

Diabetes in North Carolina



Prevalence

- In 2008, North Carolina ranked 17th highest for adult diabetes prevalence among all states in the U.S. ¹
- An estimated 643,000 North Carolinians or 9.3 percent of the total state adult population had diagnosed diabetes in 2008. ² Another 232,000 were estimated to have undiagnosed diabetes. There were an estimated 376,000 adults with prediabetes ³ in the state. Altogether, an estimated 1.25 million adults in North Carolina had some form of hyperglycemia (high blood sugar levels) in 2008.



Table 1.
Demographic characteristics for adults with diagnosed diabetes, North Carolina, 2008

Demographic Characteristic	Prevalence Rate (%)	C.I. (95%)*	Number of adults (weighted)
Diagnosed diabetes, Total	9.3	8.8 – 9.9	643,131
Gender			
Male	9.2	8.4 – 10.1	306,609
Female	9.4	8.7 – 10.2	336,521
Race/Ethnicity			
White	8.4	7.9 – 9.1	409,627
African American	15.6	13.8 – 17.5	192,133
Native American	12.4	8.7 – 17.3	13,200
Hispanic	4.5	2.9 – 6.9	24,797
Other minorities	4.3	2.8 – 6.5	26,408
Age			
18-24	1.2	-	10,563
25-34	2.5	1.6 – 4.0	21,516
35-44	5.4	4.3 – 6.8	72,341
45-54	9.7	8.4 – 11.2	124,560
55-64	17.0	15.4 – 18.8	172,230
65-74	20.1	18.2 – 22.1	126,003
75+	22.4	20.0 – 25.0	113,480
Education			
Less than H.S.	13.6	11.9 – 15.5	135,793
H.S. or G.E.D.	10.3	9.3 – 11.5	211,378
Some post-H.S.	9.2	8.1 – 10.4	163,071
College Graduate	6.3	5.5 – 7.2	130,074
Household Income			
Less than \$15,000	16.7	14.4 – 19.2	107,461
\$15,000-24,999	11.5	10.0 – 13.2	121,482
\$25,000-34,999	10.5	8.8 – 12.5	72,938
\$35,000-49,000	9.5	8.0 – 11.2	84,568
\$50,000-74,999	6.3	5.3 – 7.5	65,038
\$75,000+	5.4	4.5 – 6.5	90,017
Disability Status			
Yes	17.6	16.3 – 18.9	371,554
No	5.6	5.1 – 6.2	255,421

*C.I. denotes Confidence Interval

Source: BRFSS 2008, North Carolina State Center for Health Statistics, DHHS





Disparities

- In 2008, African Americans had the highest diabetes prevalence rate at 15.6%, followed by the Native Americans at 12.4% in the state.
- Diabetes is a disease of old age. More than one in every five North Carolina residents, aged 65 and over, had diagnosed diabetes in 2008.
- Adults with less than high school education had higher diabetes prevalence than college graduates (13.6% vs. 6.3%).
- North Carolina adults with household incomes less than \$15,000 had the highest rate of diabetes compared to people with \$75,000 or higher (16.7% vs. 5.4%).
- **Smoking:** Smoking has devastating effects on people with diabetes. Smoking raises blood glucose (sugar) and reduces body's ability to use insulin, thus resulting in poor diabetes control. Smokers with diabetes are eleven times more likely to have a heart attack or stroke than people without diabetes and do not smoke. 15.9% of all adults with diabetes smoked in North Carolina in 2008.
- From July 2008 to June 2009, among people who called North Carolina Tobacco Use Quit Line, 9.8 percent reported diabetes.⁴

Risk Factors

- **Obesity:** Obesity is a major contributor to type 2 diabetes. North Carolina ranked 8th worst for adult obesity in 2008 at 29.5%.¹ More than half (51.8%) of adults with diabetes were obese in the state in 2008.
- **Physical activity:** Physical activity helps control not only blood sugar but also weight and blood pressure, and it may improve cholesterol levels. Physical activity also reduces the risk of common diabetes complications, such as heart disease and nerve damage. Only 31 percent of North Carolina adults with diabetes reported 30+ minutes of moderate physical activity 5 days or more per week or vigorous physical activity for 20+ minutes 3 days or more per week in 2008.
- **Healthy diet:** People with diabetes have to follow a healthy diet that includes fruits and vegetables, whole grains, lean protein, low-fat dairy products and moderate amounts of healthier fats. In 2008, about 80 percent of adults with diabetes did not consume five or more servings of fruits and vegetables in North Carolina.
- **Heart Disease and stroke:** In North Carolina, a previous history of heart attack, angina, coronary heart disease, or stroke occurred in 25.1% of adults with diabetes versus 8.5% of adults without diabetes in 2008.
- **High Blood Pressure and Cholesterol:** Among adults with diabetes, 68.8% had high blood pressure, and 65.6% had high blood cholesterol in 2007 in the state.
- **Kidney Disease:** 7.6% of North Carolina residents with diabetes had kidney disease in 2008 compared to 2.3% of general adult population.
- **Visual Impairment and Diabetic Retinopathy:** In North Carolina, more than 44 percent of adults (age 40+) with diabetes reported some visual impairment in 2006.⁵ Recent research shows that diabetic retinopathy may be on the rise and one-third of all people with diabetes may have retinopathy.⁶ More than 17 percent of NC adults with diabetes reported that diabetes affected their eyes or experienced diabetic retinopathy in 2008.

Complications



- **Neuropathy:** Neuropathy (inflammation and degeneration of peripheral nerves) is a common complication affecting 60 to 70 percent of patients with diabetes.
- **Amputations:** The NC Hospital Discharge data ⁷ shows that 2,608 lower limb amputations occurred among people with diabetes in 2007.
- **Oral Health:** In 2008, 17.5 percent of adults with diabetes reported that all of their permanent teeth have been removed because of tooth decay or gum disease, compared to 6.1 percent of NC residents without diabetes.
- **Gestational Diabetes:** NC Pregnancy Risk assessment Monitoring System (PRAMS) survey showed that 9.4 percent of all pregnant women in the state reported high blood sugar (diabetes) during the pregnancy in 2007.⁸ Although gestational diabetes goes away after pregnancy in majority of cases, type 2 diabetes develops in 20 percent to 50 percent of women in the next five to 10 years.

Hospitalizations

- In 2007, diabetes was the primary diagnosis in 16,946 hospital discharges ⁱ with more than \$279 million in total charges in North Carolina. The number of hospital discharges due to diabetes either as a primary or secondary diagnosis was 37,596, and accounts for 3.8% of all hospitalizations (due to any cause) in the state.
- Diabetes was mentioned as a contributing condition in almost one out of every five hospitalizations in 2007.⁹

Costs

- The American Diabetes Association (ADA) estimated that the cost of diabetes for people in North Carolina in 2006 was \$5.3 billion. This estimate includes excess medical costs of \$3.6 billion attributed to diabetes, and lost productivity valued at \$1.7 billion.

Mortality

- Diabetes ranked as the 7th leading cause of death in North Carolina for 2007, accounting for 2,150 deaths (2.8% of all deaths) (primary diagnosis).¹⁰ This represents a 10 percent increase in the number of deaths since 1998. Diabetes contributed for another 6,226 deaths in NC in 2007.

Table 2.
Number of deaths and age-adjusted death rates (diabetes deaths per 100,000 population) with diabetes listed as the primary cause of death by race and sex, North Carolina, 2007

	Total		White		African American	
	Number	Rate	Number	Rate	Number	Rate
Total	2,150	23.4	1,357	18.2	741	47.8
Male	1,059	26.9	713	22.4	330	51.4
Female	1,091	20.3	644	14.8	411	44.1

ⁱ Provisional Hospital discharge data 2007 and subject to change.



- North Carolinians who died due to diabetes lost an average of 8.5 years of life due to early death, and a total of 18,251 years of life in 2007. ⁹
- The age-adjusted diabetes death rate among African Americans (47.8 per 100,000 population) was 2.6 times more compared to whites (18.2 per 100,000).

Diabetes Management

- North Carolina has met the Healthy People 2010 goal for HbA1c test, annual medical foot exams and annual flu vaccine among North Carolinians with diabetes.

Table 3. Diabetes Management indicators for North Carolina adults with diabetes

Management Objective	2003	2005	2008	HP 2010 Goals
2 HBA1c Tests Annually	74%	77%	76%	50
Annual Foot Exam	77%	76%	77%	75
Annual Dilated Eye Exam	76%	72%	70%	75
Annual Influenza Vaccine	58%	55%	64%	60
Pneumococcal Vaccine	53%	53%	54%	60

Diabetes prevalence by selected counties and BRFSS regions

County/Region	Rate %	C.I. (95%) %
North Carolina, Total	9.3	8.8- 9.9
County		
Alamance	8.7	6.2-12.0
Buncombe	6.1	4.1- 8.9
Cabarrus	7.4	5.1-10.6
Catawba	7.8	5.6-10.7
Cumberland	11.8	9.0-15.4
Davidson	7.7	5.4-10.7
Durham	6.9	4.7- 9.9
Forsyth	7.3	5.2-10.2
Gaston	7.9	5.5-11.3
Guilford	8.4	5.7-12.3
Iredell	7.8	5.6-10.8

County/Region	Rate %	C.I. (95%) %
Johnston	8.9	6.2-12.7
Mecklenburg	8.4	6.3-11.2
New Hanover	13.4	8.5-20.5
Onslow	7.4	5.3-10.3
Orange	5.3	3.4- 8.0
Pitt	8.3	5.8-11.6
Randolph	10.3	7.5-13.8
Robeson	12.6	9.2-17.0
Rowan	13.3	8.9-19.3
Union	6.4	4.3- 9.3
Wake	9.4	7.1-12.4
Wayne	8.2	5.9-11.1



Diabetes prevalence by selected counties and BRFSS regions (continued)

NC Regions	Rate %	C.I. (95%) %
Eastern NC	10.2	9.3-11.2
Piedmont	8.9	8.1- 9.7
Western NC	9.6	8.4-10.9
Area Health Education Centers (AHEC)	Rate %	C.I. (95%) %
Mountain AHEC	8.7	7.5-10.2
Northwest	9.4	8.3-10.7
Charlotte	9.2	7.8-10.9
Greensboro	8.4	6.9-10.2
Southern Regional	10.3	8.7-12.3
Coastal	11.8	9.0-15.3
Wake	8.9	7.4-10.7
Area L	11.8	9.1-15.2
Eastern	8.9	7.7-10.4

Source:
BRFSS 2008, North Carolina State Center for Health Statistics, DHHS

For more diabetes data, please see
The Burden of Diabetes in North Carolina at:
www.ncdiabetes.org/_pdf/Diabetes_Burden_Bk.pdf

Data sources:

- Centers for Disease Control and Prevention (CDC), Behavioral Risk Factor Surveillance System (BRFSS) Survey, Prevalence and Trends data, Atlanta, Georgia. Available online: <http://apps.nccd.cdc.gov/brfss/> (Access date: June 10, 2009).
- Note: Data source for this fact sheet is from BRFSS 2008, North Carolina State Center for Health Statistics, DHHS. Access online: <http://www.schs.state.nc.us/SCHS/brfss/2008/>
- Prediabetes is a condition in which blood sugar level is higher than normal, but not high enough to be classified as type 2 diabetes.
- North Carolina Tobacco Use Quit Line Demographic Report, Contract, 7/2/2009. Contract Dates from 7/1/2008 through 6/30/2009.
- Visual Impairment and Eye Care Among North Carolina Adults: Results from the New Vision Module Questions in the 2006 BRFSS Survey, State Center for Health Statistics, 2007.
- American Diabetes Association, Source reference: Saaddine JB, et al "Prevalence of diabetic retinopathy in the United States: National Health and Nutrition Examination Survey 2005-2006" ADA 2009; Abstract OR 382.
- NC Hospital Discharge data, 2007, State Center for Health Statistics
- NC Pregnancy Risk assessment Monitoring System (PRAMS), 2006, can be accessed at: http://www.schs.state.nc.us/SCHS/prams/2006/MORB_DID.html
- Health Profile of North Carolinians 2009: <http://www.schs.state.nc.us/SCHS/pdf/HealthProfile2009.pdf>
- NC resident death certificates data 2007, North Carolina State Center for Health Statistics, DHHS



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