



State of Health Report



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Diabetes

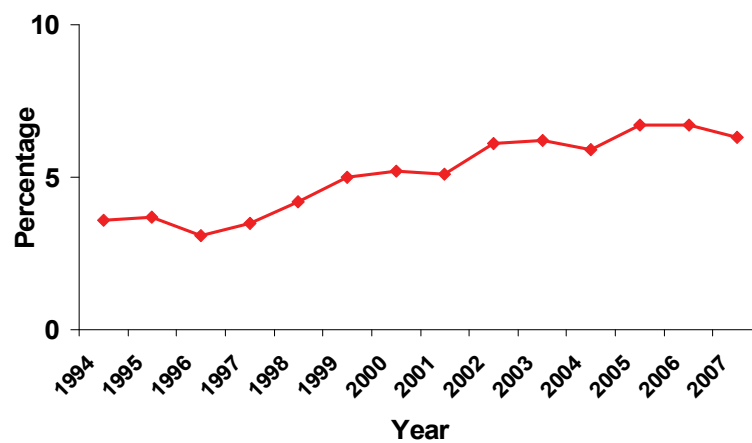
Diabetes

Diabetes mellitus is a disease associated with elevation of blood sugar (glucose) and other problems of energy management (metabolism) in the body. Over a prolonged period, these metabolic changes result in damage to body tissues, especially blood vessels and nerves, with potentially severe health consequences and an increased risk of premature death.

Diabetes comes in two types. Type 1 diabetes typically arises during childhood or adolescence due to destruction of insulin-producing cells in the pancreas by the body's immune system. About 10 percent of people with diabetes have Type 1. In type 2 diabetes, which usually starts during adulthood, the pancreas makes insulin, but the body is resistant to it. About 90 percent of people with diabetes have type 2 diabetes. Type 2 diabetes is strongly associated with obesity.

Between 1994 and 2007, the percentage of adult North Dakotans who reported ever being told they had diabetes **increased 75 percent**, from 3.6 percent to 6.3 percent.

Prevalence of Diabetes in North Dakota, by Year, 1994-2007



Health Risk of Diabetes

Having diabetes decreases life expectancy and is a risk factor for many health problems (complications), including:

- Heart disease.
- Limb amputations.
- Blindness.
- Stroke.
- High blood pressure.
- Kidney failure.

The longer a person has diabetes and the higher the blood sugar, the higher a person's risk for developing complications.

- Diabetes increases with advancing age. Among North Dakotans ages 18 to 24, 1.0 percent have diabetes, compared to 16.0 percent among those 65 and older. (North Dakota, 2006)
- People with low income or low education are at increased risk of diabetes. Diabetes was reported by 13.5 percent of those without a high school education, compared to 5.0 percent among those with a college education; and it was reported by 8.8 percent of those with a household income of less than \$25,000 compared to 3.9 percent of those with household incomes of \$75,000 or more. (North Dakota, 2006)
- Diabetes is more common among American Indians (13.9 percent) than among whites (6.1 percent). (North Dakota, 2004-2006)
- Other people at increased risk for ever having been told they had diabetes include people with:
 - Obesity (13.9%).
 - High blood pressure (18.3%).
 - High cholesterol (14.3%).
 - A disability (12.2%).
 - Fair or poor general health (21.9%).
 - No leisure time physical activity (10.2%).

Economic Impact of Diabetes

Based on national estimates of the cost of diabetes, direct and indirect costs due to diabetes in North Dakota are estimated at \$278 million per year, of which two-thirds (\$184 million) are direct medical costs. A person with diabetes uses about 2.4 times as much in health-care resources as a person without diabetes.

Ref. American Diabetes Association. Economic Costs of Diabetes in the U.S. in 2002. *Diabetes Care* 26:917-932, 2003. Available online at <http://care.diabetesjournals.org/cgi/content/full/26/3/917>.

What Does the Data Show?

Diabetes Prevalence Among North Dakotans

North Dakota has a problem with diabetes. In 2007, 6.3 percent of North Dakota adults had been told by a health-care professional that they had diabetes. This excluded women who were diagnosed with diabetes only while they were pregnant. It also doesn't count those people with pre-diabetes and those who have diabetes who have never been diagnosed. The prevalence of diabetes in North Dakota is slightly below the median for all states (7.1%).

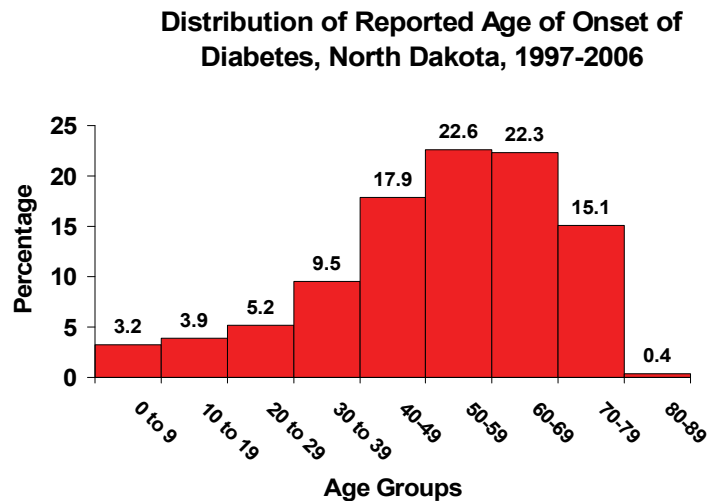
In addition to those with diagnosed diabetes, an additional 1.5 percent of respondents reported either that they had been diagnosed during pregnancy or had been told that they had pre-diabetes. These people are at high risk of progression to diabetes.

Trends in Diabetes Prevalence

Increases in the prevalence of diabetes have lagged behind increases in obesity. Increases in obesity in North Dakota are evident since at least 1990, whereas diabetes did not appear to begin to increase until 1998. Since 1998, the increase has been progressive, rising 86 percent in less than 10 years. This represents an increase in the number of people with diabetes from about 23,000 to about 43,000.

Age of Onset of Diabetes

Although nationally there have reports of an increase in diabetes onset at young ages, that trend is not apparent in North Dakota data at this time. Among people with diabetes interviewed between 1997 and 2006, 45 percent had disease onset between ages 50 and 69, and 78 percent had disease onset after age 40. The graphic below represents the age of onset of 908 people with diabetes interviewed between 1997 and 2006.



Diabetes and Death

In 2006, diabetes was the cause of death for 214 people, which represented 3.7 percent of all deaths and made diabetes the seventh leading cause of death. However, diabetes is an important contributor to many other deaths. Counting all deaths to which diabetes was a contributing factor, 603 people died in 2006. Of these 603 deaths, diabetes contributed to the death of 107 people who died of heart disease, 33 people who died of stroke and 13 people who died from high blood pressure.

Adults at High Risk of Having Diabetes

Demographic groups at particular high risk of developing diabetes are those age 65 or older (16.0%), American Indians (13.9%) and those without a high school education (13.5%). Diabetes is a strong risk factor for cardiovascular disease (e.g., heart attack, stroke), and diabetes is more common among adults with other cardiovascular disease risk factors, including hypertension (18.3 percent of people with hypertension also have diabetes), high cholesterol (14.3 percent of people with high cholesterol also have diabetes) and obesity (13.9 percent of people who are obese also have diabetes). Multiple cardiovascular risk factors in the same person further increase the risk of developing cardiovascular disease.

Diabetes Among Children

Almost all diabetes diagnosed among children is type I. These people remain dependent on insulin for survival for the rest of their lives. Available data is limited, but estimates of the frequency of diabetes among those 18 and younger by Blue Cross Blue Shield of North Dakota was 4.5 per 1,000 or about 700 children with diabetes in the state.

Interpreting the Data

The number of North Dakotans with diabetes, a disabling and deadly disease, is rising rapidly. Although the increase in diabetes may have something to do with the aging of the North Dakota population and with increases in the number of non-white residents in the state (black, Latino and American Indian populations are all at increased risk of diabetes compared to white populations), most of the increase is expected to be related to rising rates of obesity. Even if climbing obesity rates were to level off immediately, diabetes would be expected to increase for many years.

The resulting health impact is huge. As diabetes increases, the number of people with disability, poor health and reduced quality of life rises. Diabetes is expensive to care for causing health-care costs to balloon. The impact is felt not just from the diabetes, but also from all the associated conditions to which diabetes contributes.

Links to Data Tables

[Diabetes Prevalence Among Adults](#)

[Diabetes in Children](#)

[Age of Diabetes Onset, 2006](#)

[Age of Diabetes Onset, 1997-2006](#)

[Populations at Risk, 2006](#)

[Leading Cases of Death](#)

The State of Health of North Dakotans document describes the health of North Dakotans by providing data about the issues that cause disease or create health risk. In addition, for some of the topics covered, information has been added describing the impact of the issue on human lives, solutions that work and current programs used in North Dakota to address the issue.

The document is and will remain under continuous development. Additional topics will be added as they are completed and data from existing topics updated as new information becomes available. The link to the left provides active web links to the topics currently available and lists other topics planned for the future.

[More Health Reports](#)



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