetes are much more likely to have ever received the pneumonia vaccine than are those who do not have diabetes. A total of 46.5 percent of people who have diabetes have received the pneumonia vaccine, compared to 15.5 percent of people who do not have diabetes.



Weight Control

The following four charts present distribution data regarding weight control.

Percentage distributions and confidence intervals can be found in Table 6.

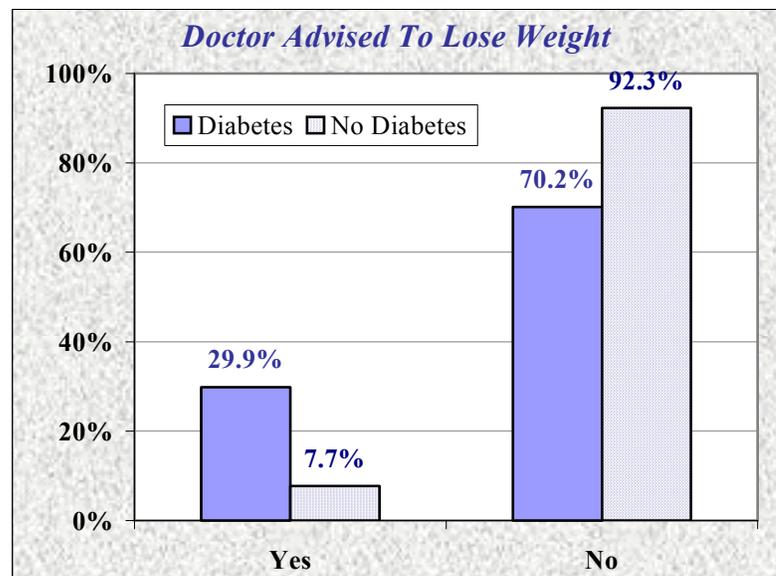
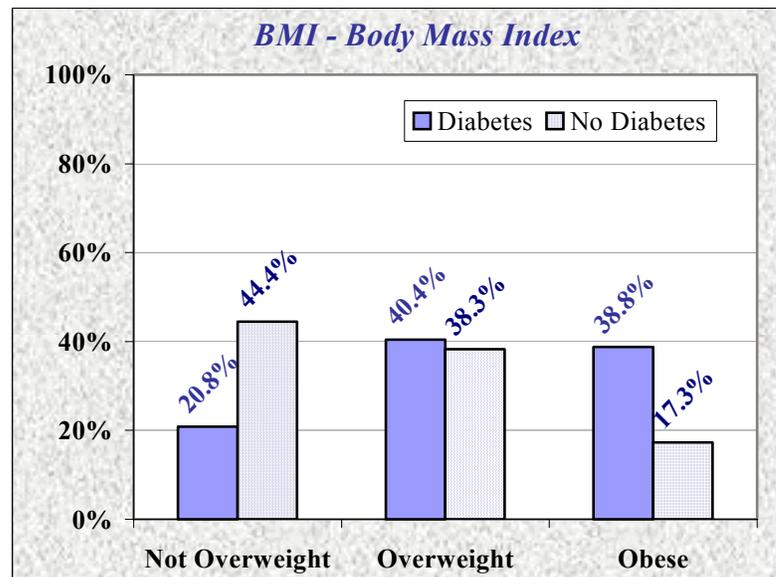
BMI

According to the data, 38.8 percent of people who have diabetes are obese, compared to 17.3 percent of people who do not have diabetes. A total of 40.4 percent of people who have diabetes are overweight but not obese, compared to 38.3 percent of people who do not have diabetes. Finally, 20.8 percent of people who have diabetes are not overweight, compared to 44.4 percent of people who do not have diabetes.

Doctor's Advice

People who have diabetes are more likely to receive advice from a doctor to lose weight. In fact, 29.9 percent of people who have diabetes received a doctor's advice to lose weight, compared to 7.7 percent of people who do not have diabetes.

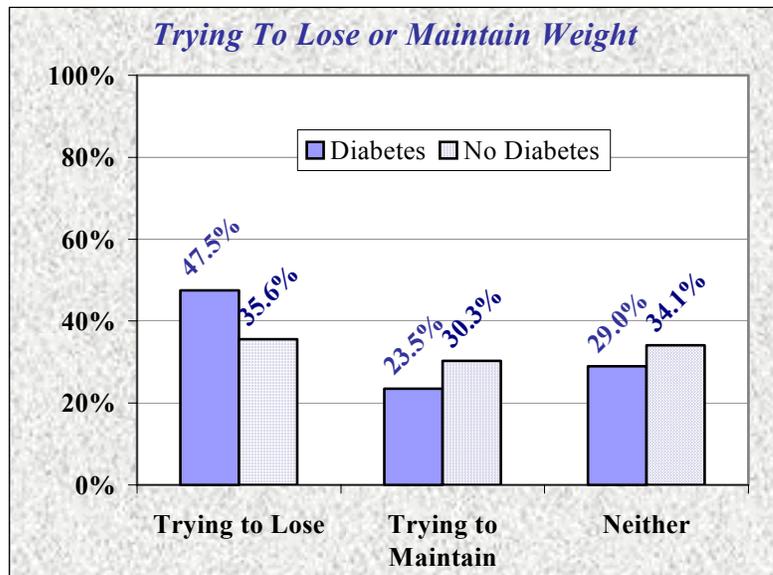
The body mass index (BMI) is calculated using height and weight and is an indicator of whether a person is overweight or obese. A BMI greater than or equal to 25 is considered overweight, and a BMI greater than or equal to 30 is considered obese.



Trying To Lose or Maintain Weight

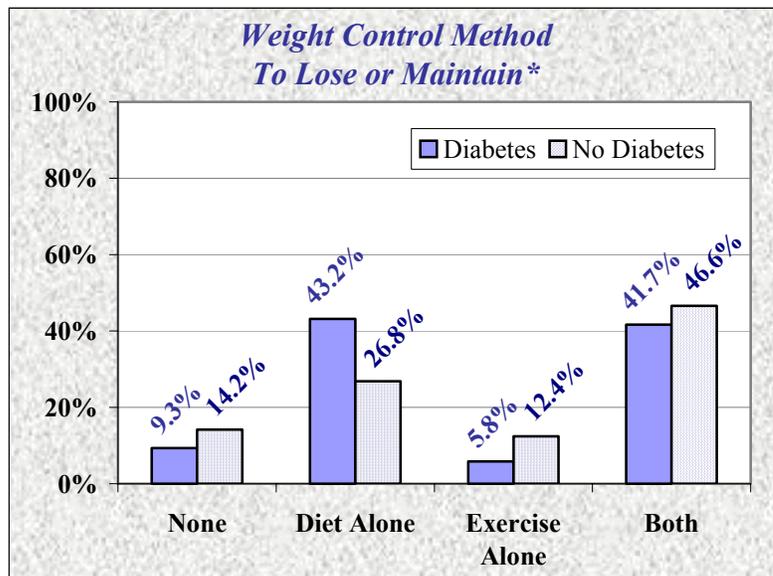
People who have diabetes are more likely to be trying to lose weight. Of those surveyed, 47.5 percent of people who have diabetes report that they are trying to lose weight, compared to 35.6 percent of people who do not have diabetes.

In addition, 23.5 percent of people who have diabetes report that they are trying to maintain their weight, compared to 30.3 percent of people who do not have diabetes.



Weight-Control Method

Of people who have diabetes, 43.2 percent reported using changes in diet alone to control weight, compared to 26.8 percent of people who do not have diabetes. Another 5.8 percent of people who have diabetes reported using exercise alone to control weight, compared to 12.4 percent of people who do not have diabetes. Finally, 41.7 percent of people who have diabetes reported using a combination of diet and exercise to control weight, compared to 46.6 percent of people who do not have diabetes.



*** Includes only those who reported trying to lose or maintain weight.**

IV. Diabetes Module

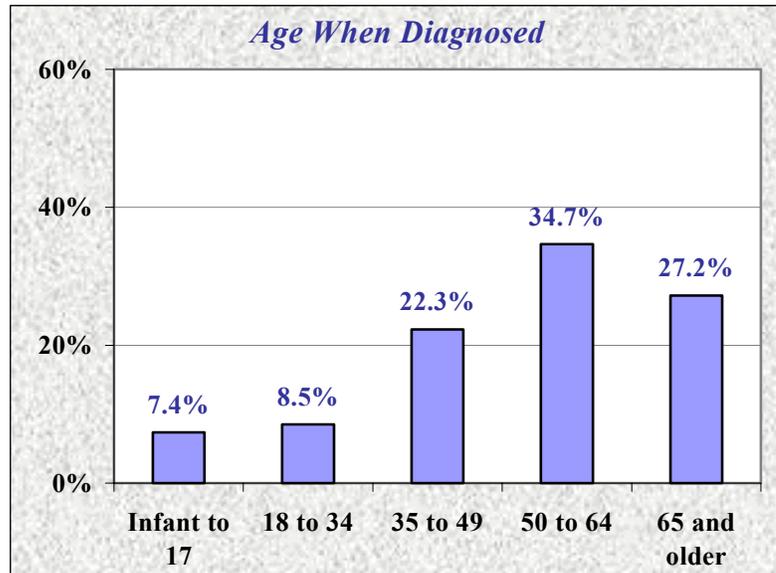
Diabetes Module

The following eight charts represent the responses to questions in the diabetes module section of the BRFSS.

Percentage distributions and confidence intervals can be found in Table 7.

Age at Diagnosis

The data shows 61.9 percent of the people who have diabetes were diagnosed at age 50 or older, while only 15.8 percent were diagnosed younger than age 35. Only 7.4 percent were diagnosed younger than 18.

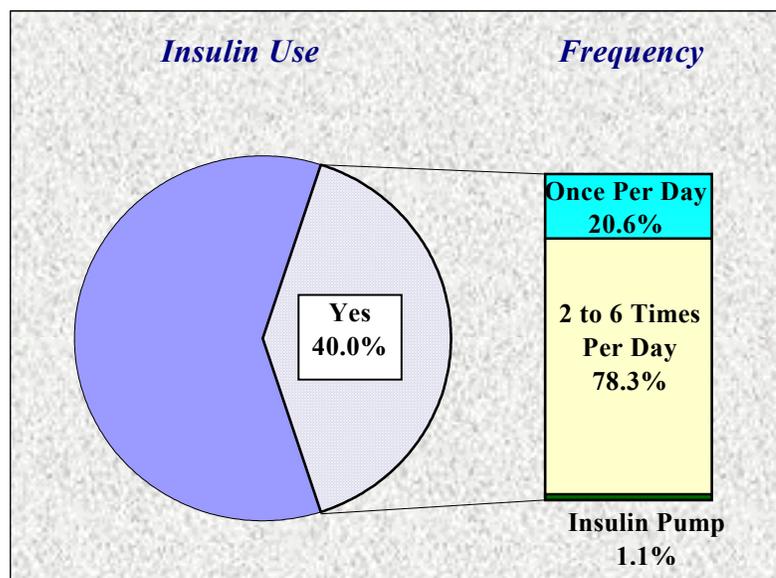


The average age at diagnosis was 51; the median age at diagnosis was 55.

Take Insulin and Frequency of Insulin Use

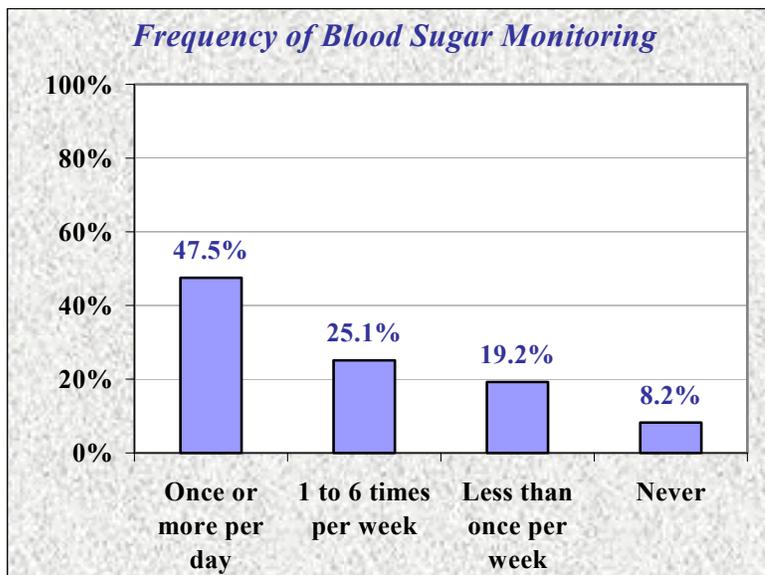
The data was collected using two separate questions. Respondents were first asked if they are now taking insulin. Those who responded yes were then asked about the frequency of insulin use.

Of the respondents, 40.0 percent indicated that they are now taking insulin. Of these, 20.6 percent take insulin once per day, 78.3 percent take insulin two to six times per day, and 1.1 percent use an insulin pump.



Frequency of Blood Sugar Monitoring

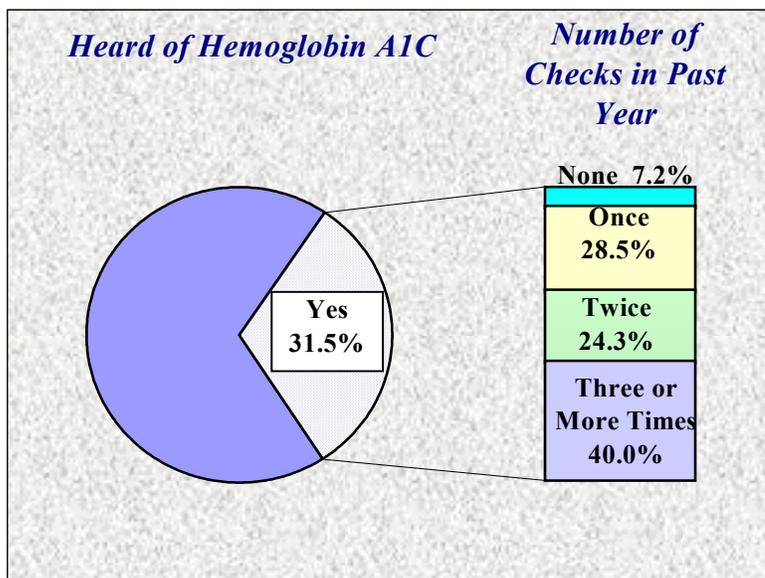
Responses indicated that 91.8 percent of people who have diabetes monitor their blood sugar on their own (or with the help of family and friends). In addition, 47.5 percent of people who have diabetes check their own blood sugar one or more times per day.



Heard of Hemoglobin A1C and Number of A1C Checks

The data was collected using two separate questions. The respondents were first asked if they had ever heard of the Hemoglobin A1C test. If they responded yes, they were then asked for the number of times they received this test in the past year.

Only 31.5 percent of respondents had heard of the Hemoglobin A1C test. Of those, 92.8 percent had at least one Hemoglobin A1C test in the past year.



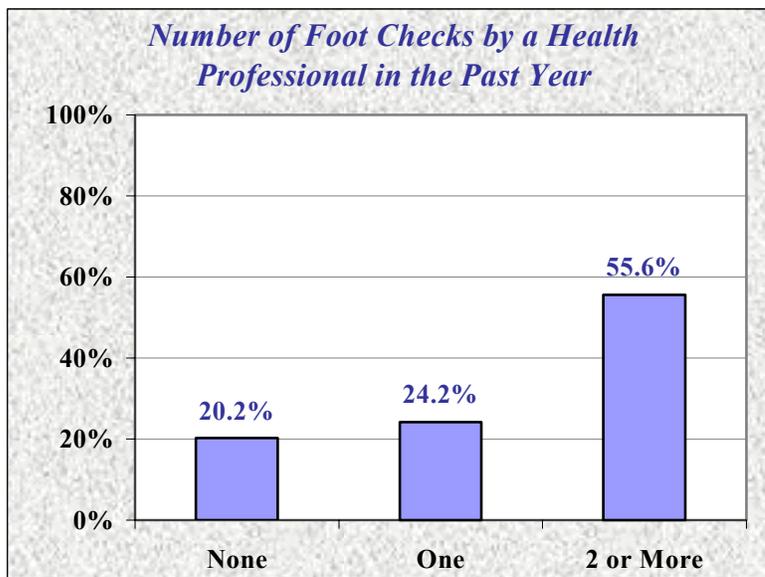
Visits to a Health Professional

The data indicates that 76.1 percent of people who have diabetes saw a health professional two or more times in the past year. Another 14.7 percent saw a health professional one time in the past year, and 9.2 percent had no visits to a health professional in the past year.



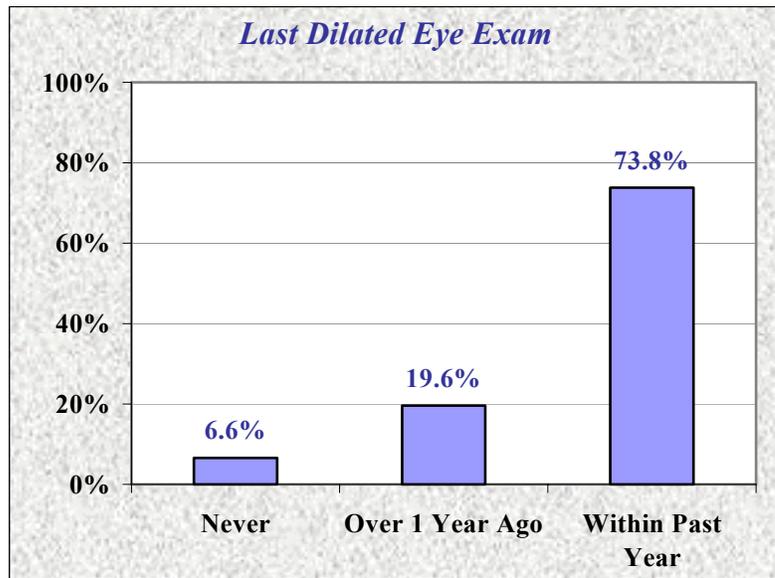
Foot Checks

The data shows that 55.6 percent of people who have diabetes had their feet checked by a health professional two or more times in the past year. Another 24.2 percent had their feet checked by a health professional one time in the past year, and 20.2 percent did not have their feet checked by a health professional in the past year.



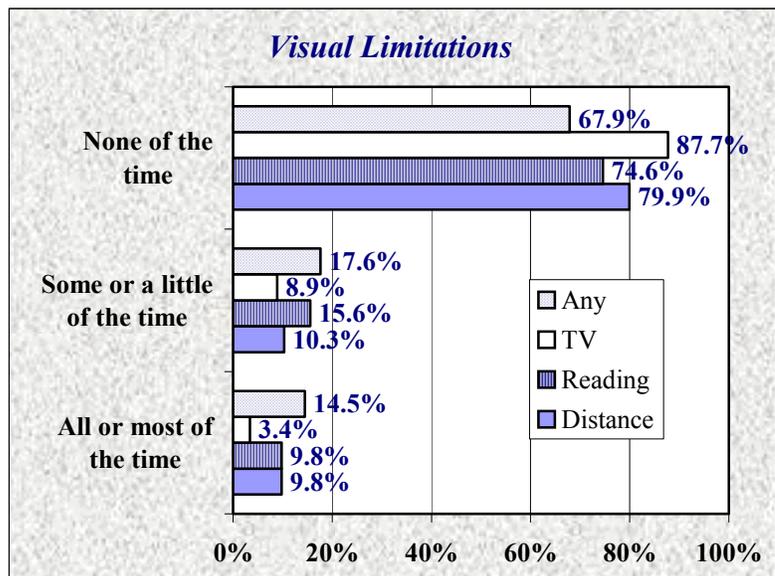
Dilated Eye Exam

During the previous year, 73.8 percent of people who have diabetes had a dilated eye exam. Another 19.6 percent had a dilated eye exam more than one year previously, and 6.6 percent had never had a dilated eye exam.



Visual Limitations

Respondents were asked about their visual limitations in three areas: distance, reading and watching TV. According to the data, 9.8 percent of respondents indicated that their distance vision is limited all or most of the time, 9.8 percent of respondents indicated that their vision during reading is limited all or most of the time, and 3.4 percent of respondents indicated that their vision during TV viewing is limited all or most of the time. Overall, 14.5 percent of respondents indicated some visual limitation all or most of the time.



V. Diabetes and Other Health Factors by Age Group

Diabetes and Other Health Factors by Age Group

Age is highly correlated with the existence of diabetes. Age is also correlated with education and income. The older a person is, the more likely he or she is to have diabetes. Also, increased age is related to lower educational attainment and lower income. In this section, the relationship between age, diabetes and some of the other health factors already presented in this report will be further analyzed.

Because age is correlated with education and income, analysis of the diabetes and health-

related factor data has similar patterns when broken down by any of these demographic variables. Therefore, age will be used as an additional level of analysis due to the demonstrated increase in the prevalence of diabetes with increased age and demonstrated correlation with education and income. The following section will distinguish differences between age groups among people who have and do not have diabetes on several of the health factors previously presented.

Diabetes Module by Age Group

The questions in the diabetes module are asked only of respondents who have indicated that a doctor has told them that they have diabetes.

Because the prevalence of diabetes is low in the younger age groups, some age groups will be combined when analyzing data specific to people who have diabetes. The population will be categorized into three age groups: 18 to 49, 50 to 64, and 65 and older.

Important Note: When broken down by age groups, the data for people who have diabetes should be interpreted with caution due to a cell sample size that is less than 50 for some variables, particularly in the youngest age group. Table 8 includes the lower level and upper level 95 percent confidence intervals. These intervals tend to be large when the sample size is small. Refer to Table 8 for further information when interpreting percentages in this section.

Sample Size

The diabetes module was not included in the 1994 survey. The following tables present the sample sizes by age group and presence of diabetes for the years 1995 through 2000 combined.

Sample Size – 1995 through 2000			
Age Group	Diabetes	No Diabetes	Total
18-49	92	6,407	6,499
50-64	131	1,876	2,007
65+	280	2,377	2,657
Total	503	10,660	11,163*

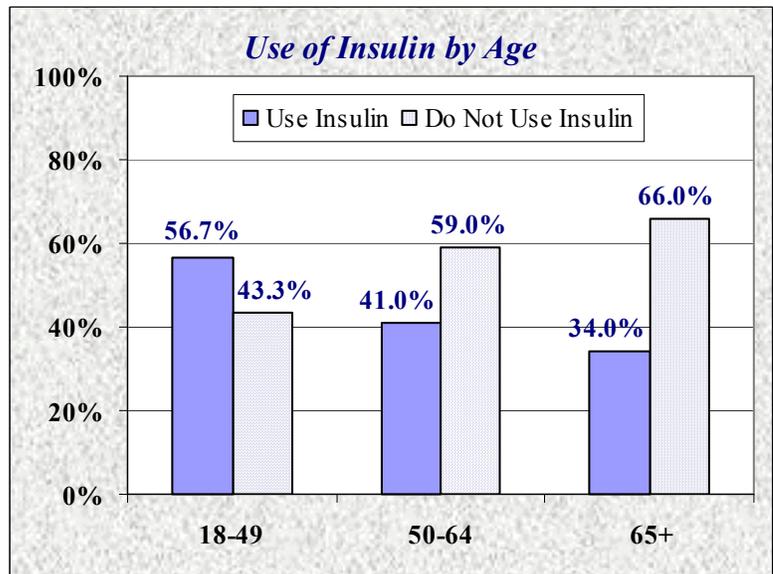
* Diabetes status was unknown for 12 of the sampled adults (0.1% of total sample of 11,175, 1995-2000)

Sample Weighted to State Adult Population – 1995 through 2000					
Age Group	Diabetes	Percent	No Diabetes	Percent	Total
18-49	3,599	1.2	286,726	98.8	290,325
50-64	5,422	6.6	77,104	93.4	82,526
65+	10,141	11.0	82,426	89.0	92,567
Total	19,162	4.1	446,256	95.9	465,418

Diabetes Module by Age Group

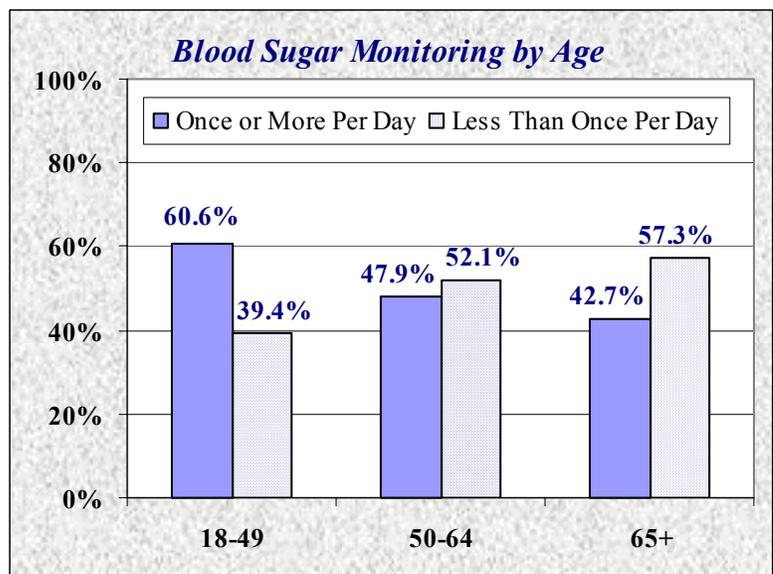
Use of Insulin by Age

People in the youngest age group were the most likely to use insulin to control their diabetes, while those 65 and older were the least likely to use insulin.



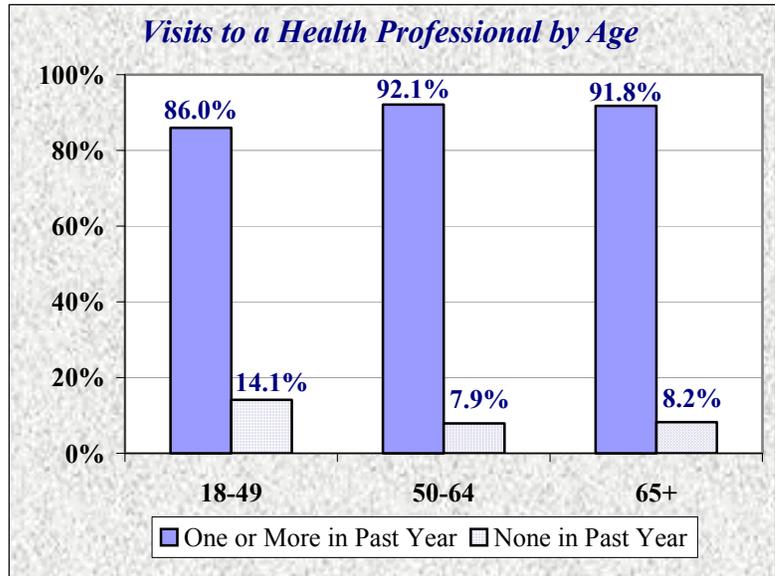
Blood Sugar Monitoring by Age

People in the youngest age group were the most likely to monitor their own blood sugar at least once a day. In the two older age groups, less than one-half of the respondents monitor their own blood sugar daily.



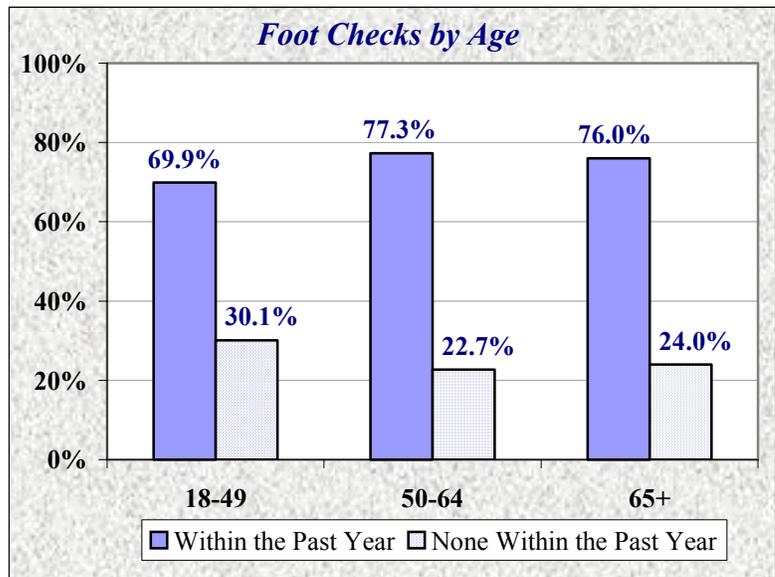
Visits to a Health Professional by Age

There is no statistical difference among the age groups regarding annual visits to a health professional for diabetes care.



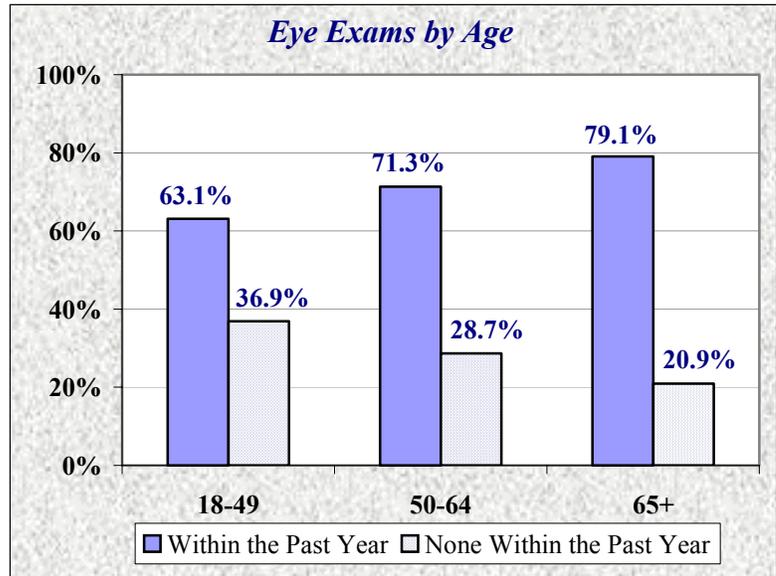
Foot Checks by Age

There is no statistical difference among the age groups regarding annual foot exams for diabetes care.



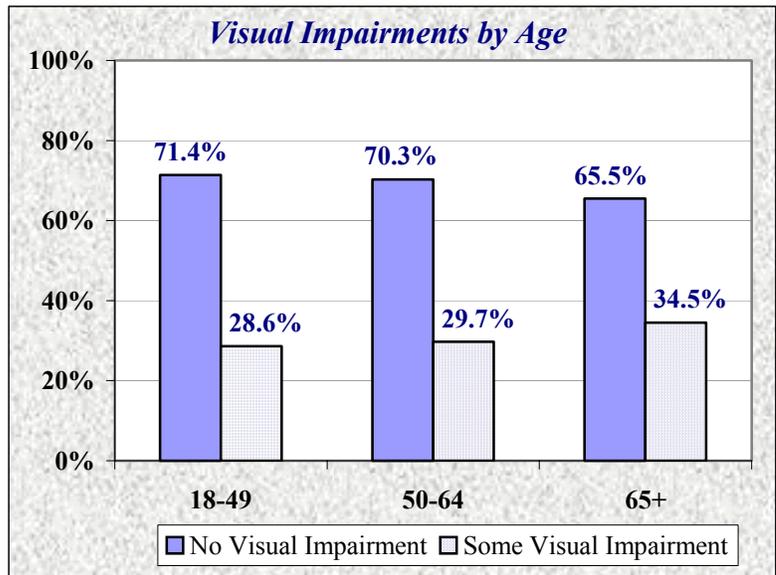
Eye Exams by Age

People in the youngest age group were the least likely to have received an eye exam in the past year. The percentage increased as age increased, with people 65 and older being the most likely to have received an eye exam in the past year.



Visual Impairments by Age

There is no statistical difference among the age groups regarding visual impairments.



Diabetes by Age Group and Related Health Factors

The following table presents health factor information by age group for people who have and do not have diabetes. The percentage in each cell represents the people in that category who display the health factor. In the “Current Smoker” row, for example, 30 percent of people age 18 through 49 who have diabetes are current smokers, while 5 percent of people 65 and older who have diabetes are current smokers and, for all age groups, 13 percent of people are current smokers.

Important Note: When broken down by age groups, the data for people who have diabetes should be interpreted with caution due to a cell sample size that is less than 50 for some variables, particularly in the youngest age group. Table 9 includes the lower level and upper level 95 percent confidence intervals. These intervals tend to be large when the sample size is small. Refer to Table 9 for further information when interpreting percentages.

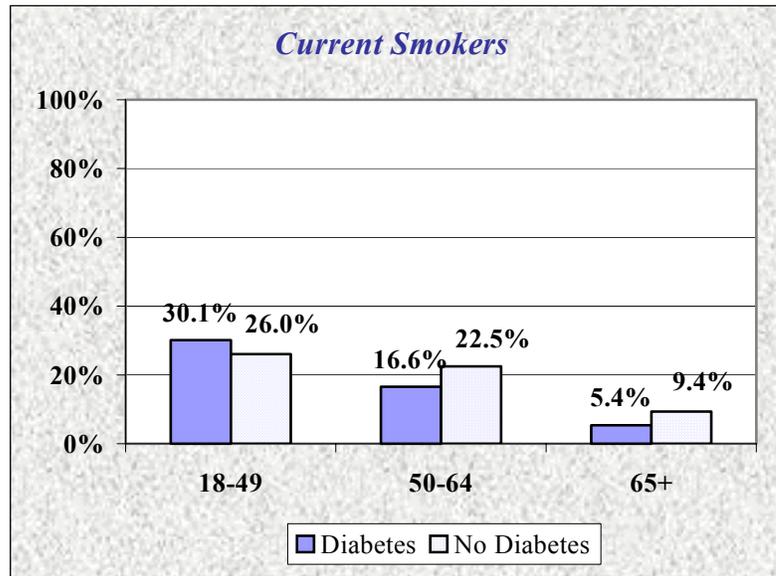
Age Group	18-49		50-64		65+		Total	
	Diabetes	No Diabetes						
Health Factor								
Current Smoker	30%	26%	17%	23%	5%	9%	13%	22%
< 5 Fruits & Vegetables	71%	85%	71%	76%	65%	68%	68%	80%
Sedentary Lifestyle	33%	55%	62%	62%	75%	63%	65%	58%
High Blood Pressure	32%	14%	63%	33%	64%	47%	58%	23%
High Cholesterol	30%	21%	35%	43%	43%	42%	38%	31%
Overweight	72%	52%	80%	67%	81%	59%	79%	56%
No Flu Shot	48%	79%	42%	68%	28%	36%	36%	69%

The next seven charts display the data for these health factors by age and diabetes status.

Diabetes by Age Group and Related Health Factors

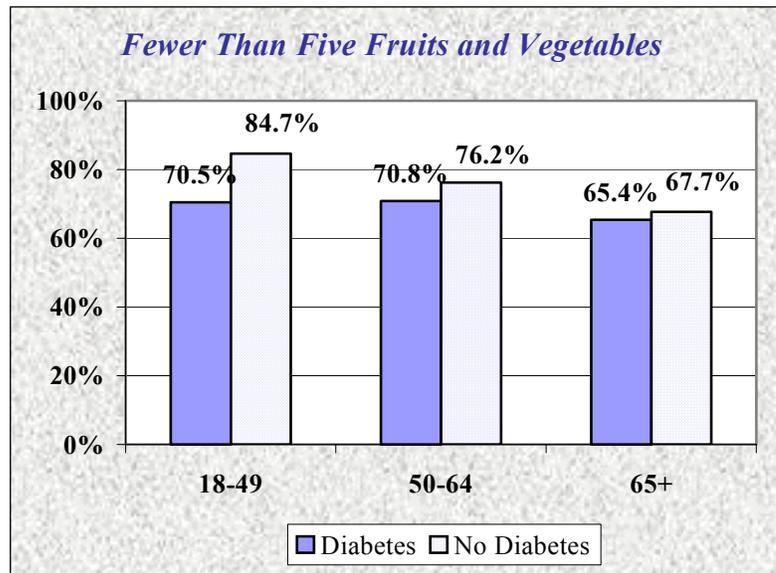
Smoking

Whether or not they have diabetes, younger adults are more likely to be smokers than are older adults.



Fewer Than Five Fruits and Vegetables

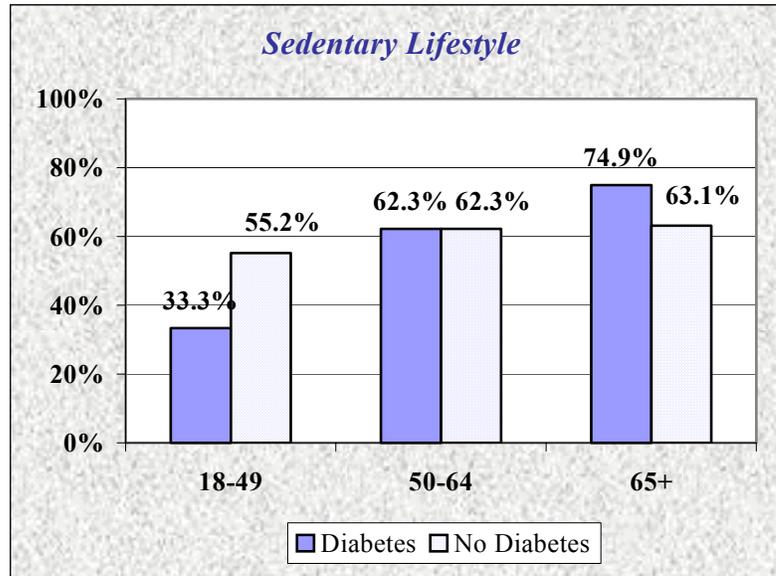
In all age groups, adults who have diabetes are more likely to consume the recommended five or more servings of fruits and vegetables daily than are those who do not have diabetes.



Sedentary Lifestyle

The percentage of adults who lead a sedentary lifestyle increases as age increases.

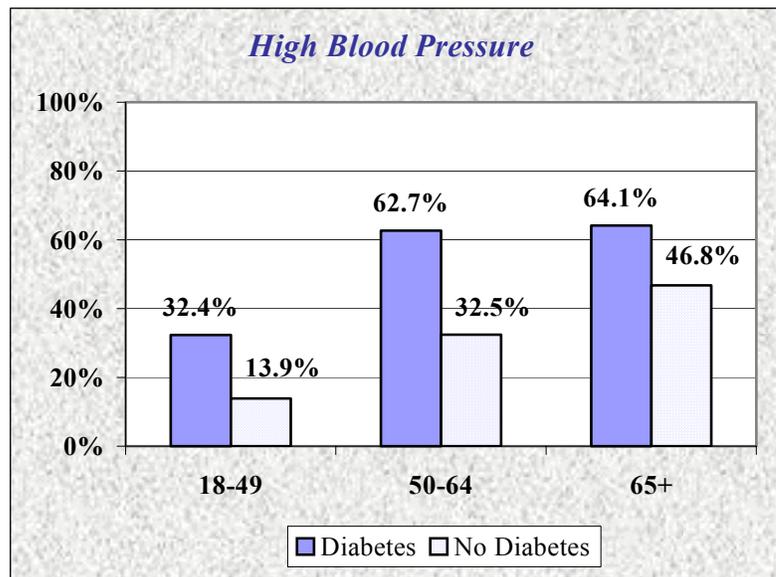
However, younger adults who have diabetes are more active than those who do not have diabetes. For adults age 65 and older, those who do not have diabetes are more physically active than those who have diabetes.



High Blood Pressure

The percentage of adults who have high blood pressure increases as age increases.

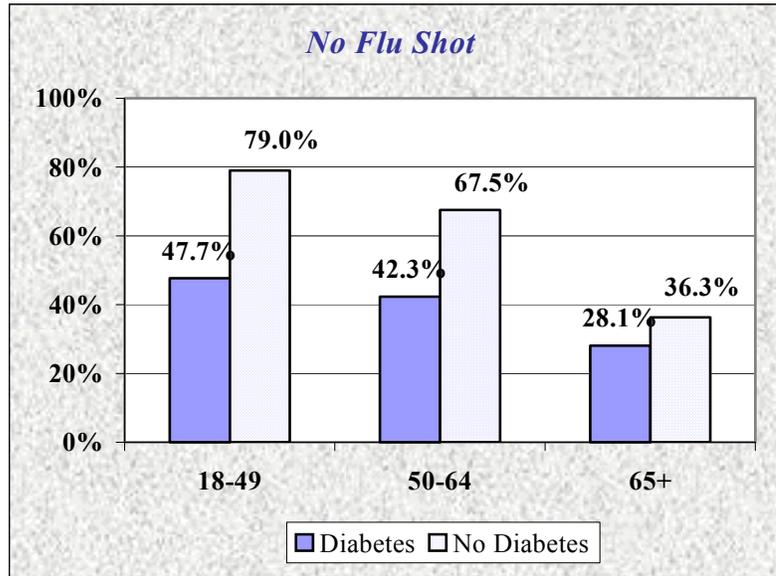
In all age groups, adults who have diabetes are more likely to have high blood pressure.



No Flu Shot

The percentage of adults who do not get an annual flu shot decreases with age.

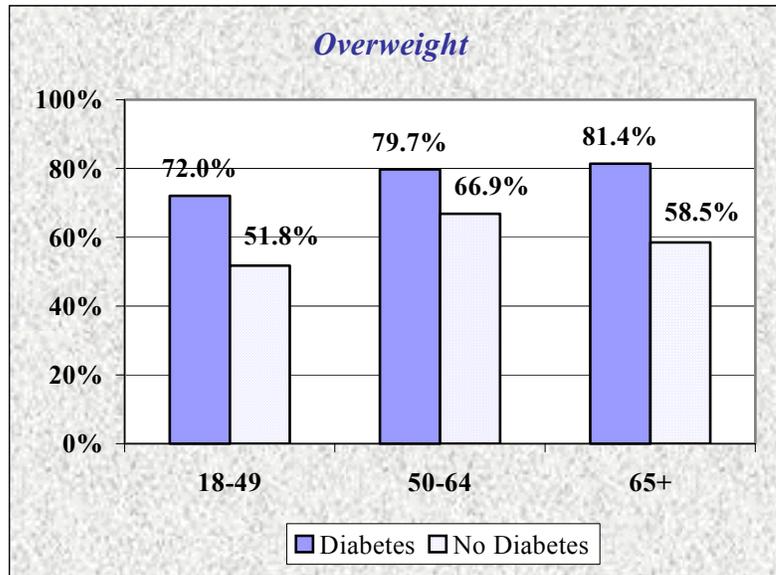
In all age groups, adults who have diabetes are more likely to get a flu shot.



Overweight

The percentage of adults who are overweight increases with age.

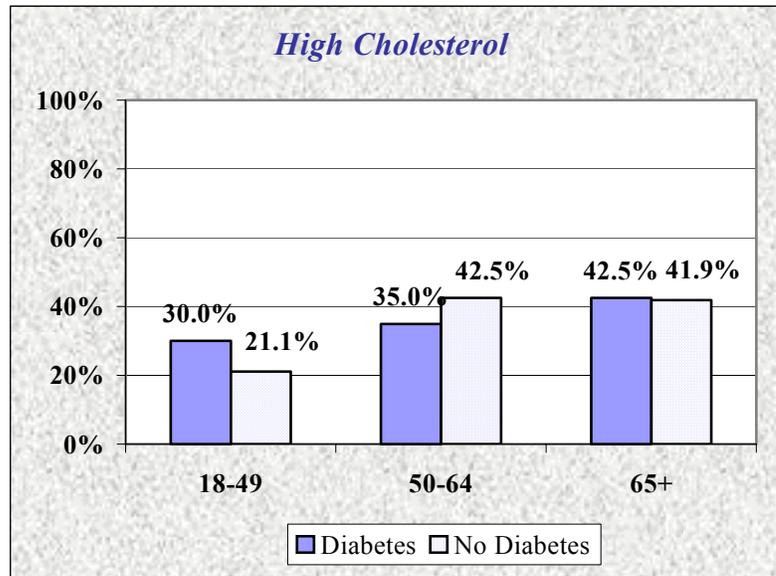
In all age groups, adults who have diabetes are more likely to be overweight.



High Cholesterol

The percentage of adults who have high cholesterol increases as age increases.

Among young adults, those who have diabetes are more likely to have high cholesterol.



*** Excludes adults who have never had their cholesterol checked.**

Eight percent of adults who have diabetes and 30 percent of adults who do not have diabetes have never had their cholesterol checked.

VI. Summary and Conclusions

Summary and Conclusions

This study analyzes data from the North Dakota BRFSS for the years 1994 through 2000, with a focus on diabetes and related health issues.

Data in the areas of demographics, health status, health conditions, health-related behaviors, immunization, weight control and diabetes-specific questions were analyzed.

Several conclusions can be made from this data regarding the prevalence of diabetes in the adult population, as well as the differences between people who do and do not have diabetes on the various health indicators studied.

Prevalence by Demographic Variables

- The prevalence of diabetes in the adult population in North Dakota for the study period was 4 percent.
- Prevalence was equal between the genders.
- Prevalence increased with age.
- Prevalence was significantly higher among the American Indian population than among white non-Hispanics and other races.
- Prevalence decreased as income increased.
- Prevalence decreased as education increased.
- Prevalence among employed adults was significantly lower than among out-of-work adults and adults who are not in the workforce

The varying prevalence of diabetes was statistically significant (chi-square analysis, $p < .05$) for all demographic variables except for gender.

Distribution Data – Comparing People Who Have Diabetes to Those Who Do Not

Almost all variables studied resulted in statistically significant differences between people who have diabetes and those who do not. The only variable that did not differ was whether or not they have a health plan.

Health Status

- General health and physical health – People who do not have diabetes indicated better general health and better physical health.
- Mental health – People who have diabetes indicated fewer days of poor mental health.
- Limited activities – People who have diabetes were more limited in their daily activities.

Health Conditions

- Blood pressure – People who have diabetes are more likely to have their blood pressure checked and to have high blood pressure.
- Blood cholesterol – People who have diabetes are more likely to have their blood cholesterol checked and are more likely to have high cholesterol.

Health-Related Behaviors

- Smoking – People who have diabetes are less likely to smoke and are more likely to be former smokers.
- Alcohol – People who have diabetes are less likely to drink alcohol.
- Fruits and vegetables – People who have diabetes are more likely to consume the recommended five or more fruits and vegetables each day.
- Physical activity – People who have diabetes are more sedentary.

Immunizations

- Flu shot – People who have diabetes are much more inclined to get an annual flu shot.
- Pneumonia vaccine – People who have diabetes are more likely to have had a pneumonia vaccine at some time in their lives.

Weight Control

- BMI – People who have diabetes are more likely to be obese.
- Trying to lose or maintain weight – People who have diabetes are more likely to be trying to lose weight, while those who do not have diabetes are more likely to be trying to maintain their weight.
- Doctor's advice – People who have diabetes are more likely to have received advice from a doctor to lose weight.
- Weight-control method – People who have diabetes are more likely to be using changes in diet alone to control weight.

Summary

The data indicates that people who have diabetes have more physical health problems, including high blood pressure, high cholesterol, obesity and physical limitations. They also are more likely to have sedentary lifestyles. However, people

who have diabetes seem to take better care of themselves in the areas of health checks (blood pressure and cholesterol), less smoking and alcohol consumption, more fruits and vegetables and getting immunizations.

Diabetes Module

The diabetes module includes questions that are asked only of people who have been diagnosed with diabetes.

- The average age at diagnosis was 51. More than one-half of the people who have diabetes were diagnosed at 50 or older.
- Forty percent use insulin.
- Nearly one-half (47.5%) monitor their own blood sugar on a daily basis.
- Only 31.5 percent have heard of the Hemoglobin A1C test.
- The majority (91%) saw a health professional at least once in the past year.
- The majority (80%) had their feet checked by a health professional at least once in the past year.
- The majority (74%) had a dilated eye exam in the past year.
- Thirty-two percent indicate some visual limitations, with 15 percent indicating visual limitations all or most of the time in either distance, reading or TV viewing.
- The majority of people who have diabetes are receiving the health care checks that they need.

Diabetes Module by Age Group

Significant Differences

- More than one-half (57%) of adults who have diabetes in the 18 to 49 age group use insulin, compared to 41 percent in the 50 to 64 age group and 34 percent in the 65 and older age group.
- Sixty-one percent of adults who have diabetes in the 18 to 49 age group monitor their own blood sugar daily, compared to 48 percent in the 50 to 64 age group and 43 percent in the 65 and older age group.
- The percentage of adults who have diabetes who had an eye exam within the past year increases with age. Sixty-three percent of those age 18 to 49, 71 percent of those age 50 to 64, and 79 percent of those 65 and older reported having a dilated eye exam within the past year.

No Significant Difference

- There were no significant differences among the age groups on the following three measures:
 - Seeing a health care professional at least once in the past year
 - Having feet checked at least once in the past year
 - Having some visual impairment

Diabetes by Age Group and Related Health Factors

Seven health factors were analyzed in this section: current smoker, fewer than five fruits and vegetables daily, sedentary lifestyle, high blood pressure, high cholesterol, overweight, and no flu shot.

In the entire adult population for all of these health factors, there was a significant difference among age groups. The younger a person is, the more likely he or she is to smoke, eat fewer than five fruits and

vegetables, and not have a flu shot. The older a person is, the more likely he or she is to have a sedentary lifestyle, high blood pressure, high cholesterol and be overweight. The same pattern of statistical significance is found when looking at the population of adults who do not have diabetes.

When looking at adults who have diabetes, a different pattern is discovered.

Adults Who Have Diabetes – By Age Group and Related Health Factors

Significant Differences

- Younger adults who have diabetes are more likely to smoke than are older adults who have diabetes.
- Younger adults who have diabetes are less likely to have a sedentary lifestyle than are older adults who have diabetes.
- Younger adults who have diabetes are less likely to have high blood pressure than are older adults who have diabetes.
- Younger adults who have diabetes are less likely to get a flu shot than are older adults who have diabetes.

No Significant Difference

- There is no significant difference among age groups of adults who have diabetes for the following factors:
 - Eating fewer than five fruits and vegetables daily
 - Having high cholesterol
 - Being overweight

Data Tables

Table 1

Diabetes -- North Dakota, 1994-2000

Percentage of People Who Reported Being Told by a Doctor That They Have Diabetes by Selected Demographic Characteristics, North Dakota Adults 18+, 1994-2000

Demographic Subgroup	North Dakota Population		Adults Who Reported Being Told By a Doctor That They Have Diabetes				
	Distribution ²	Number of Adults ¹	Percentage (prevalence)			Number of Adults ¹	Distribution by Category ²
Diagnosed With Diabetes							
Yes	4.0%	18,812					
Yes - During Pregnancy	0.7%	3,305					
No	95.2%	442,392					
Total, All Adults 18+	100.0%	464,509					
			95% Confidence Intervals				
			%	LL (%)	UL (%)		
Gender							
Male	49.2%	228,632	4.0%	3.5%	4.5%	9,064	48.2%
Female	50.8%	235,877	4.1%	3.6%	4.6%	9,748	51.8%
Total, All Adults 18+	100.0%	464,509	4.0%	3.6%	4.4%	18,812	100.0%
Age Group							
18-34	33.1%	153,552	0.8%	0.5%	1.1%	1,218	6.5%
35-49	29.5%	136,854	1.6%	1.2%	2.0%	2,234	11.9%
50-64	17.6%	81,683	6.4%	5.3%	7.5%	5,211	27.7%
65+	19.9%	92,420	11.0%	9.8%	12.2%	10,129	53.9%
Total, All Adults 18+	100.0%	464,509	4.0%	3.6%	4.4%	18,792	100.0%
Race							
White, Non-Hispanic	95.0%	440,434	3.9%	3.5%	4.3%	16,992	90.3%
Native American	2.8%	13,143	10.9%	7.3%	14.5%	1,436	7.6%
Other	2.2%	10,167	3.8%	1.3%	6.3%	384	2.0%
Total, All Adults 18+	100.0%	463,744	4.0%	3.6%	4.4%	18,812	100.0%
Income							
Less Than \$20,000	22.8%	106,001	7.1%	6.1%	8.1%	7,554	40.2%
\$20,000-\$49,999	47.8%	221,856	3.4%	2.9%	3.9%	7,564	40.2%
\$50,000 or More	19.2%	89,142	1.8%	1.2%	2.4%	1,614	8.6%
Unknown	10.2%	47,511	4.4%	3.2%	5.6%	2,080	11.1%
Total, All Adults 18+	100.0%	464,510	4.0%	3.6%	4.4%	18,812	100.0%
Education							
Less Than High School	13.1%	60,572	9.5%	8.0%	11.0%	5,731	30.5%
HS Grad or GED	30.4%	141,091	4.2%	3.6%	4.8%	5,901	31.4%
Some Post High School	33.7%	156,527	2.9%	2.4%	3.4%	4,581	24.4%
College Graduate	22.8%	105,838	2.4%	1.8%	3.0%	2,579	13.7%
Total, All Adults 18+	100.0%	464,028	4.0%	3.6%	4.4%	18,792	100.0%
Employment							
Employed	65.6%	304,354	2.2%	1.9%	2.5%	6,557	34.9%
Out of Work	3.7%	17,251	8.4%	5.9%	10.9%	1,441	7.7%
Not in Workforce	30.7%	142,406	7.6%	6.7%	8.5%	10,814	57.5%
Total, All Adults 18+	100.0%	464,011	4.0%	3.6%	4.4%	18,812	100.0%

¹ unknowns excluded in all categories except for Income

² percentages do not always add to 100 due to rounding

Source: North Dakota Behavioral Risk Factor Surveillance System

Table 2

Prevalence of Diabetes by Demographic Variables

	% with diabetes	% without diabetes	Chi-Square	P
Gender				
Male	4.0%	96.0%	0.21	0.651
Female	4.1%	95.9%		
Age				
18-34	0.8%	99.2%	311.48	<.05
35-49	1.6%	98.4%		
50-64	6.4%	93.6%		
65+	11.0%	89.0%		
Race				
White, Non-Hispanic	3.9%	96.1%	13.87	<.05
Native American	10.9%	89.1%		
Other	3.8%	96.2%		
Income				
Less Than \$20,000	7.1%	92.9%	92.87	<.05
\$20,000-\$49,999	3.4%	96.6%		
\$50,000 or More	1.8%	98.2%		
Education				
Less Than HS	9.5%	90.5%	85.91	<.05
HS Grad/GED	4.2%	95.8%		
Some Post HS	2.9%	97.1%		
College Grad	2.4%	97.6%		
Employment				
Employed	2.2%	97.8%	150.96	<.05
Out of Work (unemployed)	8.4%	91.6%		
Not in Workforce	7.6%	92.4%		

Table 3

Diabetes by Health Status

	Diabetes			No Diabetes		
	%	95% Confidence Interval		%	95% Confidence Interval	
		LL (%)	UL (%)		LL (%)	UL (%)
Health Plan ^e						
Currently Insured						
Yes	91.3%	88.7%	93.8%	88.7%	88.0%	89.3%
No	8.7%	6.2%	11.3%	11.4%	10.7%	12.0%
^ General Health ^e						
Very Good/Excellent	18.4%	14.8%	22.0%	59.2%	58.2%	60.1%
Good	35.9%	31.6%	40.1%	29.6%	28.7%	30.5%
Fair or Poor	45.7%	41.3%	50.1%	11.3%	10.6%	11.9%
^ Physical Health ^e						
Days Poor in Past 30						
None	58.2%	53.8%	62.7%	67.6%	66.7%	68.5%
1 to 2	6.0%	3.9%	8.1%	12.9%	12.2%	13.6%
3 to 10	10.2%	7.4%	13.0%	11.4%	10.8%	12.0%
11 or more	25.6%	21.6%	29.5%	8.0%	7.5%	8.5%
^ Mental Health ^e						
Days Poor in Past 30						
None	76.8%	72.9%	80.7%	67.3%	66.3%	68.2%
1 to 2	4.6%	2.4%	6.7%	11.6%	11.0%	12.2%
3 to 10	8.8%	6.1%	11.4%	13.3%	12.7%	14.0%
11 or more	9.9%	7.2%	12.5%	7.8%	7.3%	8.3%
^ Limited Activities ^e						
Days in Past 30 Due to Poor Physical or Mental Health *						
None	44.6%	38.0%	51.2%	68.4%	67.1%	69.7%
1 to 2	9.4%	5.5%	13.3%	13.9%	12.9%	14.8%
3 to 10	15.0%	10.5%	19.5%	9.7%	8.9%	10.5%
11 or more	31.1%	25.1%	37.0%	8.1%	7.4%	8.8%

* excludes those who reported no days of poor physical and mental health

e 1994-2000

^ statistically significant difference between people who have and do not have diabetes, $p < .05$

Table 4

Diabetes by Health Conditions

	Diabetes			No Diabetes		
	<u>95% Confidence Interval</u>			<u>95% Confidence Interval</u>		
	%	LL (%)	UL (%)	%	LL (%)	UL (%)
^ Blood Pressure ^d						
Checked in Past Year						
Yes	98.3%	96.9%	99.8%	86.8%	85.9%	87.7%
No	1.7%	0.2%	3.1%	13.2%	12.3%	14.1%
^ High Blood Pressure ^d						
Ever						
Yes	57.5%	51.6%	63.3%	23.2%	22.2%	24.3%
No	42.5%	36.7%	48.4%	76.8%	75.7%	77.8%
^ Blood Cholesterol ^d						
Ever Checked						
Yes	92.0%	88.6%	95.4%	69.9%	68.7%	71.2%
No	8.0%	4.6%	11.4%	30.1%	28.8%	31.3%
^ Blood Cholesterol ^d						
Checked in Past Year*						
Yes	83.7%	79.2%	88.3%	59.5%	58.0%	61.1%
No	16.3%	11.7%	20.8%	40.5%	38.9%	42.0%
^ High Cholesterol ^d						
Ever*						
Yes	38.2%	32.3%	44.1%	30.8%	29.4%	32.2%
No	61.8%	55.9%	67.7%	69.2%	67.8%	70.6%

* excludes those who reported blood cholesterol has never been checked

^d 95, 97, 98, 99

[^] statistically significant difference between people who have and do not have diabetes, $p < .05$

Table 5

Diabetes by Health-Related Behaviors

	Diabetes			No Diabetes		
	<u>95% Confidence Interval</u>			<u>95% Confidence Interval</u>		
	%	LL (%)	UL (%)	%	LL (%)	UL (%)
^ Smoking ^e						
Current Smoker	13.0%	10.0%	16.0%	22.4%	21.5%	23.2%
Former Smoker	37.9%	33.5%	42.3%	24.7%	23.9%	25.5%
Non-Smoker	49.0%	44.6%	53.5%	52.9%	52.0%	53.9%
^ Alcohol ^a						
Drinks in Past 30 Days						
None	73.7%	67.7%	79.7%	45.5%	44.0%	47.1%
1 or more	26.3%	20.3%	32.3%	54.5%	52.9%	56.0%
^ Fruits & Vegetables ^b						
Servings Per Day						
Fewer than 1 to 2	18.9%	14.2%	23.5%	40.6%	39.3%	41.9%
3 to 4	48.9%	42.7%	55.1%	39.6%	38.3%	40.8%
5 or more	32.2%	26.5%	37.9%	19.9%	18.9%	20.9%
^ Physical Activity ^b						
Sedentary	64.7%	58.7%	70.7%	57.9%	56.5%	59.2%
Active	35.3%	29.3%	41.3%	42.2%	40.8%	43.5%

Diabetes by Immunizations

	Diabetes			No Diabetes		
	<u>95% Confidence Interval</u>			<u>95% Confidence Interval</u>		
	%	LL (%)	UL (%)	%	LL (%)	UL (%)
^ Flu Shot in Past Year ^c						
Yes	64.0%	58.6%	69.5%	30.9%	29.7%	32.0%
No	36.0%	30.5%	41.4%	69.1%	68.0%	70.3%
^ Pneumonia Vaccine Ever ^c						
Yes	46.5%	40.7%	52.2%	15.5%	14.6%	16.5%
No	53.5%	47.8%	59.3%	84.5%	83.5%	85.4%

a 95, 97, 99 b 94, 96, 98, 00 c 95, 97, 99, 00 e 1994-2000

^ statistically significant difference between people who have and do not have diabetes, p < .05

Table 6

Diabetes by Weight Control

	Diabetes			No Diabetes		
	%	<u>95% Confidence Interval</u>		%	<u>95% Confidence Interval</u>	
		LL (%)	UL (%)		LL (%)	UL (%)
^ BMI ^e						
Not Overweight	20.8%	17.1%	24.5%	44.4%	43.4%	45.4%
Overweight	40.4%	35.9%	44.9%	38.3%	37.3%	39.2%
Obese	38.8%	34.4%	43.2%	17.3%	16.6%	18.1%
^ Received Doctor's Advice to Lose Weight ^b						
Yes	29.9%	24.5%	35.2%	7.7%	7.0%	8.4%
No	70.2%	64.8%	75.5%	92.3%	91.6%	93.0%
^ Trying to Lose or Maintain Weight ^b						
Trying to Lose	47.5%	41.5%	53.5%	35.6%	34.4%	36.8%
Trying to Maintain	23.5%	18.4%	28.6%	30.3%	29.1%	31.5%
Neither	29.0%	23.5%	34.5%	34.1%	32.9%	35.3%
^ Weight Control Method ^b						
To lose or maintain weight*						
None	9.3%	5.4%	13.2%	14.2%	13.1%	15.3%
Diet and/or exercise	90.7%	86.8%	94.6%	85.8%	84.7%	86.9%
<i>Diet alone</i>	43.2%	36.0%	50.4%	26.8%	25.4%	28.2%
<i>Exercise alone</i>	5.8%	1.7%	9.9%	12.4%	11.3%	13.5%
<i>Both</i>	41.7%	34.6%	48.8%	46.6%	45.1%	48.1%
<i>None</i>	9.3%	5.4%	13.2%	14.2%	13.1%	15.3%

* includes only those who reported trying to lose or maintain weight

^b 94, 96, 98, 00 ^e 1994-2000

[^] statistically significant difference between people who have and do not have diabetes, $p < .05$

Table 7

Diabetes Module - People Who Have Diabetes Only

	%	95% Confidence Interval	
		LL (%)	UL (%)
Diabetes - Ever Told by a Doctor You Have Diabetes ^e			
Yes	4.0%	3.7%	4.4%
Yes - Pregnancy Only	0.7%	0.6%	0.9%
No	95.2%	94.8%	95.6%
Age at Diagnosis ^f			
Infant to 17	7.4%	4.5%	10.2%
18 to 34	8.5%	5.8%	11.2%
35 to 49	22.3%	18.4%	26.3%
50 to 64	34.7%	30.1%	39.2%
65 and older	27.2%	23.0%	31.4%
Take Insulin ^g			
Yes	40.0%	34.8%	45.3%
No	60.0%	54.7%	65.2%
Frequency of Insulin Use ^g (only those that take insulin)			
Once per day	20.6%	13.6%	27.7%
2 to 6 times per day	78.3%	71.1%	85.5%
Insulin Pump	1.1%	-0.5%	2.6%
Frequency of Blood Sugar Monitoring ^f			
1 or more per day	47.5%	42.7%	52.3%
1 to 6 times per week	25.1%	20.9%	29.3%
Less than 1 per week	19.2%	15.6%	22.9%
Never	8.1%	5.6%	10.7%
Heard of Hemoglobin A1C ^g			
Yes	31.5%	26.4%	36.5%
No	68.5%	63.5%	73.6%
Number of Hemoglobin A1C Checks in Past Year ^g (only those who have heard of the test)			
None	7.2%	2.1%	12.2%
Once	28.5%	19.3%	37.8%
Twice	24.3%	15.2%	33.5%
3 or more times	40.0%	30.1%	49.9%

Table 7 (continued)

Diabetes Module - People Who Have Diabetes Only

	%	95% Confidence Interval	
		LL (%)	UL (%)
Number of Visits to a Health Professional in Past Year ^f			
None	9.2%	6.1%	12.3%
Once	14.7%	11.4%	18.0%
2 or more times	76.1%	71.8%	80.3%
Number of Foot Checks by a Health Professional in Past Year ^f			
None	20.2%	16.4%	24.0%
Once	24.2%	19.7%	28.7%
2 or more times	55.6%	50.6%	60.6%
Frequency of Dilated Eye Exam ^f			
Never	6.6%	4.0%	9.3%
More than 1 year ago	19.6%	15.7%	23.5%
Within past year	73.8%	69.4%	78.2%
Vision Limited Distance ^g			
All or most of the time	9.8%	6.8%	12.9%
Some or a little of the time	10.3%	7.2%	13.4%
None of the time	79.9%	75.8%	84.0%
Vision Limited Reading ^g			
All or most of the time	9.8%	7.0%	12.7%
Some or a little of the time	15.6%	11.7%	19.5%
None of the time	74.6%	70.1%	79.0%
Vision Limited TV ^g			
All or most of the time	3.4%	1.7%	5.1%
Some or a little of the time	8.9%	5.9%	11.8%
None of the time	87.7%	84.4%	91.1%
Any Visual Limitations ^g Distance, Reading, or TV			
All or most of the time	14.5%	11.0%	18.0%
Some or a little of the time	17.6%	13.5%	21.6%
None of the time	67.9%	63.1%	72.8%

e 1994-2000 f 1995-2000 g 1995-1999

Table 8

Diabetes Module by Age Group - People Who Have Diabetes Only Percent and 95% Confidence Intervals

^ Insulin Use ^g							
Age Group	Use Insulin			Do Not Use Insulin			
	%	LL (%)	UL (%)	%	LL (%)	UL (%)	
18-49	56.7%	45.7%	67.8%	43.3%	32.2%	54.3%	
50-64	41.0%	31.8%	50.1%	59.0%	49.9%	68.2%	
65+	34.0%	27.7%	40.2%	66.1%	59.8%	72.3%	

^ Blood Sugar Monitoring ^f							
Age Group	Daily Monitoring			Less Than Daily Monitoring			
	%	LL (%)	UL (%)	%	LL (%)	UL (%)	
18-49	60.6%	49.6%	71.6%	39.4%	28.4%	50.4%	
50-64	47.9%	38.6%	57.2%	52.1%	42.8%	61.4%	
65+	42.7%	36.3%	49.1%	57.3%	50.9%	63.7%	

Number of Visits to a Health Professional in Past Year ^f							
Age Group	One or More in Past Year			None in Past Year			
	%	LL (%)	UL (%)	%	LL (%)	UL (%)	
18-49	86.0%	76.4%	95.6%	14.1%	4.5%	23.7%	
50-64	92.1%	87.2%	97.0%	7.9%	3.0%	12.8%	
65+	91.8%	88.0%	95.6%	8.2%	4.4%	12.0%	

Foot Checks by a Health Professional in Past Year ^f							
Age Group	Within the Past Year			None in Past Year			
	%	LL (%)	UL (%)	%	LL (%)	UL (%)	
18-49	69.9%	58.9%	80.9%	30.1%	19.1%	41.1%	
50-64	77.3%	69.5%	85.1%	22.7%	14.9%	30.5%	
65+	76.0%	70.5%	81.5%	24.0%	18.5%	29.5%	

^ Dilated Eye Exam ^f							
Age Group	Within the Past Year			None in Past Year			
	%	LL (%)	UL (%)	%	LL (%)	UL (%)	
18-49	63.1%	51.7%	74.5%	36.9%	25.5%	48.3%	
50-64	71.3%	63.0%	79.6%	28.7%	20.4%	37.0%	
65+	79.1%	73.7%	84.5%	20.9%	15.5%	26.3%	

Any Visual Limitations ^g							
Age Group	No Visual Impairment			Some Visual Impairment			
	%	LL (%)	UL (%)	%	LL (%)	UL (%)	
18-49	71.4%	60.9%	81.9%	28.6%	18.1%	39.1%	
50-64	70.3%	60.4%	80.2%	29.7%	19.8%	39.6%	
65+	65.5%	59.0%	72.0%	34.5%	28.0%	41.0%	

e 1994-2000 f 1995-2000 g 1995-1999

^ statistically significant difference among age groups, $p < .05$

Table 9

Diabetes by Age Group and Health-Related Factors

	Diabetes			No Diabetes		
	%	Interval		%	Interval	
		LL (%)	UL (%)		LL (%)	UL (%)
^ Current Smoker ^e						
Age Group						
18-49	30.1%	20.0%	40.2%	26.0%	24.9%	27.1%
50-64	16.6%	10.2%	23.0%	22.5%	20.6%	24.4%
65+	5.4%	3.0%	7.8%	9.4%	8.2%	10.5%
^^ <5 Fruits and Vegetables ^b						
Age Group						
18-49	70.5%	54.6%	86.3%	84.7%	83.5%	85.8%
50-64	70.8%	60.8%	80.8%	76.2%	73.5%	78.8%
65+	65.4%	58.0%	72.8%	67.7%	65.1%	70.3%
^ Sedentary Lifestyle ^b						
Age Group						
18-49	33.3%	19.1%	47.5%	55.2%	53.6%	56.9%
50-64	62.3%	51.4%	73.1%	62.3%	59.3%	65.2%
65+	74.9%	67.6%	82.1%	63.1%	60.4%	65.8%
^ High Blood Pressure ^d						
Age Group						
18-49	32.4%	19.0%	45.7%	13.9%	12.1%	15.6%
50-64	62.7%	51.7%	73.7%	32.5%	29.2%	35.7%
65+	64.1%	56.3%	72.0%	46.8%	44.0%	49.5%
^^ High Cholesterol* ^d						
Age Group						
18-49	30.0%	17.9%	42.0%	21.1%	20.0%	22.3%
50-64	35.0%	23.3%	46.6%	42.5%	39.7%	45.4%
65+	42.5%	35.2%	49.9%	41.9%	39.2%	44.5%
^^ Overweight ^e						
Age Group						
18-49	72.0%	61.9%	82.1%	51.8%	50.5%	53.0%
50-64	79.7%	72.4%	87.1%	66.9%	64.7%	69.0%
65+	81.4%	76.9%	85.9%	58.5%	56.5%	60.5%
^ No Flu Shot ^c						
Age Group						
18-49	47.7%	35.1%	60.3%	79.0%	77.6%	80.3%
50-64	42.3%	31.1%	53.5%	67.5%	64.8%	70.3%
65+	28.1%	21.4%	34.8%	36.3%	33.7%	38.9%

* excludes those who reported never having their cholesterol checked

b 94, 96, 98, 2000

d 95, 97, 98, 99

c 95, 97, 99, 2000

e 1994-2000

^ statistically significant difference among age groups for people who have and do not have diabetes, $p < .05$

^^ statistically significant difference among age groups only for people who do not have diabetes, $p < .05$

Appendix A

Definitions of variables used in study.

<i>Demographics</i>			
Variable	SAS Variable Name	Defined Levels	Years Available
Gender	SEX	Male (1), Female (2)	1994-2000
Age	AGE	18-34, 35-49, 50-64, 65 and older	1994-2000
Race/Ethnicity	RACE	White-Non Hispanic (1), Native American (7), Other, 99=DK	1994-2000
Education	EDUCA	Less than HS (1-3), HS (4), Some college (5), 4 or more years of college (6)	1994-2000
Income	INCOME (INCOME2, INCOME95)	Less than \$20,000 (1-3), \$20,000 to \$49,999 (4-6), \$50,000 and higher (7-8)	1994-2000
Employment	EMPLOY	Employed (1-2), Not working (not employed or unable to work, 3-4,8), Other (homemaker, student, retired, 5-7)	1994-2000
<i>Health Status</i>			
Variable	SAS Variable Name	Defined Levels	Years Available
Insured	HLTHPLAN	Yes (1), No (2)	1994-2000
Health Status	GENHLTH	Fair or poor (4-5), Good (3), Very Good or Excellent (1-2)	1994-2000
Poor Physical Health (days in past month)	PHYSHLTH	None, 1 to 2, 3 to 10, 11 or more 1-30, number of days 88=none	1994-2000
Poor Mental Health (days in past month)	MENTHLTH	None, 1 to 2, 3 to 10, 11 or more 1-30, number of days 88=none	1994-2000
Limited Activities (days in past month limited due to poor physical or mental health)	POORHLTH (skipped if PHYSHLTH and MENTHLTH = 0)	None, 1 to 2, 3 to 10, 11 or more 1-30, number of days 88=none	1994-2000

<i>Health Conditions</i>			
Variable	SAS Variable Name	Defined Levels	Years Available
Blood Pressure Checked (in past year)	BPTAKE	Yes (1-2), No (3-5)	95, 97, 98, 99
High Blood Pressure	BPHIGH	Yes (1), No (2)	95, 97, 98, 99
Cholesterol Checked (ever)	BLOODCHO	Yes (1), No (2)	95, 97, 98, 99
Cholesterol Checked (in past year)	CHOLCHK	Yes (1), No (all others) (skipped if BLOODCHO is not yes)	95, 97, 98, 99
High Cholesterol	TOLDHI	Yes (1), No (2) (skipped if BLOODCHO is not yes)	95, 97, 98, 99
Diabetes (ever told by doctor)	DIABETES	Yes (1), No (2-3)	1994-2000
<i>Health-Related Behaviors</i>			
Variable	SAS Variable Name	Defined Levels	Years Available
Smoking	SMOKER (SMOKER2)	Current (1-2), Former (3), Non (4)	1994-2000
Alcohol (drinks per month)	DRNKMO	None, 1-4, 5 or more 1-1000, 8888 = none	95, 97, 99
Sedentary / Active Lifestyle	TOTINDX	Sedentary (1-2), Active (3-4)	94, 96, 98, 00
Fruit and Vegetable (servings per day)	FRTINDX	Less than 1 to 2 (1-2), 3 to 4 (3), five or more (4)	94, 96, 98, 00
<i>Immunization</i>			
Variable	SAS Variable Name	Defined Levels	Years Available
Flu Shot (in past year)	FLUSHOT	Yes (1), No (2)	95, 97, 99, 00
Pneumonia Vaccine (ever)	PNEUMVAC	Yes (1), No (2)	95, 97, 99, 00

<i>Weight Control</i>			
Variable	SAS Variable Name	Defined Levels	Years Available
Received Doctor's Advice About Weight	DRADVICE	Lose weight (1), Gain weight (2), Maintain (3), No advice (4)	94, 96, 98, 00
Trying to Lose Weight	LOSEWT	Yes (1), No (2)	94, 96, 98, 00
Trying to Maintain Weight	MAINTAIN	Yes (1), No (2)	94, 96, 98, 00
Weight Loss Method (skipped if LOSEWT < 1)	LOSEWT, FEWCAL, & PHYACT	None, Diet (FEWCAL = 1-3), Exercise (PHYACT = 1), Both	94, 96, 98, 00
BMI (body mass index)	BMI (BMI2)	Less than 20, 20 to 24.99, 25 to 29.99, 30 or higher	1994-2000
<i>Diabetes Module</i>			
Variable	SAS Variable Name	Defined Levels	Years Available
Age at Diagnosis (with diabetes)	DIABAGE (DIABAGE2)	Infant to 17, 18 to 34, 35-49, 50-64, 65 and older, 77=DK	1995-2000
On Insulin	INSULIN	Yes (1), No (2)	1995-1999
Frequency of Insulin Use	INSLNFRQ (INSLFRQ2)	1-6 times per day (101-106) 333 = insulin pump	1995-1999
Blood Sugar Monitoring (frequency)	BLDSUGAR (BLDSUGR2)	1 or more per day, 1 to 6 per week, Weekly or less	1995-2000
Ever heard of Hemoglobin A1C	HEMOGLBN	Yes (1), No (2)	1995-1999
Hemoglobin A1C (times in past year)	CHKHEMO	Yes (1-76), None (88) (skipped if HEMOGLBN < 1)	1995-1999
Seen Health Care Professional (times in past year)	DOCTDIAB	None (88), 1, 2 or more 77 = DK	1995-2000
Feet Checked by Health Care Professional (times in past year)	FEETCHK	None (88), 1, 2 or more 77 = DK	1995-2000
Dilated Eye Exam (times since last one)	EYEEEXAM	Never (8), More than 1 year ago (3-4), within past year (1-2)	1995-2000
Visually Impaired	VISNDIST, VISNREAD, VISNTV	Yes (reading, tv, or distance vision, 1-2), No (3-5)	1995-1999