



The Burden of Diabetes in Ohio

**Ohio Diabetes Prevention
and Control Program
Bureau of Health Promotion
and Risk Reduction**

**Office of Healthy Ohio
Ohio Department of Health
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Acknowledgments

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The Public Health Burden of Diabetes Mellitus in Ohio

Diabetes is a serious health problem that has continued to increase both nationally and in Ohio. In the United States in 2007, an estimated 23.6 million people had diabetes or 7.8 percent of the population. Of the 23.6 million persons, 17.9 million have been diagnosed with diabetes and 5.7 million are estimated to be undiagnosed (1).

In Ohio in 2007, there were more than one million adults in Ohio who were estimated to have diabetes; 830,000 adult Ohioans have been diagnosed with diabetes and an additional 210,000 adults are estimated to have the disease and not know it (1,2,3). Diabetes prevalence has increase by 63.8 percent over the past decade, from 5.8 percent of the state's population in 1998 to 9.5 percent in 2007 (2).

Diabetes can affect many parts of the body and can lead to serious complications such as blindness, kidney damage and lower-limb amputations. Together, people with diabetes, their support network and their health care providers can reduce the occurrence of these and other diabetes complications by controlling the levels of blood glucose, blood pressure and blood lipids by receiving other preventive care practices in a timely manner (1).

Diabetes leads to serious health-related complications, and is also economically costly in the United States and Ohio. In a report by the Lewis Group, the total U.S. estimated cost of diabetes in 2007 was \$174 billion, including \$116 billion in medical expenditures and \$58 billion in reduced national productivity (4).

The direct (medical care) and indirect (lost productivity) costs of diabetes in Ohio total an estimated \$5.9 billion. Approximately \$3.9 billion are direct medical expenditures for adults; \$2 billion are from indirect costs for adults. The estimate includes only persons diagnosed with diabetes (5).

This burden document describes diabetes data from four data sources. The Ohio Behavioral Risk Factor Surveillance System collects data on state and county prevalence, risk factors, preventive care practices and medical conditions (6). The Ohio Medicaid Program provides state and county prevalence and some medical expenditures (7). The Ohio Medicare Program supplies state and county prevalence data (8). Ohio mortality data provide information on the state's leading causes of death. Death information and census data allows us to report age-adjusted death rates by race and gender, and county fatality rates (9).

The Ohio Diabetes Prevention and Control Program is working toward more centralized and coordinated statewide data gathering, analysis and sharing. This report is intended to help describe the burden of diabetes in Ohio for state and local agency policy/decision makers and other interested local constituents. It is hoped that the analysis information of these four data sources will help provide assistance in making policy changes and determining allocation of funding resources.

Key Findings

Ohio and United States Behavioral Risk Factor Surveillance System

- There was an increasing trend in the diabetes prevalence between 1995-2007 for both Ohio and the United States (U.S.). (*Figure 2.01, Table 2.1*).
- In the three-year time period 2005-2007, Ohio blacks (13.4 percent) and Hispanics (8.9 percent) had a higher prevalence than whites (7.4 percent). (*Table 2.3*).
- From the year 1995 to 2007, the Ohio 18-44 age group's diabetes prevalence increased 100 percent; the 45-64 age group increased 111 percent; the 65-74 age group increased 136 percent; and the 75 and older age group increased 95 percent.
- The highest Ohio prevalence rates for those aged 65-74 years were in 1999, 2003, 2004 and 2007. For the most part, this age group had the highest prevalence of diabetes over this 12-year span. (*Figure 2.03, Table 2.4*).
- For the years 2005-2007, 85.1 percent of Ohio adults with diabetes were overweight or obese, compared to 61.4 percent of adults without diabetes. More than half of adults with diabetes were classified as obese compared to one-quarter of adults without diabetes (not reported having diabetes). (*Figure 2.06, Table 2.7*).
- Between 1996 and 2007, the percent of Ohio adults with diabetes who reported no leisure time physical activity in the past 30 days was higher, compared to persons without diabetes. (*Figure 2.08, Table 2.9*).
- In 2005 and 2007, when comparing Ohio adults who meet physical activity recommended guidelines, 34.4 percent of adults with diabetes met the physical activity recommendations, compared to 51.3 percent of adults without diabetes. About 30 percent of adults with diabetes reported no physical activity at all. (*Figure 2.09, Table 2.10*).
- The percentage of Ohio adults with diabetes who received two HbA1c tests in the past year as part of their blood glucose monitoring by a health professional increased from nearly 62 percent in 2000 to 78 percent in 2004, but decreased to 72 percent in 2007. (*Figure 2.16, Table 2.13*).
- The percentage of Ohio adults with diabetes who have daily self-monitored their blood glucose has slightly increased from nearly 47 percent in 1995 to 66 percent in 2007. (*Figure 2.19, Table 2.13*).
- In Ohio between 1995-2007, the percentage of persons with diabetes who in the past year had seen a physician (*Table 2.13, Figure 2.12*); had a dilated eye examination (*Figure 2.13, Table 2.13*); had their feet checked (*Figure 2.14, Table 2.13*); and received an influenza vaccine (flu shot) (*Figure 2.15, Table 2.13*) fluctuated and did not increase appreciably from year to year.

- In Ohio for the years 2004-2005, persons with diabetes had a higher percentage of other chronic medical conditions (high blood pressure, high cholesterol, coronary heart disease, stroke and myocardial infarction), compared to adults without diabetes. (*Figure 2.21, Table 2.14*).

Ohio Medicaid Program

- The age-specific prevalence of diabetes increased with age until age 65 years and older. Diabetes was most common in those 65 years of age and older. (*Figure 3.02, Table 3.1*).
- Prevalence of diabetes was higher for females than for males; this was true across all races. (*Table 3.1*).
- Black and white females 65–74 years old had the highest diabetes prevalence rates of all racial-sex-age groups. (*Figure 3.02, Table 3.1*).
- Eighty percent of Medicaid beneficiaries with diabetes were classified as aged, blind or disabled aid category or disability assistance aid category (*Figure 3.01*), compared to 20 percent of the general Medicaid population. [Data not shown]
- In Fiscal Year 2004, Ohio’s Medicaid Program expenditures were \$10.3 billion. More than 23 percent (\$2.4 billion) was spent on health care for eligibles diagnosed with diabetes who represent less than 7 percent of the total Medicaid population. (*Tables 3.1, B.3*).

Ohio Medicare

- In FY 2005, Medicare covered more than 1.8 million Ohioans ages 18 and older. Of these, 14.9 percent (273,394) were persons diagnosed with diabetes. (*Table 4.1*).
- Among Medicare beneficiaries, the prevalence of diabetes increased with age until the age group of 46–55 years with the exception of black males and females (*Figure 4.01, Table 4.1*). Black women and men age 66–75 years old had the highest prevalence of all the racial-sex-age groups. (*Figure 4.01, Table 4.1*).

Mortality

- In 2005, diabetes was the sixth-leading cause of death for Ohioans. (*Table 5.1*).
- Between 1995-2005, The Ohio mortality rate for black males had the largest increase (12 percent) and black females had the largest decrease (21 percent) (*Figure 5.01, Table 5.2*).
- Blacks continued to die more often from diabetes than whites in Ohio. (*Figure 5.01, Table 5.2*).
- In 2005, the overall age-adjusted diabetes mortality rate for Ohio was 30 per 100,000, (*Table 5.2*), compared to the national rate of 25 per 100,000 persons.

Ohio and United States Behavioral Risk Factor Surveillance System

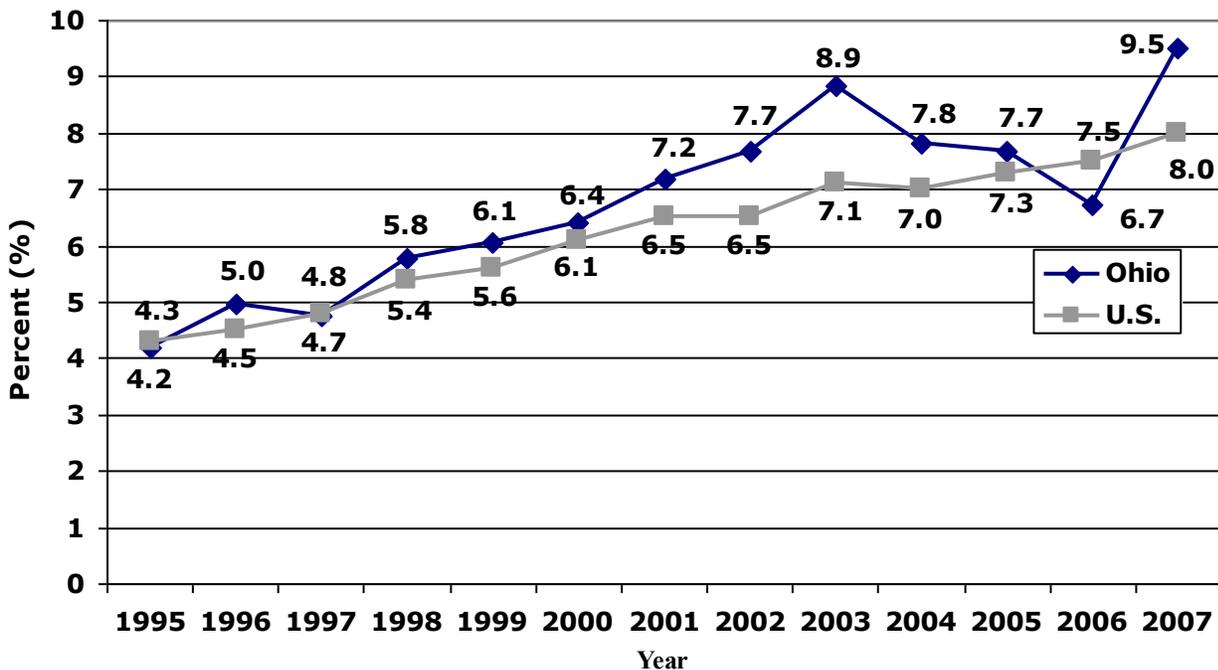
Prevalence

In Ohio and the United States, the prevalence of diabetes has dramatically increased between the years 1995 and 2007. During the time period, the prevalence of diabetes increased by 126 percent from 4.2 percent to 9.5 percent of Ohio adults reported having been diagnosed with diabetes. A similar trend was observed in the United States where the median prevalence increased by 86 percent from 4.3 percent in 1995 to 8.0% of US adults having been diagnosed with diabetes in 2007. (Figure 2.01, Table 2.1).

Please note that throughout this document, the standard error (SE) and 95 percent confidence intervals (CI) are presented for the sample estimates. The 95 percent confidence intervals are indicative of what the range of estimates would be if the sample was drawn 100 times, i.e. 95 of the estimates would be in this range.

Figure 2.01

Estimated Prevalence of Diabetes by Year, Ohio and the United States* 1995-2007. [1][2][3][4]



Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section, BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] Diabetes prevalence does not include women who were told they had diabetes only during pregnancy.

[3] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[4] For adults (18 years and older).

*Estimated Prevalence based on BRFSS National Median, 1995-2007.

Sex

In 2007, the prevalence of diabetes in Ohio was 9.7 percent for males and 9.2 percent for females. These estimates were higher compared to the United States median prevalence estimates of 8.1 percent for males and 7.9 percent for females.

During the years 1995 to 2007, the prevalence of diabetes for both males and females more than doubled. The prevalence increased by 111 percent among Ohio adult males from 4.6 percent to 9.7 percent; whereas, the prevalence for females increased by more than 142 percent from 3.8 percent in 1995 to 9.2 percent in 2007. (Table 2.1).

Table 2.1

Estimated Prevalence of Diabetes by Sex and Year, Ohio and the United States* 1995-2007. [1][2][3][4]

Year	Males					Females					All				
	Ohio			US	Ohio			US	Ohio			US			
	%	SE	C.I.	%	%	SE	C.I.	%	%	SE	C.I.	%			
1995	4.6	1.2	2.3 - 6.9	4.1	3.8	0.7	2.4 - 5.1	4.7	4.2	0.7	2.9 - 5.5	4.3			
1996	3.9	0.8	2.4 - 5.3	4.2	6.0	0.8	4.4 - 7.6	4.7	5.0	0.6	3.9 - 6.1	4.5			
1997	3.9	0.6	2.7 - 5.1	4.9	5.5	0.6	4.3 - 6.7	4.9	4.7	0.5	3.9 - 5.6	4.8			
1998	6.4	1.0	4.5 - 8.3	5.2	5.3	0.7	3.9 - 6.6	5.3	5.8	0.6	4.6 - 6.9	5.4			
1999	5.0	0.9	3.2 - 6.7	5.9	7.1	0.9	5.3 - 8.8	5.5	6.1	0.6	4.8 - 7.3	5.6			
2000	6.4	1.0	4.4 - 8.4	6.1	6.3	0.8	4.7 - 7.9	5.9	6.4	0.6	5.2 - 7.6	6.1			
2001	7.5	0.8	5.9 - 9.1	6.6	6.9	0.6	5.7 - 8.1	6.5	7.2	0.5	6.2 - 8.2	6.5			
2002	7.2	0.7	5.8 - 8.6	6.6	8.1	0.7	6.8 - 9.4	6.6	7.7	0.5	6.7 - 8.6	6.5			
2003	8.8	0.9	7.0 - 10.6	7.2	8.9	0.7	7.4 - 10.4	6.9	8.9	0.6	7.7 - 10.0	7.1			
2004	8.4	1.0	6.5 - 10.3	7.2	7.3	0.7	5.9 - 8.7	6.4	7.8	0.6	6.6 - 9.0	7.0			
2005	8.1	0.7	6.7 - 9.5	7.7	7.3	0.5	6.3 - 8.3	7.1	7.7	0.4	6.9 - 8.5	7.3			
2006	6.9	0.8	5.4 - 8.4	7.9	6.6	0.6	5.3 - 7.8	7.1	6.7	0.5	5.8 - 7.7	7.5			
2007	9.7	0.5	8.7 - 10.7	8.1	9.2	0.4	8.4 - 10.0	7.9	9.5	0.3	8.9 - 10.1	8.0			

Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section, BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] Diabetes prevalence does not include women who were told they had diabetes only during pregnancy.

[3] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[4] For adults (18 years and older).

*Estimated Prevalence based on BRFSS National Median, 1995-2007.

Race

In Ohio, with the exception of the years 1995 and 2003, diagnosed diabetes was more common in blacks than in whites. (Table 2.2). Between 1995-2007, there were no consistent trends in diabetes prevalence between the United States and Ohio. (Table 2.2).

In the three-year 2005-2007 prevalence estimate, blacks (13.4 percent) and Hispanics (8.9 percent) had a higher prevalence than whites. (7.4 percent) (Table 2.3).

Table 2.2

Estimated Prevalence of Diabetes by Race and Year, Ohio and the United States* 1995-2007. [1][2][3][4][5]

Year	White					Black					All							
	Ohio				US	Ohio				US	Ohio				US			
	%	SE	C.I.		%	%	SE	C.I.		%	%	SE	C.I.		%			
1995	4.6	0.8	3.1	-	6.1	4.2	1.6	1.1	0.0	-	3.7	7.0	4.2	0.7	2.9	-	5.5	4.3
1996	4.8	0.6	3.6	-	5.9	4.2	5.8	1.8	2.4	-	9.3	7.2	5.0	0.6	3.9	-	6.1	4.5
1997	4.5	0.5	3.6	-	5.5	4.4	6.8	1.4	4.1	-	9.5	7.6	4.7	0.5	3.9	-	5.6	4.8
1998	5.3	0.6	4.1	-	6.4	4.7	9.2	2.5	4.2	-	14.1	8.5	5.8	0.6	4.6	-	6.9	5.4
1999	5.5	0.7	4.3	-	6.8	5.1	12.7	3.0	6.8	-	18.5	9.0	6.1	0.6	4.8	-	7.3	5.6
2000	6.1	0.6	4.9	-	7.3	5.7	9.0	2.4	4.3	-	13.6	10.3	6.4	0.6	5.2	-	7.6	6.1
2001	7.0	0.6	5.9	-	8.1	6.0	8.4	1.7	5.0	-	11.9	9.4	7.2	0.5	6.2	-	8.2	6.5
2002	7.0	0.5	6.0	-	8.0	6.0	11.5	2.1	7.4	-	15.6	10.2	7.7	0.5	6.7	-	8.6	6.5
2003	8.7	0.6	7.4	-	9.9	6.6	8.7	1.8	5.1	-	12.2	10.3	8.9	0.6	7.7	-	10.0	7.1
2004	7.4	0.7	6.1	-	8.7	6.5	11.2	1.7	7.9	-	14.4	10.4	7.8	0.6	6.6	-	9.0	7.0
2005	7.2	0.5	6.3	-	8.1	6.8	12.6	1.6	9.5	-	15.8	11.4	7.7	0.4	6.9	-	8.5	7.3
2006	6.0	0.5	5.0	-	7.0	7.2	13.5	2.1	9.3	-	17.6	11.9	6.7	0.5	5.8	-	7.7	7.5
2007	8.9	0.3	8.3	-	9.6	7.6	14.1	1.5	11.2	-	17.0	12.6	9.5	0.3	8.8	-	10.1	8.0

Table 2.3

Estimated Prevalence of Diabetes by Race/Ethnicity, Ohio 2005-2007. [1][2][3][4][5]

Race/Ethnicity	%	SE	C.I.		
White	7.4	0.2	6.9	-	7.9
Black	13.4	1.0	11.4	-	15.4
Hispanic	8.9	2.5	0.0	-	13.8
All	7.9	0.2	7.4	-	8.4

Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] "All" includes other races.

[4] For adults (18 years and older).

[5] Diabetes prevalence does not include women who were told they had diabetes only during pregnancy.

*Estimated Prevalence based on BRFSS National Median, 1995-2007.

Age Group

For the three years, 2005-2007, the prevalence of diabetes increased with increasing age until the age of 75 and older. (Figure 2.02, Table 2.4).

During the time period of 1995-2007, age-specific prevalence increased for all age groups.

From the year 1995 to 2007, the 18-44 year age group's diabetes prevalence increased 100 percent; the 45-64 age group increased 111 percent; the 65-74 age group increased 136 percent; and the 75 and older age group increased 95 percent.

The 1995-2007 prevalence rates for Ohioans with diabetes aged 18-44 years had an increasing pattern over this time period. (Figure 2.03, Table 2.4).

Among those aged 45-64 years, there was an increase of diabetes prevalence until 1999. The diabetes prevalence rates fluctuated with an upward and downward trend between 2000-2007. (Figure 2.03, Table 2.4).

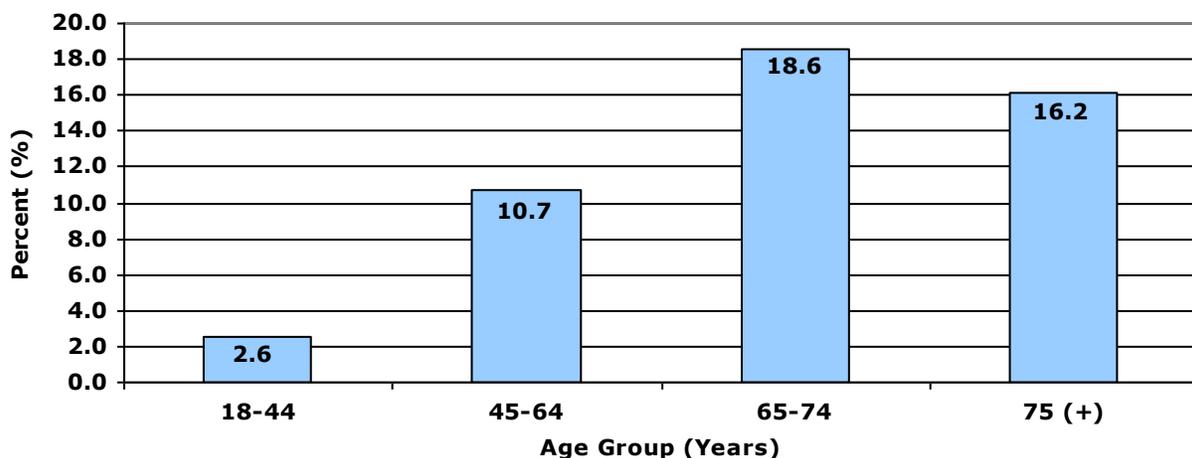
The highest prevalence rates for those aged 65-74 years were in 2003, 2004 and 2007. For the most part, this age group had the highest prevalence of diabetes over this 12-year span. (Figure 2.03, Table 2.4).

Similar to the 65-74 age group, those 75 years and older had their highest diabetes prevalence rates for 2003 (19.7 percent) and 2007 (18.9 percent). (Figure 2.03, Table 2.4).

Ohio's population in 2005 was estimated to be about 11.5 million. In 2030, that number is estimated to increase slightly to 11.6 million. The proportion of Ohio's population classified as elderly was 13.3 percent in 2000 and is expected to rise to 20.4 percent by 2030 (10,11). An increase in the percent of aged persons with diabetes is also expected.

Figure 2.02

Estimated Prevalence of Diabetes by Age Group, Ohio 2005-2007. ^{[1][2][3]}



Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section, BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

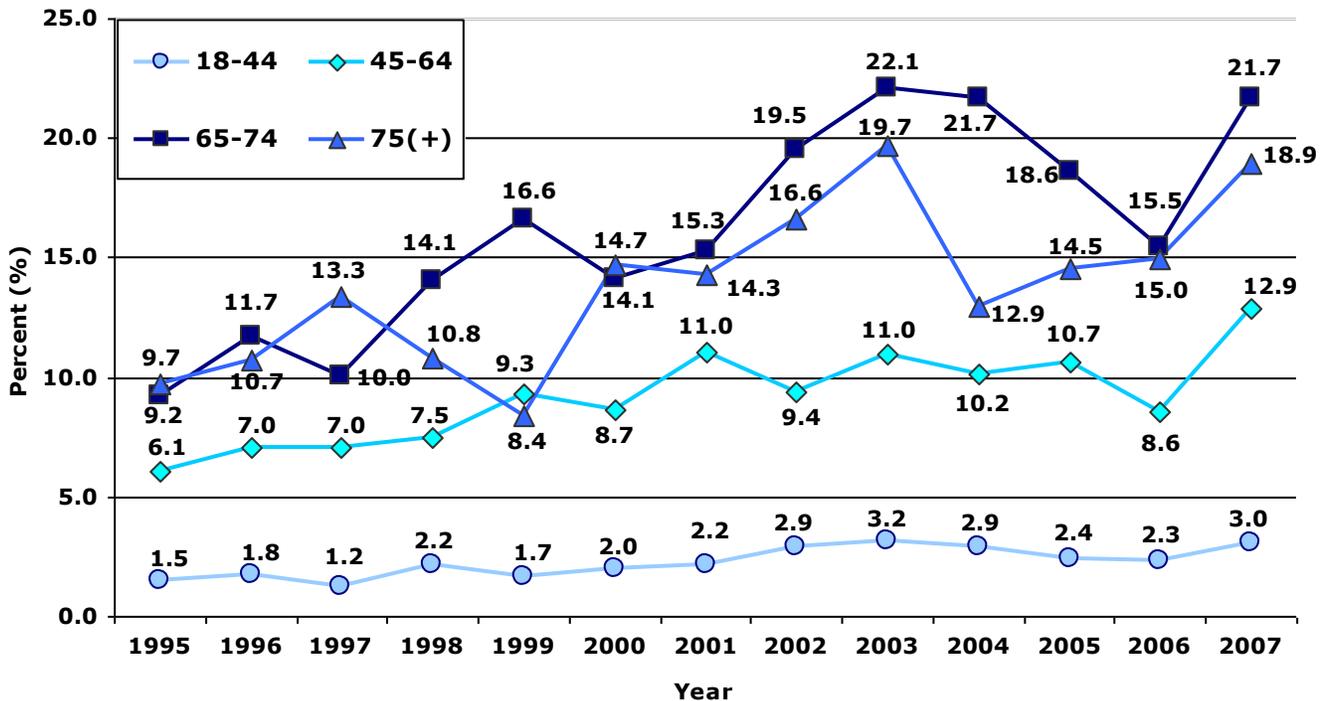
Table 2.4

Estimated Prevalence of Diabetes by Age Group and Year, Ohio 1995–2007.^{[1][2][3]}

Year	Age Group (Years)											
	18-44			45-64			65-74			75(+)		
	%	SE	C.I.	%	SE	C.I.	%	SE	C.I.	%	SE	C.I.
1995	1.5	0.5	0.0 - 2.5	6.1	1.8	2.7 - 9.5	9.2	2.6	4.2 - 14.3	9.7	2.7	4.4 - 15.1
1996	1.8	0.5	0.8 - 2.7	7.0	1.3	4.5 - 9.6	11.7	2.2	7.3 - 16.0	10.7	2.8	5.3 - 16.1
1997	1.2	0.3	0.6 - 1.9	7.0	1.1	5.0 - 9.1	10.0	1.6	6.8 - 13.2	13.3	2.6	8.2 - 18.4
1998	2.2	0.6	0.0 - 3.3	7.5	1.2	5.1 - 9.9	14.1	2.2	9.7 - 18.5	10.8	2.7	5.5 - 16.1
1999	1.7	0.5	0.0 - 2.7	9.3	1.4	6.6 - 12.0	16.6	3.0	10.8 - 22.4	8.4	2.4	3.6 - 13.1
2000	2.0	0.5	1.1 - 3.0	8.7	1.3	6.2 - 11.2	14.1	2.6	9.0 - 19.3	14.7	3.2	8.5 - 21.0
2001	2.2	0.4	1.4 - 2.9	11.0	1.1	8.8 - 13.3	15.3	2.2	11.1 - 19.6	14.3	2.4	9.5 - 19.1
2002	2.9	0.5	2.0 - 3.9	9.4	0.9	7.6 - 11.1	19.5	2.5	14.6 - 24.4	16.6	2.3	12.2 - 21.0
2003	3.2	0.6	2.0 - 4.4	11.0	1.1	8.9 - 13.0	22.1	2.5	17.1 - 27.0	19.7	2.8	14.1 - 25.2
2004	2.9	0.6	1.7 - 4.2	10.2	1.1	8.0 - 12.3	21.7	2.9	16.0 - 27.3	12.9	2.3	8.5 - 17.4
2005	2.4	0.4	1.6 - 3.1	10.7	0.9	9.0 - 12.3	18.6	1.8	15.1 - 22.1	14.5	1.8	11.0 - 18.0
2006	2.3	0.5	1.3 - 3.3	8.6	0.9	6.8 - 10.4	15.5	2.1	11.3 - 19.6	15.0	2.2	10.7 - 19.2
2007	3.0	0.4	2.4 - 3.7	12.9	0.6	11.7 - 14.1	21.7	1.3	19.2 - 24.1	18.9	1.1	16.7 - 21.1

Figure 2.03

Estimated Prevalence of Diabetes by Age Group and Year, Ohio 1995–2007.^{[1][2][3]}



Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section, BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

Social and Economic Characteristics

Income

The prevalence of diabetes increases as a person’s income level decreases. In Ohio for the years 2005-2007, diabetes was more common in adults with a household income of less than \$15,000, compared to adults whose annual household income was \$75,000 and more. (Figure 2.04, Table 2.5).

Figure 2.04

Estimated Prevalence of Diabetes by Annual Household Income, Ohio 2005-2007 [1][2][3]

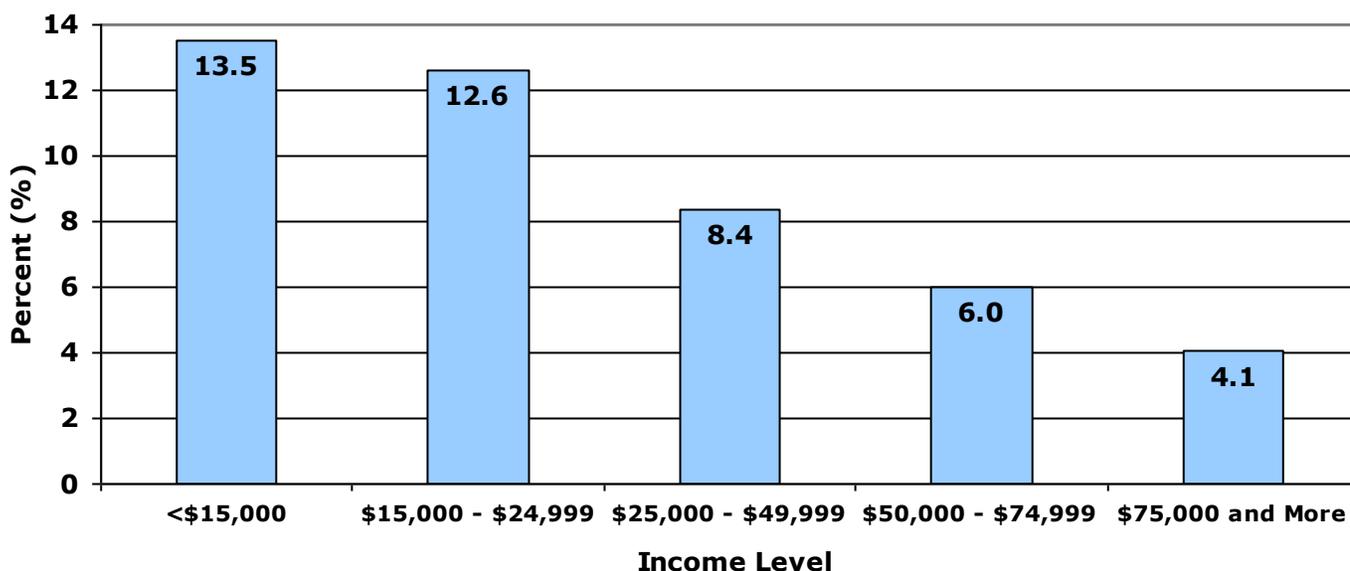


Table 2.5

Estimated Prevalence of Diabetes by Annual Household Income, Ohio 2005-2007. [1][2][3]

Income Level	%	SE	C.I.	
<\$15,000	13.5	1.0	11.6	15.5
\$15,000 - \$24,999	12.6	0.8	11.0	14.2
\$25,000 - \$49,999	8.4	0.5	7.4	9.3
\$50,000 - \$74,999	6.0	0.5	5.0	7.0
\$75,000 and More	4.1	0.4	3.3	4.9

Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

Education

The prevalence of diabetes decreases as a person’s education level increases. Those with less education appear to be more likely to develop diabetes (*Figure 2.05, Table 2.6*). Lower socioeconomic status (i.e., lower income and less education) has been associated with diabetes.

Figure 2.05

Estimated Prevalence of Diabetes by Education, Ohio 2005-2007. [1][2][3]

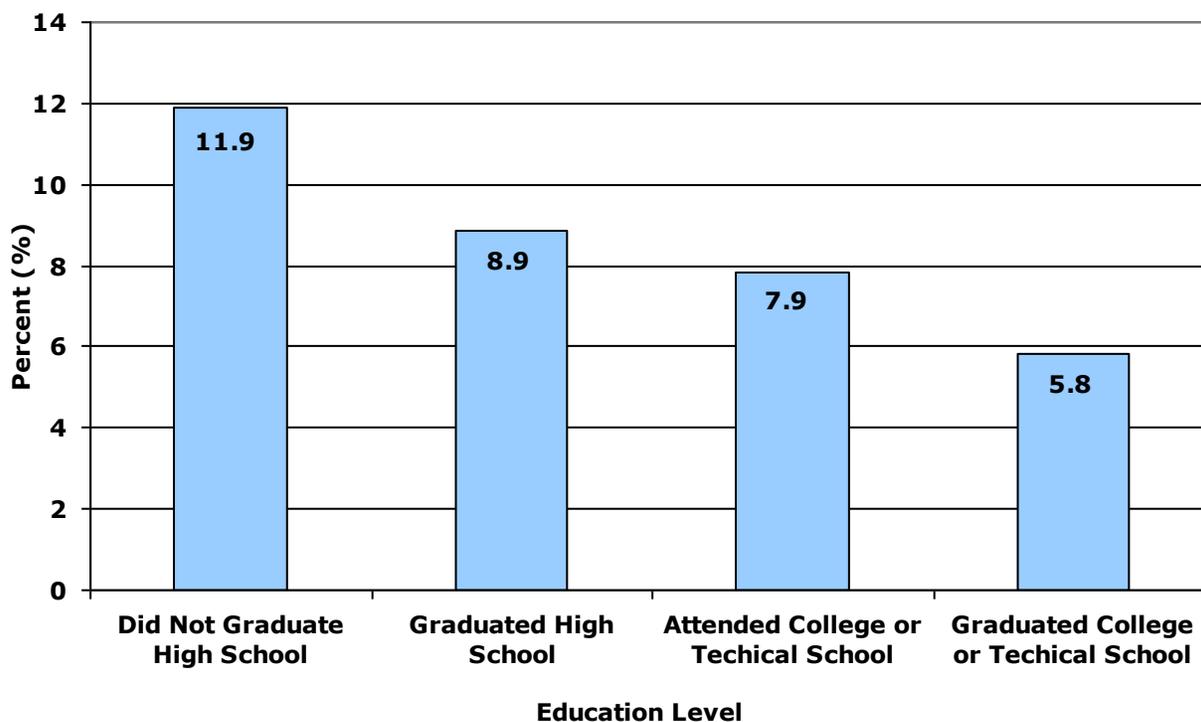


Table 2.6

Estimated Prevalence of Diabetes by Education, Ohio 2005-2007. [1][2][3]

Education Level	%	SE	C.I.		
Did Not Graduate High School	11.9	1.0	10.0	-	13.9
Graduated High School	8.9	0.4	8.0	-	9.7
Attended College or Technical School	7.9	0.5	6.9	-	8.8
Graduated College or Technical School	5.8	0.4	5.1	-	6.6

Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

Risk Factors

Weight

Adults who are overweight or obese are at increased risk for diabetes. For the years 2005-2007, 85.1 percent of Ohio adults with diabetes were overweight or obese, compared to 61.4 percent of adults without diabetes. More than half of adults with diabetes were classified as obese compared to one-quarter of adults without diabetes (not reported having diabetes). (Figure 2.06, Table 2.7).

During the 1995-2007 time period, those classified as overweight/obese increased in percentage for both adults with diabetes and without diabetes. (Figure 2.07, Table 2.8).

Figure 2.06

Percentage of Adults with and without Diabetes by Weight Category, Ohio 2005-2007. [1][2][3][4][5]

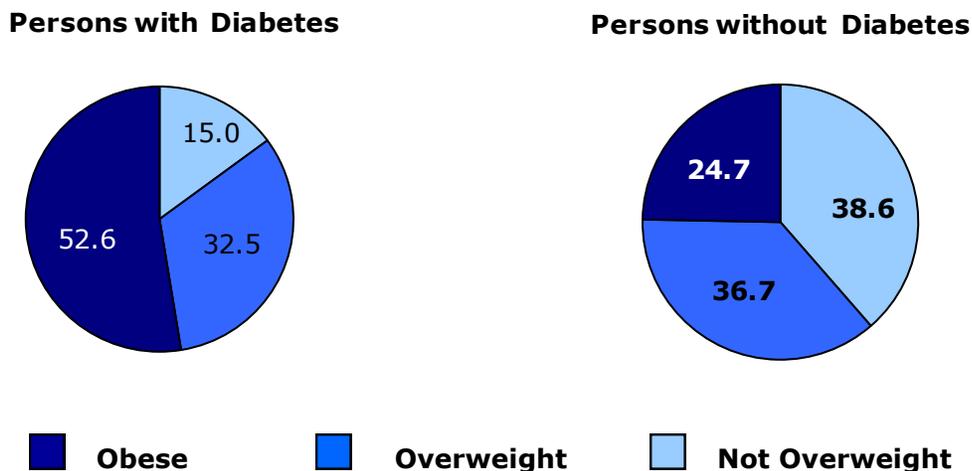


Table 2.7

Percentage of Adults with and without Diabetes by Weight Category, Ohio 2005-2007. [1][2][3][4][5]

Weight Categories	Diabetes			No Diabetes		
	%	SE	C.I.	%	SE	C.I.
Not Overweight	15.0	1.1	12.8 - 17.1	38.6	0.6	37.4 - 39.8
Overweight	32.5	1.5	29.6 - 35.3	36.7	0.6	35.5 - 37.9
Obese	52.6	1.6	49.5 - 55.7	24.7	0.6	23.6 - 25.8

Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] The following categories are defined as: Not Overweight or Obese BMI <25, Overweight 25≤BMI≤29.9, Obese BMI ≥30.

[4] For adults (18 years and older).

[5] Totals may not equal 100% due to rounding.

Figure 2.07

Percentage of Adults Who are Overweight or Obese by Diabetes Status and Year, Ohio 1995-2007. [1][2][3][4]

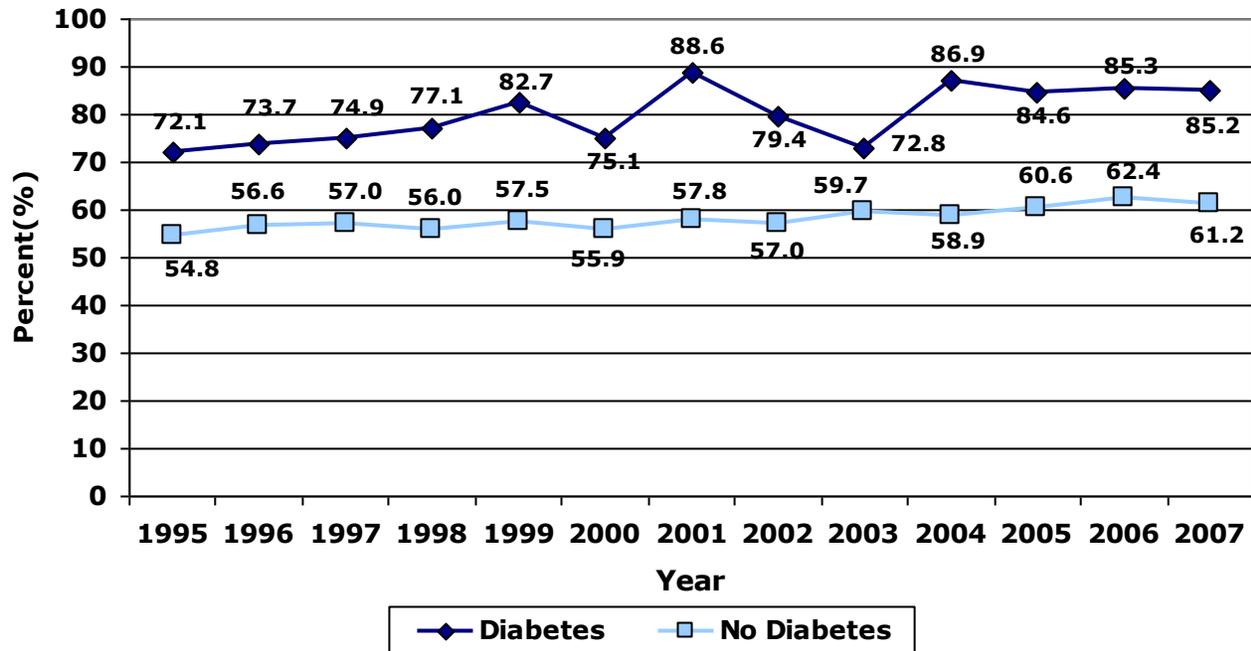


Table 2.8

Percentage of Adults Who are Overweight or Obese by Diabetes Status and Year, Ohio 1995-2007. [1][2][3][4]

Year	Diabetes				No Diabetes					
	%	SE	C.I.		%	SE	C.I.			
1995	72.1	7.7	56.9	-	87.2	54.8	1.6	0.0	-	57.9
1996	73.7	5.1	63.7	-	83.7	56.6	1.5	53.7	-	59.4
1997	74.9	4.2	66.7	-	83.0	57.0	1.2	54.6	-	59.4
1998	77.1	4.6	68.1	-	86.2	56.0	1.3	53.4	-	58.6
1999	82.7	4.4	74.0	-	91.3	57.5	1.6	54.5	-	60.5
2000	75.1	4.5	66.3	-	83.9	55.9	1.3	53.3	-	58.6
2001	88.6	2.2	84.3	-	93.0	57.8	1.1	55.6	-	60.0
2002	79.4	2.9	73.8	-	85.1	57.0	1.0	55.0	-	58.9
2003	72.8	3.4	66.1	-	79.5	59.7	1.1	57.6	-	61.9
2004	86.9	2.4	82.2	-	91.7	58.9	1.3	56.3	-	61.4
2005	84.6	1.9	80.9	-	88.3	60.6	1.0	58.6	-	62.6
2006	85.3	2.7	80.1	-	90.6	62.4	1.4	59.6	-	65.1
2007	85.2	1.2	82.8	-	87.6	61.2	0.8	59.8	-	62.7

Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] Overweight or obese was defined as BMI \geq 25.

[4] For adults (18 years and older).

Physical Activity

Lack of physical activity is a risk factor for diabetes. Between 1996 and 2007, the percent of Ohio adults with diabetes who reported no leisure time physical activity in the past 30 days was higher, compared to persons without diabetes. (Figure 2.08, Table 2.9).

In 2005 and 2007, among adults who meet physical activity recommended guidelines, 33.4 percent of adults with diabetes meet the physical activity recommendations, compared to 51.3 percent of adults without diabetes. About 26 percent of adults with diabetes reported no physical activity at all. (Figure 2.09, Table 2.10).

Figure 2.08

Percentage of Adults Who Report No Leisure Time Physical Activity in the Last 30 Days by Diabetes Status and Year, Ohio 1996-2007. [1][2][3][4]

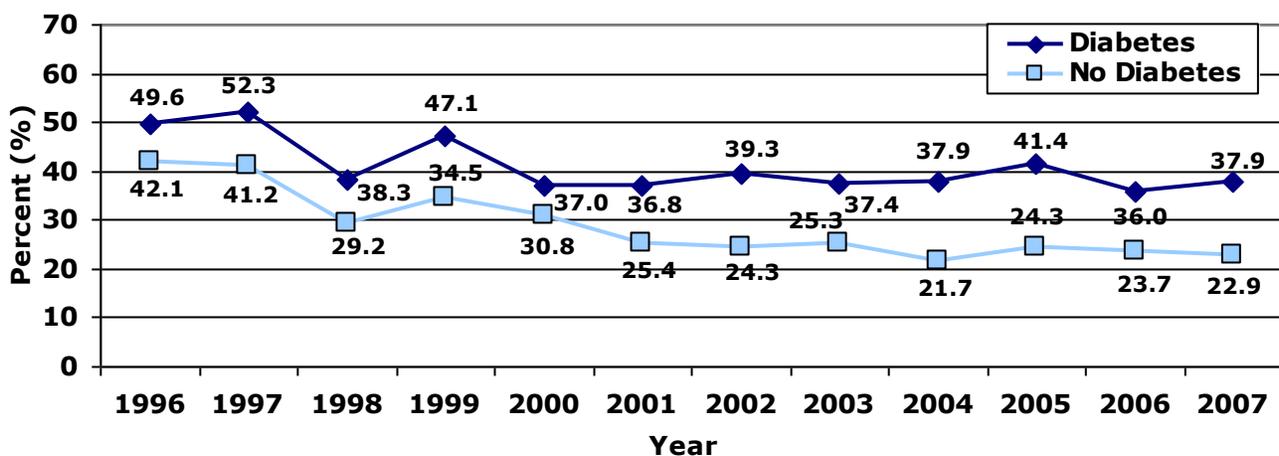


Table 2.9

Percentage of Adults Who Report No Leisure Time Physical Activity in the Past 30 Days by Diabetes Status and Year, Ohio 1996-2007. [1][2][3][4]

Year	Diabetes				No Diabetes					
	%	SE	C.I.		%	SE	C.I.			
1996	49.6	5.6	38.7	-	60.6	42.1	1.5	39.2	-	45.0
1997	52.3	4.9	42.7	-	61.8	41.2	1.3	38.7	-	43.7
1998	38.3	4.9	28.6	-	47.9	29.2	1.2	26.8	-	31.5
1999	47.1	5.4	36.6	-	57.6	34.5	1.5	31.5	-	37.4
2000	37.0	4.7	27.8	-	46.2	30.8	1.2	28.4	-	33.2
2001	36.8	3.5	30.0	-	43.7	25.4	1.0	23.5	-	27.3
2002	39.3	3.2	32.9	-	45.6	24.3	0.9	22.6	-	26.0
2003	37.4	3.3	30.9	-	43.8	25.3	0.9	23.5	-	27.2
2004	37.9	3.8	30.5	-	45.2	21.7	1.0	19.8	-	23.7
2005	41.4	2.8	35.9	-	46.8	24.3	0.9	22.7	-	26.0
2006	36.0	4.7	26.8	-	45.1	23.7	1.2	21.4	-	26.0
2007	37.9	1.6	34.7	-	41.1	22.9	0.6	21.7	-	24.1

Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

[4] No Leisure Time Physical Activity = not doing physical activity or exercise during the past 30 days other than their regular job.

Figure 2.09

Percentage of Adults with and without Diabetes by Physical Activity Level Status, Ohio 2005 and 2007. ^{[1][2][3][4]}

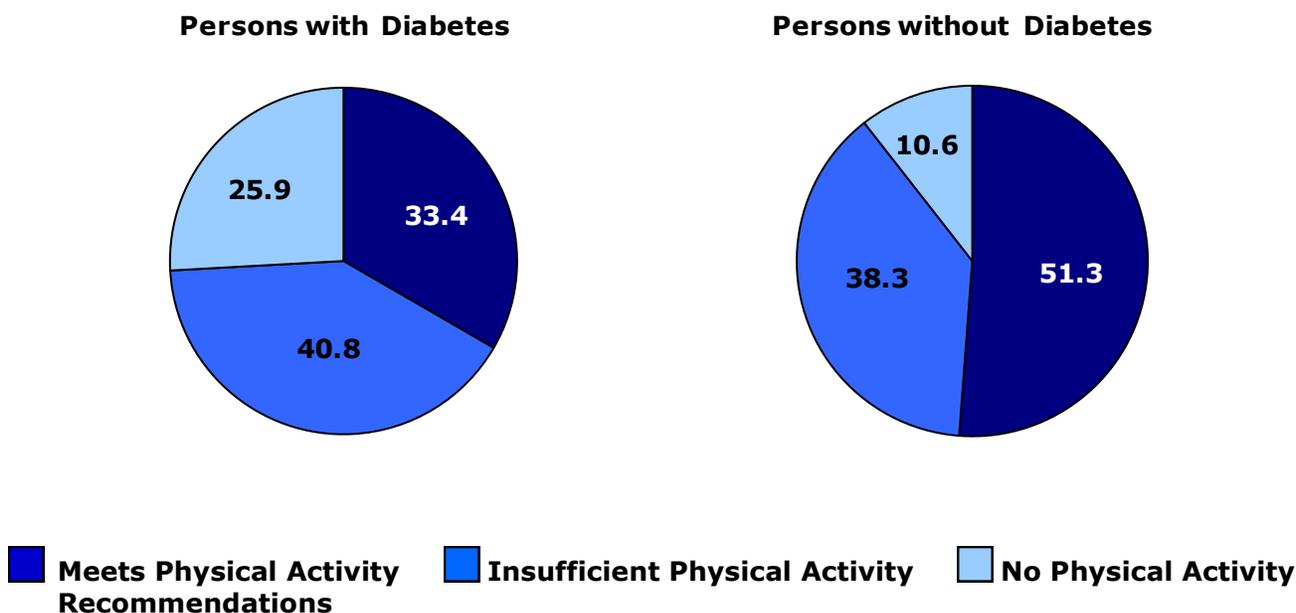


Table 2.10

Percentage of Adults with and without Diabetes by Physical Activity Level Status, Ohio 2005 and 2007. ^{[1][2][3][4]}

Physical Activity Level Status	Diabetes				No Diabetes			
	%	SE	C.I.		%	SE	C.I.	
Meets Physical Activity Recommendations	33.4	1.6	30.3	- 36.5	51.3	0.7	50.0	- 52.6
Insufficient Physical Activity	40.8	1.6	37.6	- 44.0	38.3	0.6	37.1	- 39.6
No Physical Activity	25.9	1.4	23.1	- 28.7	10.6	0.4	9.8	- 11.3

Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

[4] The following categories are defined as: Meets Physical Activity recommendations = Adults that have reported participating in either moderate physical activity defined as 30 or more minutes per day for 5 or more days per week, or vigorous activity for 20 or more minutes per day on 3 or more days per week. Insufficient Physical Activity = Insufficient activity to meet moderate or vigorous recommendations. No Physical Activity = No moderate or vigorous activity.

Cigarette Smoking

Smoking can cause an increase in morbidity and mortality among persons with diabetes. However, between 1996–2007, the percentage of adult Ohioans with diabetes who currently smoke was less, compared to adults without diabetes. (Figure 2.10, Table 2.11).

More adults with diabetes (37.4 percent) were former smokers, compared to adults without diabetes (23.5 percent). (Figure 2.11, Table 2.12).

Figure 2.10

Percentage of Adults Who Currently Smoke by Diabetes Status and Year, Ohio 1996-2007. ^{[1][2][3][4]}

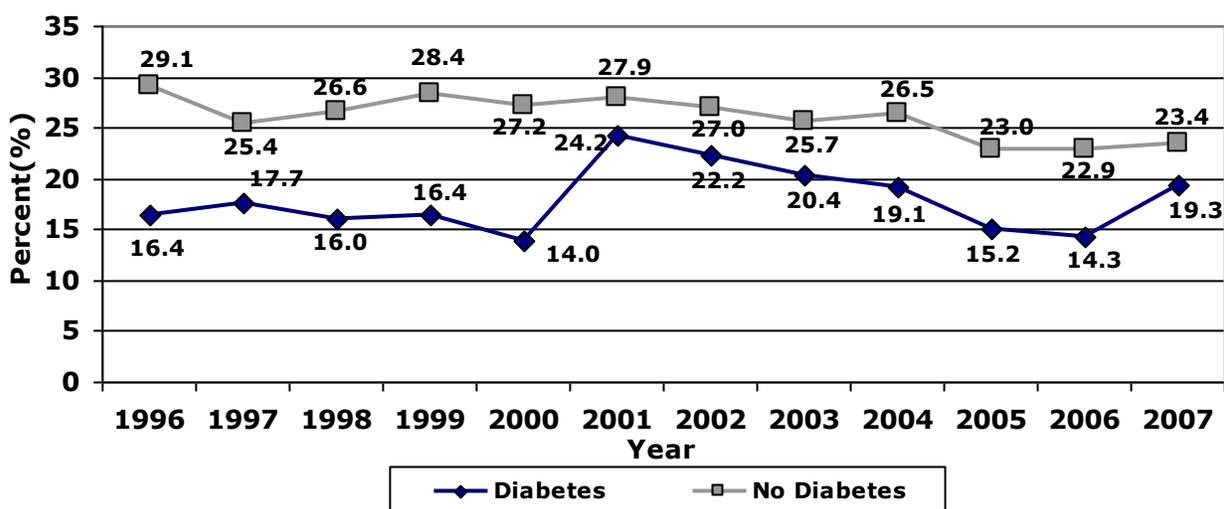


Table 2.11

Percentage of Adults Who Currently Smoke by Diabetes Status and Year, Ohio 1996-2007. ^{[1][2][3][4]}

Year	Diabetes				No Diabetes					
	%	SE	C.I.		%	SE	C.I.			
1996	16.4	4.5	7.6	-	25.2	29.1	1.4	26.3	-	31.9
1997	17.7	3.9	10.0	-	25.3	25.4	1.1	23.4	-	27.5
1998	16.0	4.0	8.2	-	23.8	26.6	1.2	24.3	-	29.0
1999	16.4	4.1	8.4	-	24.3	28.4	1.4	25.6	-	31.1
2000	14.0	3.0	8.0	-	19.9	27.2	1.2	24.8	-	29.5
2001	24.2	3.2	17.9	-	30.4	27.9	1.0	26.0	-	29.8
2002	22.2	2.7	16.9	-	27.5	27.0	0.9	25.3	-	28.7
2003	20.4	3.0	14.6	-	26.3	25.7	0.9	23.8	-	27.5
2004	19.1	3.1	13.1	-	25.2	26.5	1.2	24.1	-	28.8
2005	15.2	1.9	11.4	-	18.9	23.0	0.9	21.3	-	24.6
2006	14.3	2.4	9.6	-	19.0	22.9	1.3	20.5	-	25.4
2007	19.3	1.5	16.4	-	22.2	23.4	0.7	22.1	-	24.8

Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] Current Smoker is defined as: reported smoking at least 100 cigarettes in lifetime, and currently smokes at least some days.

[4] For adults (18 years and older).

Figure 2.11

Percentage of Adults with and without Diabetes by Smoking Status, Ohio 2005-2007. ^{[1][2][3][4]}

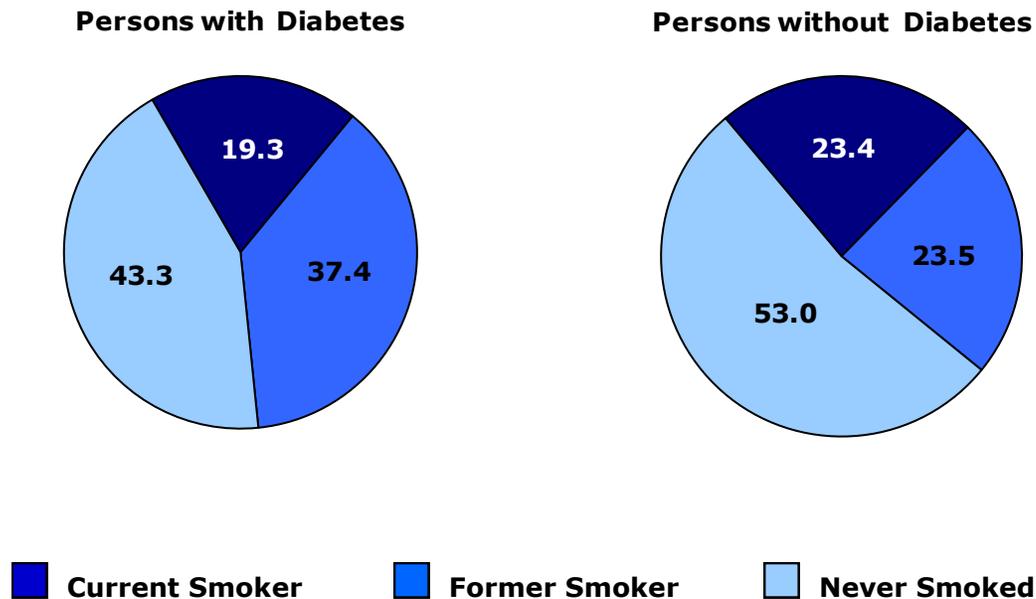


Table 2.12

Percentage of Adults with and without Diabetes by Smoking Status, Ohio 2005-2007. ^{[1][2][3][4]}

Smoking Status	Diabetes					No Diabetes				
	%	SE	C.I.			%	SE	C.I.		
Current Smoker	19.3	1.5	16.4	-	22.2	23.4	0.7	22.1	-	24.8
Former Smoker	37.4	1.7	34.2	-	40.7	23.5	0.6	22.4	-	24.7
Never Smoked	43.3	1.7	39.9	-	46.6	53.0	0.7	51.6	-	54.5

Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] The following categories are defined as: Current Smoker = Reported smoking at least 100 cigarettes in lifetime, and currently smokes at least some days, Former Smoker = Reported smoking at least 100 cigarettes in lifetime, currently does not smoke any days. Never Smoked = reported not have smoked at least 100 cigarettes in lifetime.

[4] For adults (18 years and older).

Preventive Care Practices

For persons with diabetes, receiving the proper examinations, vaccinations, testing, education and keeping up with self-monitoring is necessary to control and manage the disease. In Ohio between 1995–2007, the percentage of persons with diabetes who in the past year had seen a physician for their diabetes (Table 2.13, Figure 2.12); had a dilated eye examination (Figure 2.13, Table 2.13); had their feet checked (Figure 2.14, Table 2.13); and received an influenza vaccine (flu shot) (Figure 2.15, Table 2.13) fluctuated and did not increase appreciably from year to year. The percentage of adults with diabetes who received two HbA1c tests in the past year as part of their blood glucose monitoring by a health professional increased from nearly 62 percent in 2000 to 78 percent in 2004 but decreased again to 72 percent in 2007 (Figure 2.16, Table 2.13). The percentage of persons with diabetes who ever received the pneumonia vaccine had increased from approximately 39 percent in 1997 to more than 60 percent by 2006 and then dropped to approximately 53 percent in 2007. (Figure 2.17, Table 2.13). Between 2000–2007, the percentage of persons with diabetes who have ever received a diabetes self-management course averaged around 53 percent (Figure 2.18, Table 2.13). The percentage of adults with diabetes who have daily self-monitored their blood glucose slightly increased from nearly 47 percent in 1995 to 66 percent in 2007 (Figure 2.19, Table 2.13). Those who daily self-examined their feet has slightly decreased from 76 percent in 2000 to 63 percent in 2007. (Figure 2.20, Table 2.13).

Table 2.13

Percentage of Adults Who Received the Following Diabetes Preventive Care Practices by Year, Ohio 1995–2007. ^{[1][2][3]}

Year	Seen Doctor*			Dilated Eye Exam*			Feet Checked*			Flu Shot*			HbA1c Tests*		
	%	SE	C.I.	%	SE	C.I.	%	SE	C.I.	%	SE	C.I.	%	SE	C.I.
1995	81.3	7.7	66.3 - 96.3	57.0	8.4	40.6 - 73.5	56.2	8.9	38.8 - 73.5	43.7	8.1	27.8 - 59.6	N/A		
1996	89.3	3.6	82.2 - 96.3	68.1	5.6	57.1 - 79.1	64.5	6.0	52.8 - 76.2	N/A			N/A		
1997	96.5	1.2	94.3 - 98.8	68.2	4.5	59.5 - 77.0	70.8	4.6	61.8 - 79.9	62.2	4.4	53.6 - 70.8	N/A		
1998	88.6	3.4	82.0 - 95.2	64.0	5.1	54.1 - 74.0	69.3	5.2	59.2 - 79.5	55.0	5.2	44.8 - 65.3	N/A		
1999	93.3	2.6	88.2 - 98.3	70.9	4.8	61.5 - 80.3	71.7	5.0	61.9 - 81.5	52.3	5.4	41.8 - 62.8	N/A		
2000	93.1	4.8	83.7 - 102.5	74.6	4.3	66.2 - 83.0	65.6	4.8	56.2 - 75.0	64.2	2.6	59.1 - 69.3	61.5	5.3	51.1 - 71.9
2001	92.4	1.9	88.6 - 96.1	69.4	3.6	62.4 - 76.4	63.9	3.6	56.7 - 71.0	48.7	3.7	41.5 - 55.9	69.1	3.8	61.7 - 76.6
2002	94.3	1.3	91.8 - 96.9	66.4	3.3	60.0 - 72.8	73.2	2.8	67.7 - 78.6	55.7	3.3	49.2 - 62.1	69.3	3.4	62.6 - 76.1
2003	90.0	2.6	84.8 - 95.2	66.1	3.4	59.4 - 72.7	63.1	3.5	56.2 - 70.0	51.0	3.5	44.2 - 57.8	75.1	3.4	68.5 - 81.7
2004	92.0	2.1	87.8 - 96.1	66.1	3.6	59.0 - 73.3	67.4	3.7	60.1 - 74.6	57.0	3.9	49.4 - 64.6	78.2	3.4	71.5 - 84.9
2005	87.9	2.0	84.0 - 91.8	71.0	2.5	66.0 - 76.0	63.0	2.8	57.5 - 68.5	53.6	2.8	48.1 - 59.1	71.2	2.9	65.6 - 76.8
2006	90.2	2.1	86.0 - 94.4	70.8	3.5	63.9 - 77.7	67.3	3.7	60.0 - 74.6	55.3	3.7	48.0 - 62.5	69.9	3.9	62.3 - 77.6
2007	88.0	1.7	84.7 - 91.3	72.7	2.4	68.1 - 77.4	71.0	2.3	66.4 - 75.5	61.0	2.5	56.1 - 65.9	72.2	2.5	67.3 - 77.1

Year	Pneumonia Vaccine#			Diabetes Self-Management Class#			Daily Self-Monitoring of Blood Glucose			Daily Self-Exam of Feet		
	%	SE	C.I.	%	SE	C.I.	%	SE	C.I.	%	SE	C.I.
1995	28.4	7.2	14.3 - 42.4	N/A			46.5	8.5	29.9 - 63.0	N/A		
1996	N/A			N/A			43.1	5.9	31.6 - 54.6	N/A		
1997	38.9	4.6	29.8 - 48.0	N/A			44.4	4.8	35.1 - 53.8	N/A		
1998	37.9	5.1	27.9 - 47.9	N/A			39.3	5.1	29.2 - 49.3	N/A		
1999	44.3	5.5	33.5 - 55.0	N/A			55.5	5.3	45.1 - 65.9	N/A		
2000	51.6	5.0	41.8 - 61.4	51.1	5.0	41.3 - 60.8	62.0	4.7	52.7 - 71.3	76.3	4.1	68.3 - 84.2
2001	50.7	3.8	43.3 - 58.1	55.4	3.7	48.3 - 62.6	50.8	3.7	43.4 - 58.1	73.5	3.2	67.2 - 79.7
2002	51.3	3.4	44.6 - 57.9	61.6	3.3	55.2 - 68.0	54.0	3.3	47.5 - 60.5	70.8	3.1	64.8 - 76.8
2003	53.2	3.5	46.4 - 60.0	48.3	3.4	41.5 - 55.0	62.3	3.5	55.5 - 69.1	71.8	3.1	65.7 - 77.9
2004	46.8	4.0	39.0 - 54.6	55.1	5.4	44.6 - 65.6	61.8	3.8	54.4 - 69.3	64.5	3.8	57.1 - 71.9
2005	47.3	2.9	41.7 - 52.9	55.1	2.8	49.6 - 60.5	63.7	2.8	58.3 - 69.1	68.5	2.6	63.3 - 73.6
2006	60.6	3.6	53.5 - 67.8	48.9	3.7	41.7 - 56.1	59.1	3.7	51.8 - 66.3	69.1	3.4	62.4 - 75.8
2007	52.7	2.6	47.7 - 57.7	59.1	2.4	54.4 - 63.9	66.3	2.4	61.6 - 70.9	63.0	2.5	58.1 - 67.9

Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

* In the past year. # Ever Received. N/A Data not available for specific years.

Figure 2.12

Percentage of Adults with Diabetes Who have Seen a Doctor for their Diabetes in the Past Year, by Year, Ohio 1995–2007.^{[1][2][3]}

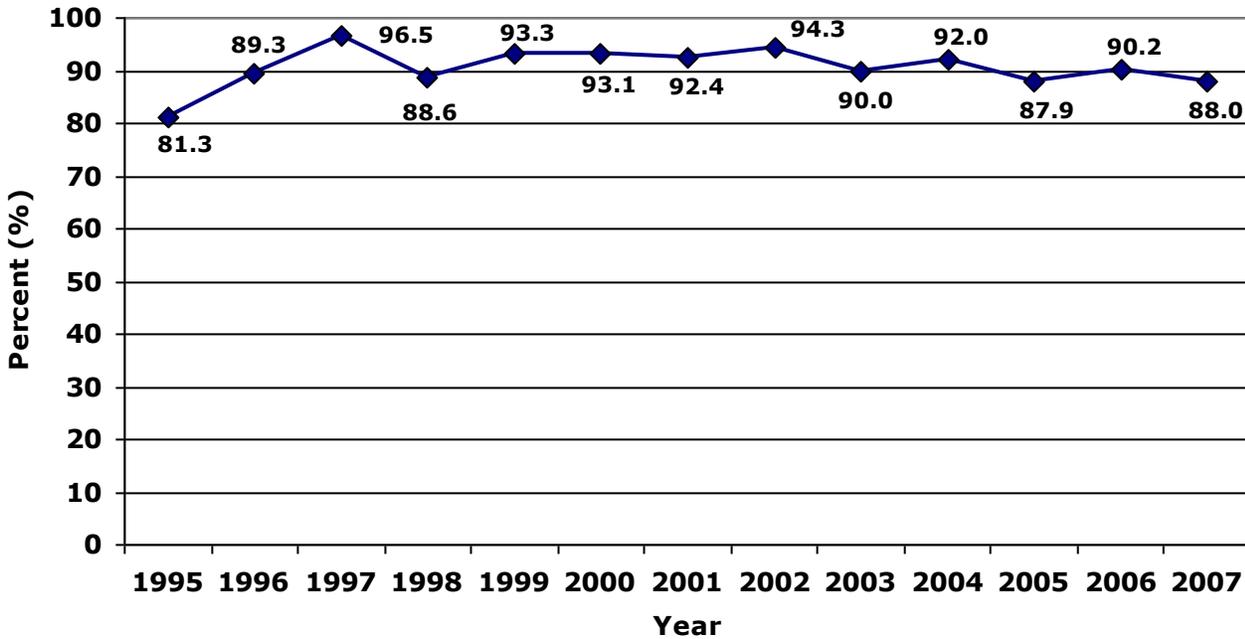
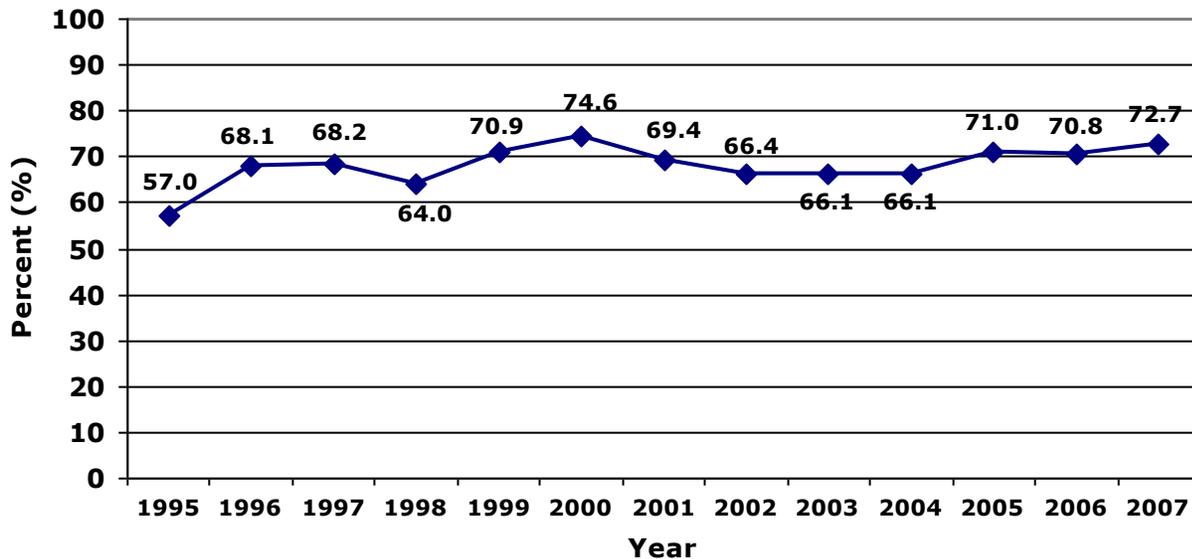


Figure 2.13

Percentage of Adults with Diabetes Who had a Dilated Eye Exam in the Past Year, by Year, Ohio 1995–2007.^{[1][2][3]}



Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

Figure 2.14

Percentage of Adults with Diabetes Who had Their Feet Checked by a Health Professional in the Past Year, by Year, Ohio 1995–2007.^{[1][2][3]}

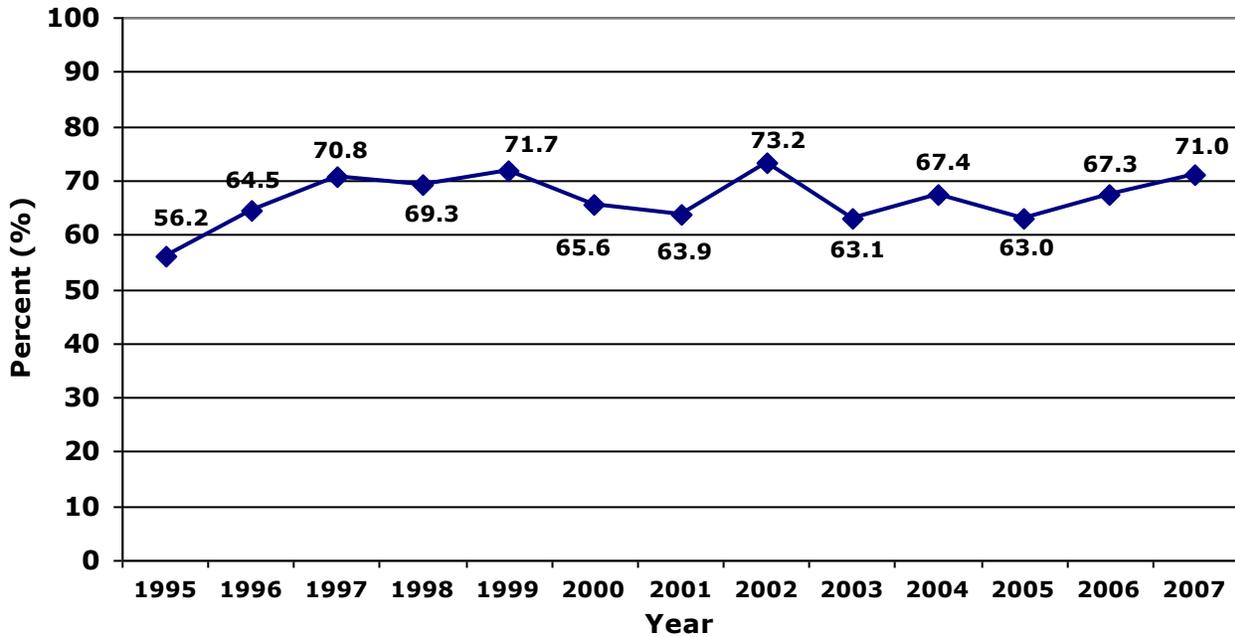
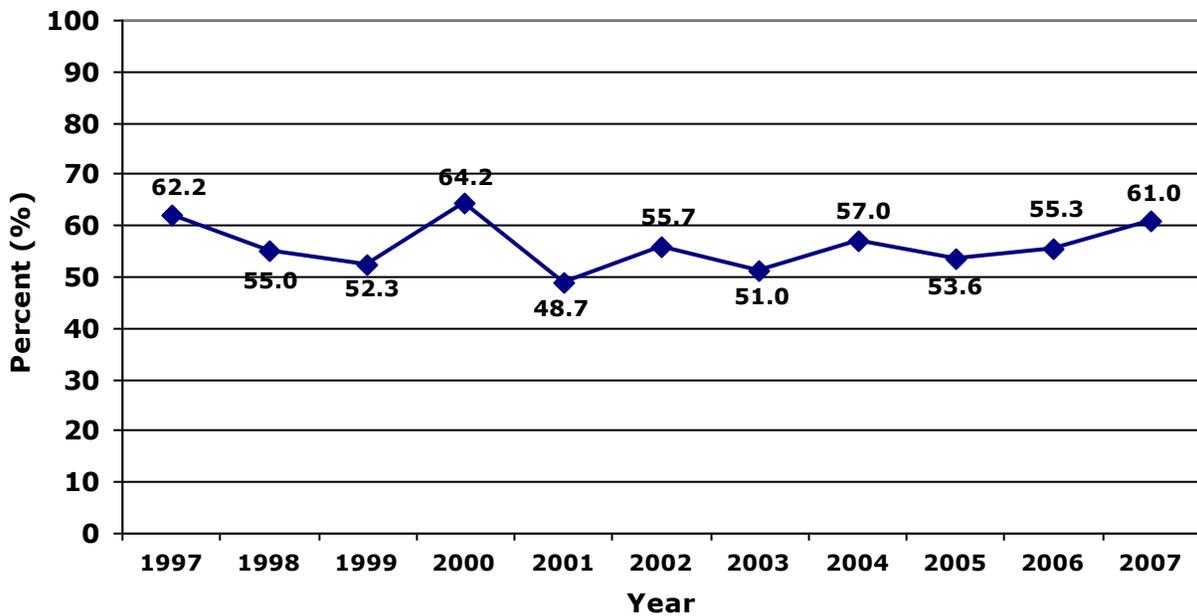


Figure 2.15

Percentage of Adults with Diabetes Who had a Flu Shot in the Past Year, by Year, Ohio 1997–2007.^{[1][2][3]}



Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

Figure 2.16

Percentage of Adults with Diabetes Who Have Received at Least Two HbA1c Tests by a Health Professional for Their Diabetes in the Past Year, by Year, Ohio 2000–2007. [1][2][3]

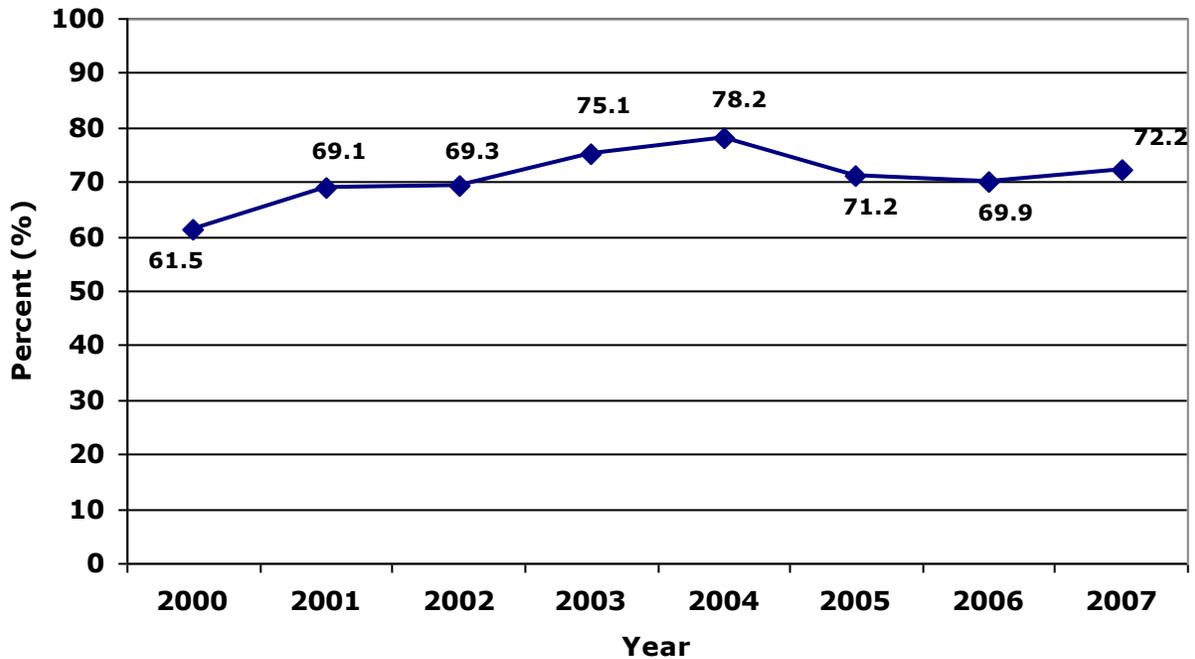
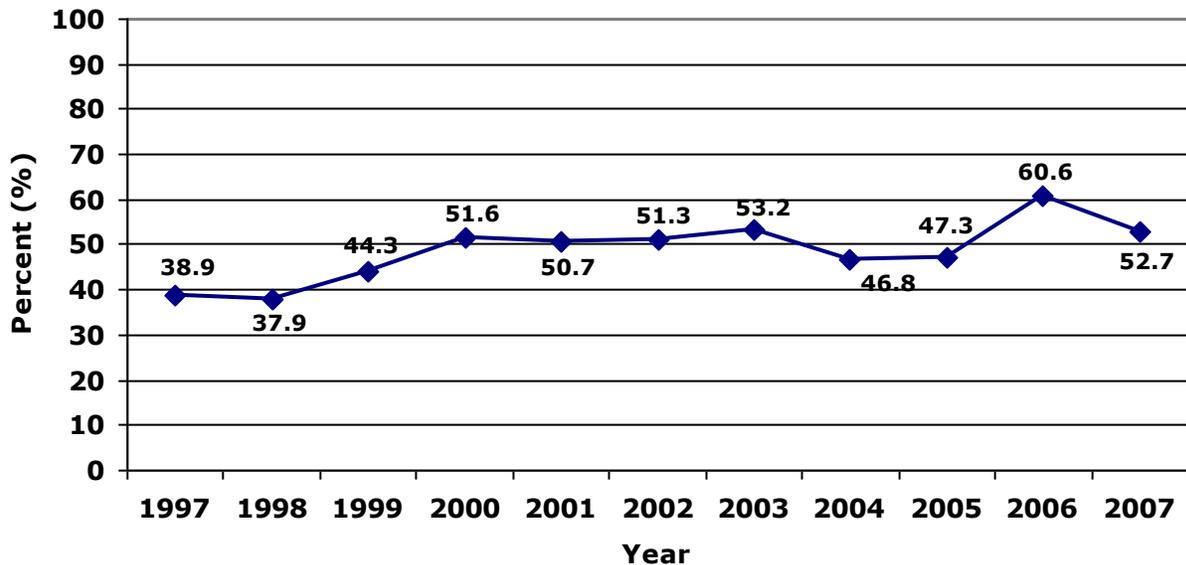


Figure 2.17

Percentage of Adults with Diabetes Who Have Ever Received a Pneumonia Vaccination, by Year, Ohio 1997–2007. [1][2][3]



Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

Figure 2.18

Percentage of Adults with Diabetes Who have Ever Received a Diabetes Self-Management Course, by Year, Ohio 2000–2007. ^{[1][2][3]}

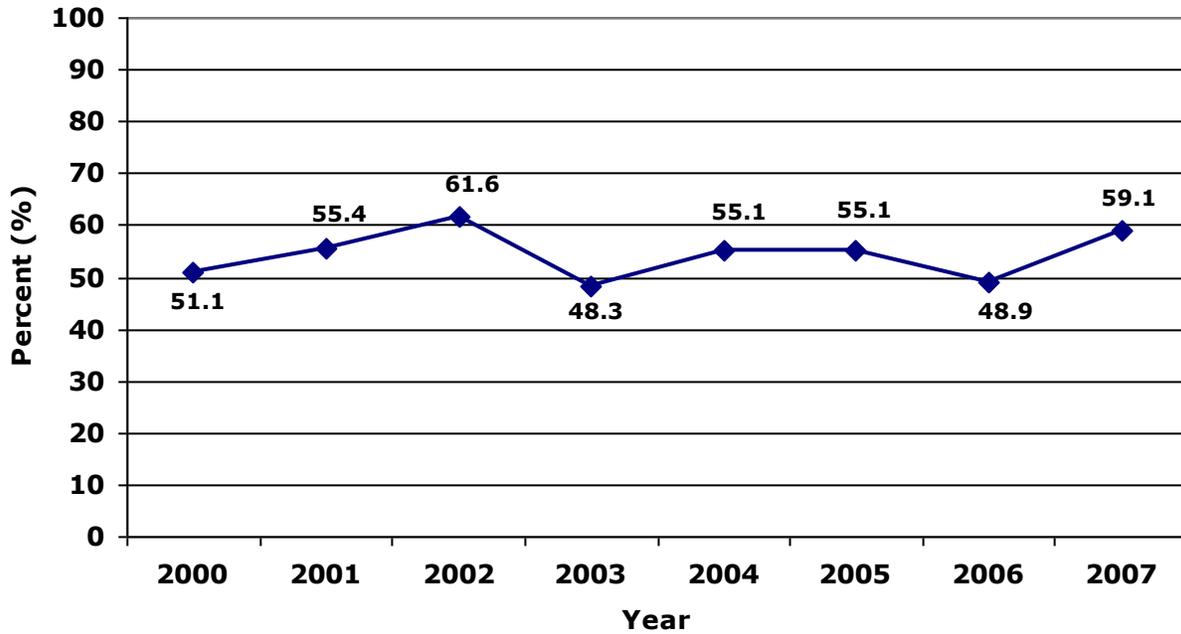
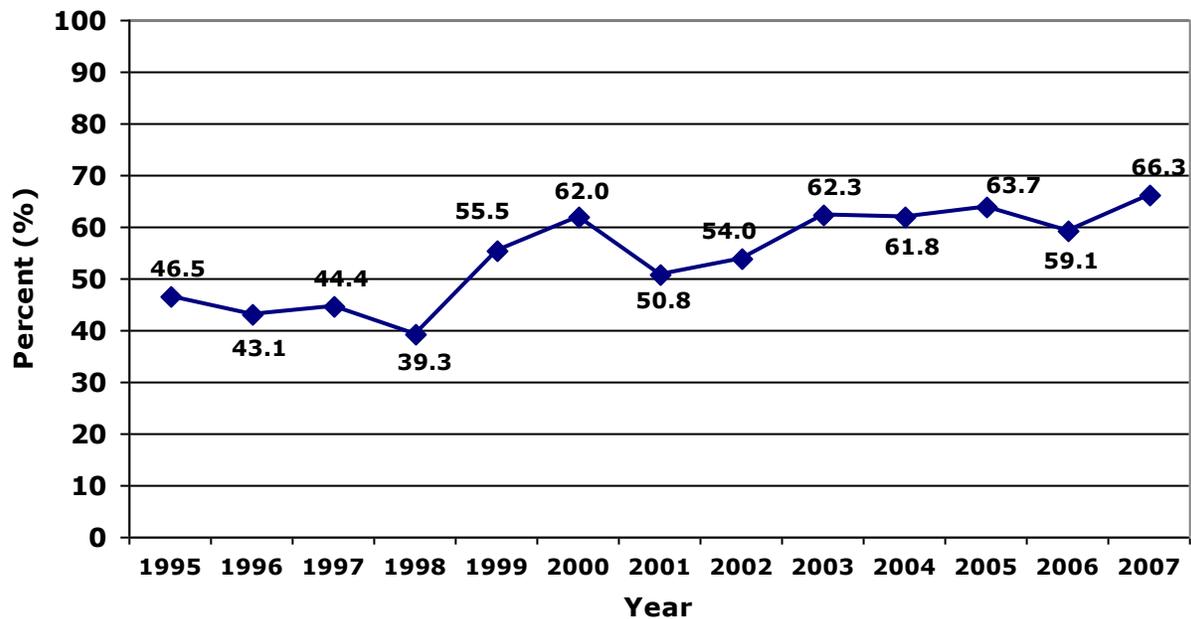


Figure 2.19

Percentage of Adults with Diabetes Who have Checked Their Blood Glucose at Least Once Daily in the Past Year, by Year, Ohio 1995–2007. ^{[1][2][3]}



Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

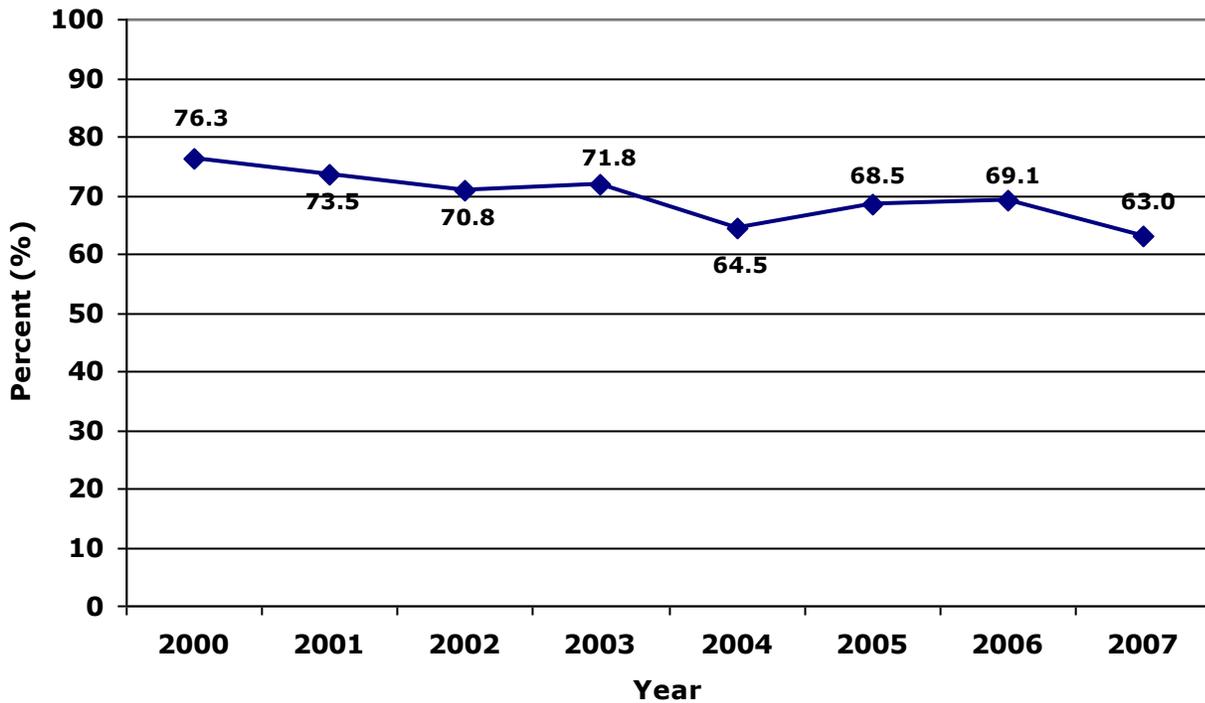
[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

Figure 2.20

Percentage of Adults with Diabetes Who Have Self-Examined Their Feet at Least Once Daily in the Past Year, by Year, Ohio 2000–2007. ^{[1][2][3]}



Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

Co-Morbidity

In Ohio for the years 2004 to 2005, persons with diabetes had a higher percentage of other chronic medical conditions (high blood pressure, high cholesterol, coronary heart disease, stroke and myocardial infarction), compared to adults without diabetes (*Figure 2.21, Table 2.14*). Most notable was high blood pressure among persons with diabetes (69.3 percent), compared to adults without diabetes (23.7 percent). We did not control for age in this analysis and in general, persons with diabetes are older adults and older adults tend to have more chronic conditions. The persons without diabetes (*Figure 2.21, Table 2.14*) may be a younger group of adults and thus have fewer chronic medical conditions.

Figure 2.21

Percentage of Adults with and without Diabetes by Selected Medical Conditions, Ohio 2004-2005. ^{[1][2][3]}

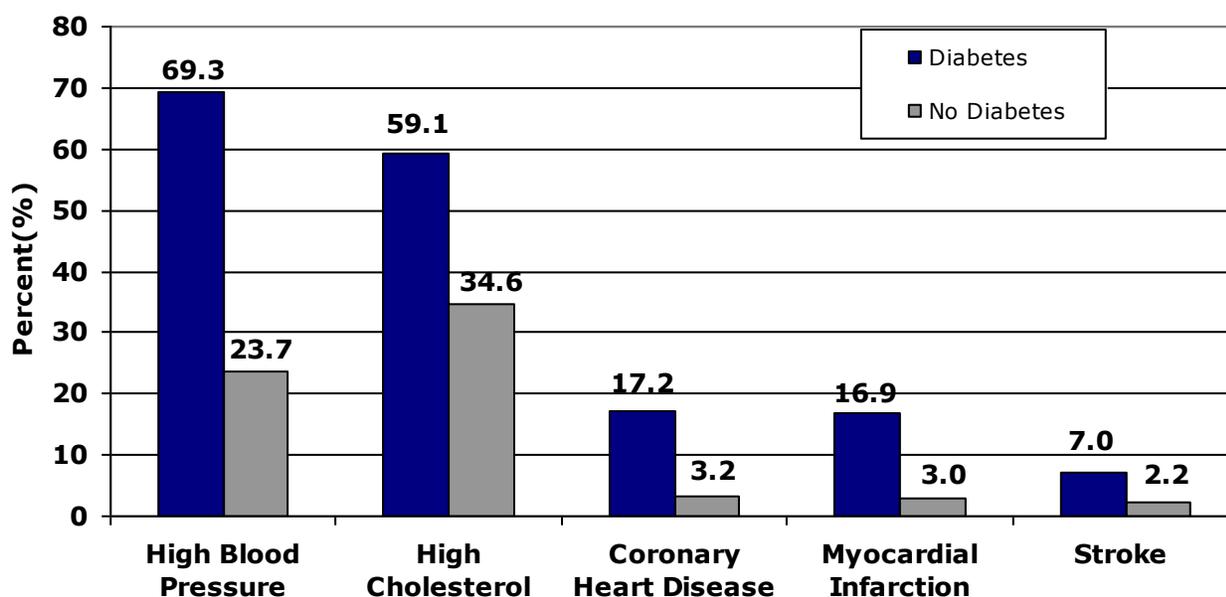


Table 2.14

Percentage of Adults with and without Diabetes by Selected Medical Conditions, Ohio 2004-2005. ^{[1][2][3]}

Medical Condition	Diabetes			No Diabetes		
	%	SE	C.I.	%	SE	C.I.
High Blood Pressure	69.3	2.3	64.9 - 73.8	23.7	0.7	22.4 - 24.9
High Cholesterol	59.1	2.5	54.2 - 64.0	34.6	0.8	33.0 - 36.3
Coronary Heart Disease	17.2	1.9	13.6 - 20.8	3.2	0.3	2.7 - 3.7
Myocardial Infarction	16.9	1.9	13.3 - 20.5	3.0	0.2	2.5 - 3.4
Stroke	7.0	1.1	4.8 - 9.2	2.2	0.2	1.8 - 2.7

Source: Ohio Behavioral Risk Factor Surveillance System, Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] The percentage was adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e., age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

Ohio Medicaid Program

The Ohio Medicaid Program provides health care for three main groups of low-income Ohioans: parents (pregnant women) and children, the elderly and the blind or disabled. In Fiscal Year (FY) 2004, the Medicaid program covered 2 million Ohioans. Nearly 58 percent of Medicaid eligibles were women, 66 percent were white, 29 percent were black and 4 percent were other (Asian, Hispanic, Native American, and other) races. Eighty-two percent were less than 45 years of age. (Table 3.1).

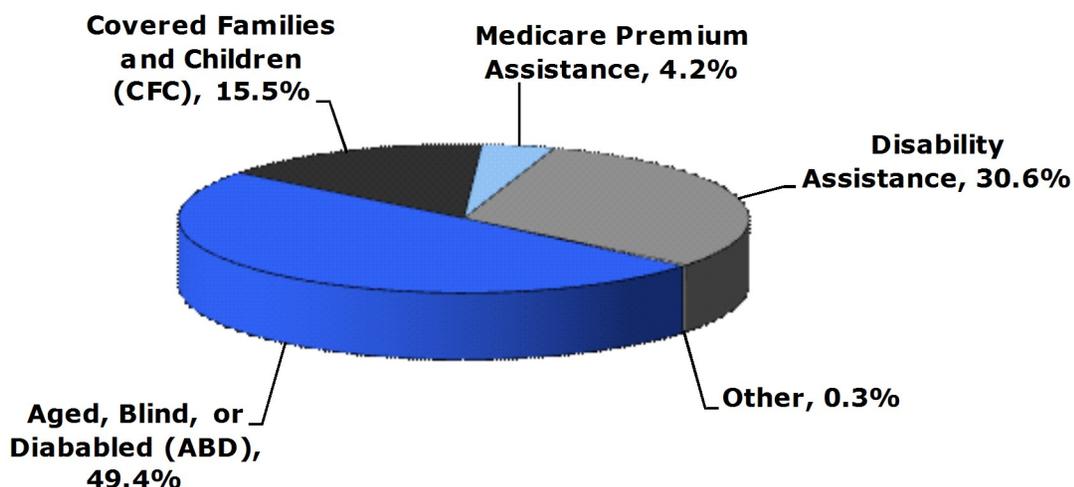
Prevalence (Sex, Race and Age Group)

According to 2004 data, approximately 6.3 percent of Medicaid eligibles have been diagnosed with diabetes. Of these, nearly 69 percent were women. The diabetes prevalence rates among the races were all above 5 percent; 6.5 percent for whites, 5.8 percent for blacks; and 6.1 percent for all other races (Table 3.1). Nearly 75 percent of Medicaid eligibles with diabetes were age 45 years or older. Eighty percent of Medicaid beneficiaries with diabetes were classified as aged, blind or disabled aid category or disability assistance aid category (Figure 3.01), compared to 20 percent of the general Medicaid population. (Data not shown).

The age-specific prevalence of diabetes among Medicaid eligibles increased with age through age 65-74 (Figure 3.02, Table 3.1). Diabetes was most common in those 65 years of age and older. Prevalence was higher for females than for males; this was true across all races. Black and white females 65-74 years old had the highest diabetes prevalence rates of all sex-racial-age groups. (Figure 3.02, Table 3.1).

Figure 3.01

Distribution of Medicaid Eligibles with Diabetes by Aid Category, Ohio 2004. [1][2][3][4][5]



Source: Ohio Medicaid Program, analysis completed by Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1]Fiscal Year 2004 (July 1, 2003 - June 30, 2004).

[2] Medicaid eligibles that had coverage for any part of the year (one or month or more). Also called Medicaid any-month eligibles.

[3] Diabetes is defined by diagnosis and procedure code combinations in the National Committee for Quality Assurance Healthcare Effectiveness Data and Information Set measure.

[4] Fiscal Year 2004 (July 1, 2003 - June 30, 2004).

[5] Eligibles in more than one category during the year are counted multiple times unless otherwise stated.

* Fee for service only.

Table 3.1

Prevalence of Diabetes among Medicaid Eligibles* by Race, Sex and Age Group, Ohio 2004. [1][2][3][4][5][6]

White

AGE GROUP	MALES			FEMALES			TOTAL		
	NUMBER OF ELIGIBLES WITH DIABETES	NUMBER OF MEDICAID ELIGIBLES	PREVALENCE OF DIABETES	NUMBER OF ELIGIBLES WITH DIABETES	NUMBER OF MEDICAID ELIGIBLES	PREVALENCE OF DIABETES	NUMBER OF ELIGIBLES WITH DIABETES	NUMBER OF MEDICAID ELIGIBLES	PREVALENCE OF DIABETES
0-17	1,073	343,844	0.3%	1,175	327,461	0.4%	2,248	671,305	0.3%
18-44	6,657	149,363	4.5%	13,131	295,403	4.4%	19,788	444,766	4.4%
45-64	12,525	59,475	21.1%	20,877	81,005	25.8%	33,402	140,480	23.8%
65-74	4,283	15,264	28.1%	10,056	29,938	33.6%	14,339	45,202	31.7%
75+	4,523	17,106	26.4%	15,687	62,741	25.0%	20,210	79,847	25.3%
Total	29,061	585,052	5.0%	60,926	796,548	7.6%	89,987	1,381,600	6.5%

Black

AGE GROUP	MALES			FEMALES			TOTAL		
	NUMBER OF ELIGIBLES WITH DIABETES	NUMBER OF MEDICAID ELIGIBLES	PREVALENCE OF DIABETES	NUMBER OF ELIGIBLES WITH DIABETES	NUMBER OF MEDICAID ELIGIBLES	PREVALENCE OF DIABETES	NUMBER OF ELIGIBLES WITH DIABETES	NUMBER OF MEDICAID ELIGIBLES	PREVALENCE OF DIABETES
0-17	403	172,299	0.2%	556	165,955	0.3%	959	338,254	0.3%
18-44	2,401	42,926	5.6%	6,188	127,937	4.8%	8,589	170,863	5.0%
45-64	4,991	21,005	23.8%	8,974	32,176	27.9%	13,965	53,181	26.3%
65-74	1,469	4,842	30.3%	4,102	10,399	39.4%	5,571	15,241	36.6%
75+	1,145	3,843	29.8%	4,435	13,400	33.1%	5,580	17,243	32.4%
Total	10,409	244,915	4.3%	24,255	349,867	6.9%	34,664	594,782	5.8%

Other

AGE GROUP	MALES			FEMALES			TOTAL		
	NUMBER OF ELIGIBLES WITH DIABETES	NUMBER OF MEDICAID ELIGIBLES	PREVALENCE OF DIABETES	NUMBER OF ELIGIBLES WITH DIABETES	NUMBER OF MEDICAID ELIGIBLES	PREVALENCE OF DIABETES	NUMBER OF ELIGIBLES WITH DIABETES	NUMBER OF MEDICAID ELIGIBLES	PREVALENCE OF DIABETES
0-17	21	10,269	0.2%	18	9,671	0.2%	39	19,940	0.2%
18-44	132	2,798	4.7%	249	5,848	4.3%	381	8,646	4.4%
45-64	274	1,081	25.3%	431	1,454	29.6%	705	2,535	27.8%
65-74	190	600	31.7%	336	1,048	32.1%	526	1,648	31.9%
75+	167	623	26.8%	303	1,154	26.3%	470	1,777	26.4%
Total	784	15,371	5.1%	1,337	19,175	7.0%	2,121	34,546	6.1%

Total

AGE GROUP	MALES			FEMALES			TOTAL		
	NUMBER OF ELIGIBLES WITH DIABETES	NUMBER OF MEDICAID ELIGIBLES	PREVALENCE OF DIABETES	NUMBER OF ELIGIBLES WITH DIABETES	NUMBER OF MEDICAID ELIGIBLES	PREVALENCE OF DIABETES	NUMBER OF ELIGIBLES WITH DIABETES	NUMBER OF MEDICAID ELIGIBLES	PREVALENCE OF DIABETES
0-17	1,497	526,412	0.3%	1,749	503,087	0.3%	3,246	1,029,499	0.3%
18-44	9,190	195,087	4.7%	19,568	429,188	4.6%	28,758	624,275	4.6%
45-64	17,790	81,561	21.8%	30,282	114,635	26.4%	48,072	196,196	24.5%
65-74	5,942	20,706	28.7%	14,494	41,385	35.0%	20,436	62,091	32.9%
75+	5,835	21,572	27.0%	20,425	77,295	26.4%	26,260	98,867	26.6%
Total	40,254	845,338	4.8%	86,518	1,165,590	7.4%	126,772	2,010,928	6.3%

Source: Ohio Medicaid Program, analysis completed by Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] Other includes: Asian, Hispanic, Native American and other races.

[2] Medicaid eligibles that had coverage for any part of the year (one or month or more). Also called Medicaid any-month eligibles.

[3] Unknown date of birth not included.

[4] Age is calculated as of June, 2004.

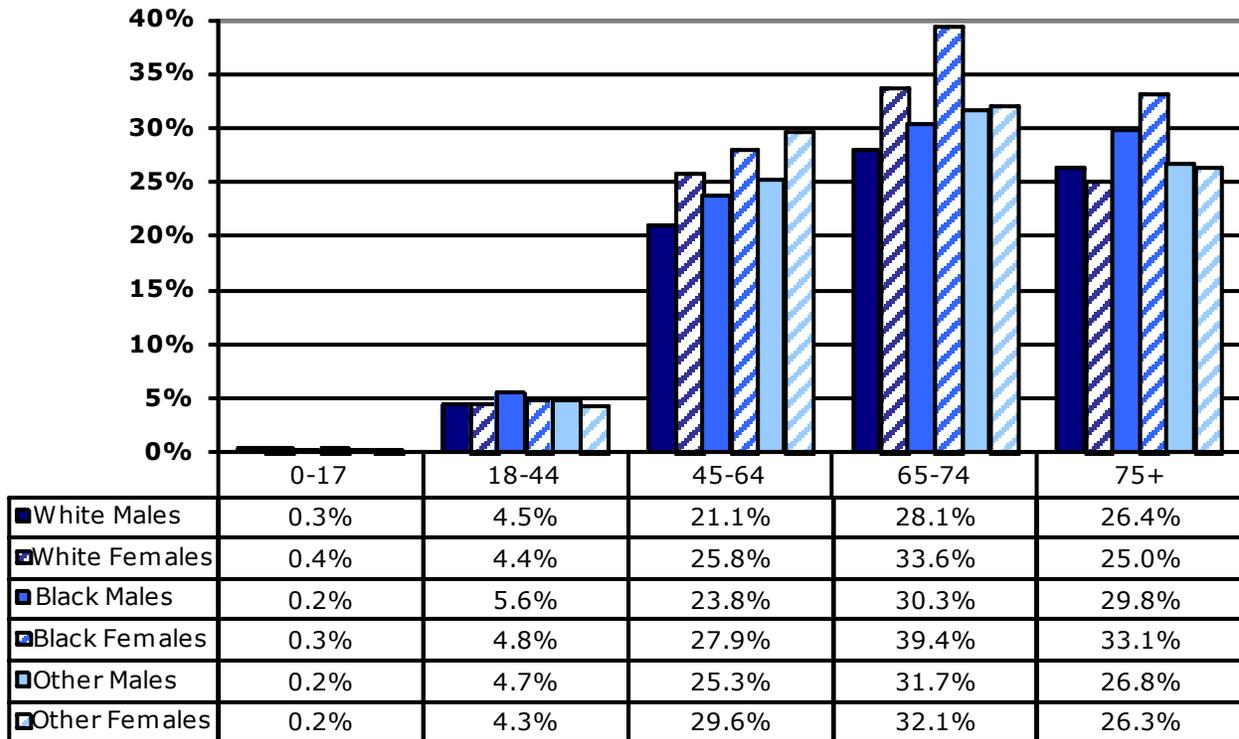
[5] Diabetes is defined by diagnosis and procedure code combinations in the National Committee for Quality Assurance Healthcare Effectiveness Data and Information Set measure.

[6] Fiscal Year 2004 (July 1, 2003 - June 30, 2004).

* Fee for service only.

Figure 3.02

Prevalence of Diabetes Among Medicaid Eligibles* by Race, Sex and Age Group, Ohio 2004. [1][2][3][4][5][6]



Source: Ohio Medicaid Program, analysis completed by Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] Other includes: Asian, Hispanic, Native American and other races.

[2] Medicaid eligibles that had coverage for any part of the year (one month or more). Also called Medicaid any-month eligibles.

[3] Unknown date of birth not included.

[4] Age is calculated as of June, 2004.

[5] Diabetes is defined according to diagnosis and procedure code combinations in the National Committee for Quality Assurance Healthcare Effectiveness Data and Information Set measure.

[6] Fiscal Year 2004 (July 1, 2003 - June 30, 2004).

* Fee for service only.

Expenditures

In FY 2004, Ohio's Medicaid Program expenditures were \$10.3 billion. More than 23 percent (\$2.4 billion) was spent on health care for eligibles diagnosed with diabetes who represent less than 7 percent of the total Medicaid population (*Tables 3.1, C.2*).

Of the more than \$2.4 billion spent on fee-for-service Medicaid eligibles with a diagnosis of diabetes, about 89 percent (\$2.1 billion) was spent on 10 health service categories. (Table 3.2). About thirty-three percent (\$807 million) (*Figure 3.03, Table 3.2*) was expended to skilled nursing facilities. Prescription drugs (diabetes-related and other medications) were the second-most expensive category and one of the most widely used benefits with 21.6 percent (\$527 million) (*Figure 3.03, Table 3.2*). Inpatient care cost 13.2 percent (\$322 million). (*Figure 3.03, Table 3.2*).

Table 3.2

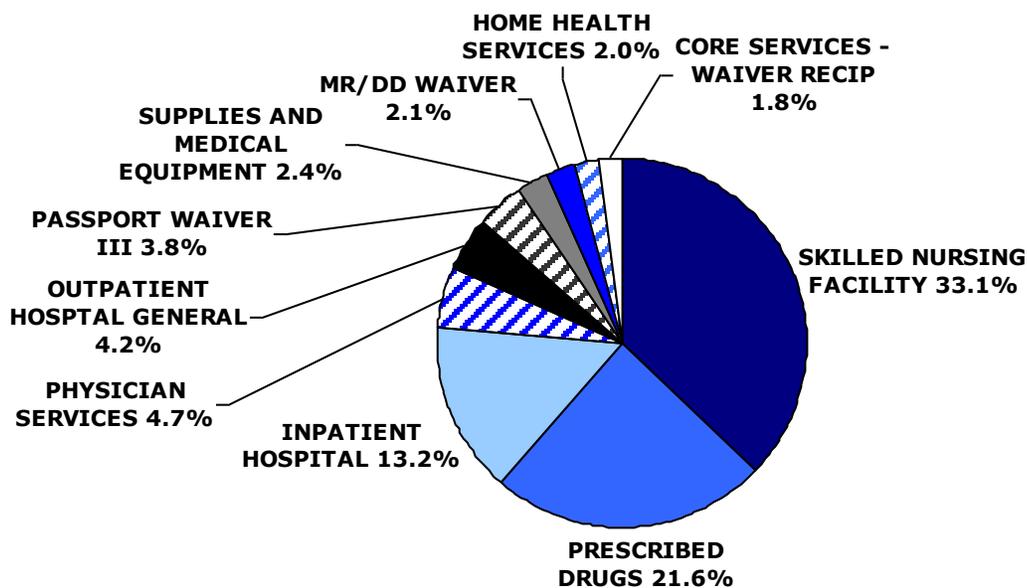
Top Ten Health Service Category Total Expenditures and Percentages for Medicaid Eligibles* with Diabetes, Ohio 2004 ^{[1][2][3]}

Service Category	Expenditures for Diabetes Eligibles	Percent of Total Expenditures
SKILLED NURSING FACILITY	\$807,156,422	33.1%
PRESCRIBED DRUGS	\$527,023,840	21.6%
INPATIENT HOSPITAL	\$322,195,083	13.2%
PHYSICIAN SERVICES	\$114,502,663	4.7%
OUTPATIENT HOSPITAL GENERAL	\$103,144,333	4.2%
PASSPORT WAIVER III	\$92,624,952	3.8%
SUPPLIES AND MEDICAL EQUIPMENT	\$59,456,103	2.4%
MR/DD WAIVER	\$50,895,248	2.1%
HOME HEALTH SERVICES	\$49,324,167	2.0%
CORE SERVICES - WAIVER RECIPIENT	\$43,021,188	1.8%
TOTAL	\$2,169,343,999	88.9%

Source: Ohio Medicaid Program, analysis completed by Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.
 [1] Medicaid eligibles that had coverage for any part of the year (one month or more). Also called Medicaid any-month eligibles.
 [2] Expenditures in dollars.
 [3] Fiscal Year 2004 (July 1, 2003 - June 30, 2004).
 * Fee for service only.

Figure 3.03

Top Ten Health Service Category Percentages for Total Expenditures for Medicaid Eligibles* with Diabetes, Ohio 2004 ^{[1][2][3]}



Source: Ohio Medicaid Program, analysis completed by Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.
 [1] Medicaid eligibles that had coverage for any part of the year (one month or more). Also called Medicaid any-month eligibles.
 [2] Expenditures in dollars.
 [3] Fiscal Year 2004 (July 1, 2003 - June 30, 2004).
 *Fee for service only.

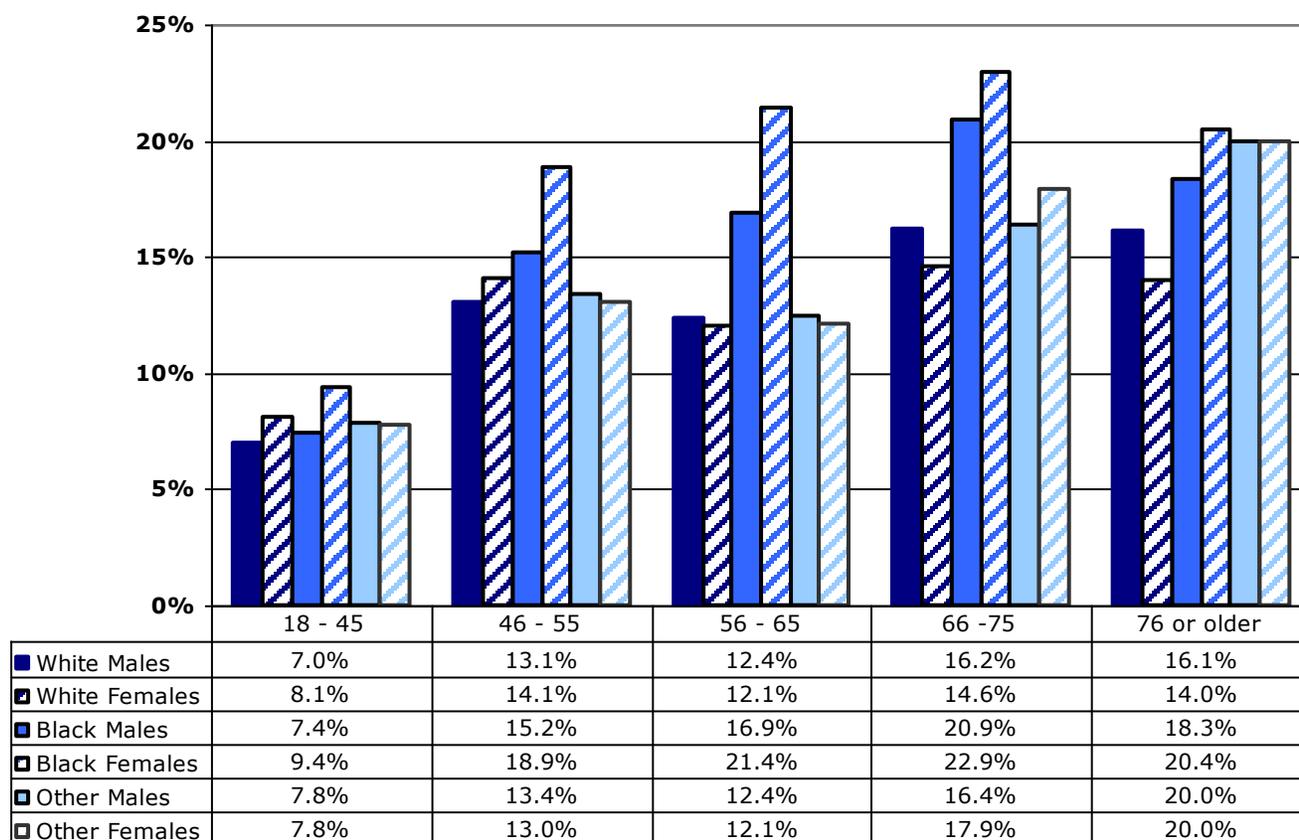
Ohio Medicare Program

Prevalence (Sex, Race and Age Group)

In FY 2005, Medicare covered more than 1.8 million Ohioans ages 18 and older. Of these, 14.9 percent (273,394) were persons diagnosed with diabetes (*Table 4.1*). Among Medicare beneficiaries, the prevalence of diabetes increased with age through the age group of 46 – 55 age group with the exception of black males and females who increased through the 66–75 age group (*Figure 4.01, Table 4.1*). Black women and men age 66–75 years old had the highest prevalence of all the racial sex-age groups. (*Figure 4.01, Table 4.1*).

Figure 4.01

Prevalence of Diabetes Among Medicare Beneficiaries by Sex, Race, and Age Group, Ohio 2005.^{[1][2][3]}



Source: Ohio KePRO, analysis completed by Chronic Disease and Behavioral Epidemiology Section, BHSIOS, Ohio Department of Health.

[1] Other includes: Asian, Hispanic, Native American and other.

[2] For adults ages 18 years and older.

[3] Fiscal Year 2005 (July 1, 2004 - June 30, 2005).

[4] Medicare beneficiaries with unknown age, gender, race were excluded from analysis.

Table 4.1**Prevalence of Diabetes among Medicare Beneficiaries by Race, Sex and Age Group, Ohio 2005.** ^{[1][2][3]}**White**

Age Group	Males			Females			Total		
	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes
18 - 45	2,477	35,450	7.0%	2,305	28,467	8.1%	4,782	63,917	7.5%
46 - 55	4,908	37,577	13.1%	4,297	30,521	14.1%	9,205	68,098	13.5%
56 - 65	10,033	81,096	12.4%	9,459	78,421	12.1%	19,492	159,517	12.2%
66 - 75	49,678	306,236	16.2%	53,291	365,640	14.6%	102,969	671,876	15.3%
76+	40,325	250,357	16.1%	59,454	425,282	14.0%	99,779	675,639	14.8%
Total	107,421	710,716	15.1%	128,806	928,331	13.9%	236,227	1,639,047	14.4%

Black

Age Group	Males			Females			Total		
	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes
18 - 45	681	9,213	7.4%	715	7,615	9.4%	1,396	16,828	8.3%
46 - 55	1,312	8,654	15.2%	1,476	7,810	18.9%	2,788	16,464	16.9%
56 - 65	1,819	10,757	16.9%	2,642	12,328	21.4%	4,461	23,085	19.3%
66 - 75	5,839	27,918	20.9%	8,631	37,666	22.9%	14,470	65,584	22.1%
76+	3,451	18,832	18.3%	7,251	35,481	20.4%	10,702	54,313	19.7%
Total	13,102	75,374	17.4%	20,715	100,900	20.5%	33,817	176,274	19.2%

Other*

Age Group	Males			Females			Total		
	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes
18 - 45	92	1,173	7.8%	63	812	7.8%	155	1,985	7.8%
46 - 55	162	1,212	13.4%	109	836	13.0%	271	2,048	13.2%
56 - 65	256	2,060	12.4%	201	1,660	12.1%	457	3,720	12.3%
66 - 75	733	4,474	16.4%	711	3,976	17.9%	1,444	8,450	17.1%
76+	416	2,085	20.0%	607	3,037	20.0%	1,023	5,122	20.0%
Total	1,659	11,004	15.1%	1,691	10,321	16.4%	3,350	21,325	15.7%

Total

Age Group	Males			Females			Total		
	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes
18 - 45	3,250	45,836	7.1%	3,083	36,894	8.4%	6,333	82,730	7.7%
46 - 55	6,382	47,443	13.5%	5,882	39,167	15.0%	12,264	86,610	14.2%
56 - 65	12,108	93,913	12.9%	12,302	92,409	13.3%	24,410	186,322	13.1%
66 - 75	56,250	338,628	16.6%	62,633	407,282	15.4%	118,883	745,910	15.9%
76+	44,192	271,274	16.3%	67,312	463,800	14.5%	111,504	735,074	15.2%
Total	122,182	797,094	15.3%	151,212	1,039,552	14.5%	273,394	1,836,646	14.9%

Source: Ohio KePRO, analysis completed by Chronic Disease and Behavioral Epidemiology Section, BHSIOS, Ohio Department of Health.

[1] For adults ages 18 years and older.

[2] Fiscal Year 2005 (July 1, 2004 - June 30, 2005)

[3] Medicare beneficiaries with unknown age, gender, race were excluded from analysis.

* Other includes: Asian, Hispanic, Native American and other.

Mortality

In 2005, diabetes was the sixth-leading cause of death for Ohioans (*Table 5.1*). Between 1995 - 2005, the overall diabetes mortality rate remained fairly constant (*Table 5.2, Figure 5.01*). The mortality rate for black males had the largest increase (12 percent) and black females had the largest decrease (21 percent) (*Table 5.2, Figure 5.01*). Disparities from diabetes were evident in the mortality rates in which blacks continued to die more often than whites (*Table 5.2, Figure 5.01*). In 2005, the mortality rate for black males (63.1) was nearly double that of the white males (32.7). The mortality rates for black females (41.6) was 68 percent higher, compared to white females (24.7).

Table 5.1

The 10 Leading Causes of Death - Number of Deaths, Percent of all Deaths, and Age-Adjusted Mortality Rates, per 100,000 Persons, Ohio 2005. ^{[1][2]}

RANKING	CAUSE OF DEATH	NUMBER OF DEATHS	PERCENT OF ALL DEATHS	RATE (PER 100,000 PERSONS)
1	Diseases of Heart	28,995	26.6%	224
2	Cancer	24,695	22.7%	197
3	Chronic Lower Respiratory Disease	6,578	6.0%	52
4	Cerebrovascular Disease	6,280	5.8%	48
5	Unintentional Injuries	4,447	4.1%	37
6	Diabetes	3,792	3.5%	30
7	Alzheimer's Disease	3,478	3.2%	26
8	Influenza and Pneumonia	2,415	2.2%	19
9	Nephritis, Nephrotic Syndrome, Nephrosis	1,885	1.7%	15
10	Septicemia	1,447	1.3%	11
	Others	24,996	22.9%	-
	All Causes	109,008	100.0%	857

Source: Chronic Disease and Behavioral Epidemiology Section BHSIOS- Prevention, Ohio Department of Health.
 [1]The direct age-adjusted rate was calculated using bridged race post-censal estimates for 2005 (July 1) as a denominator and the U.S. 2000 standard population for age-adjustment.
 [2] Ohio residents where the underlying cause of death was determined to be Diabetes Mellitus; International Classification of Diseases, Injuries, and Causes of Death, ICD-10 codes E10-E14 for 2005 deaths (World Health Organization Geneva, Switzerland, 1992, Volume 10).

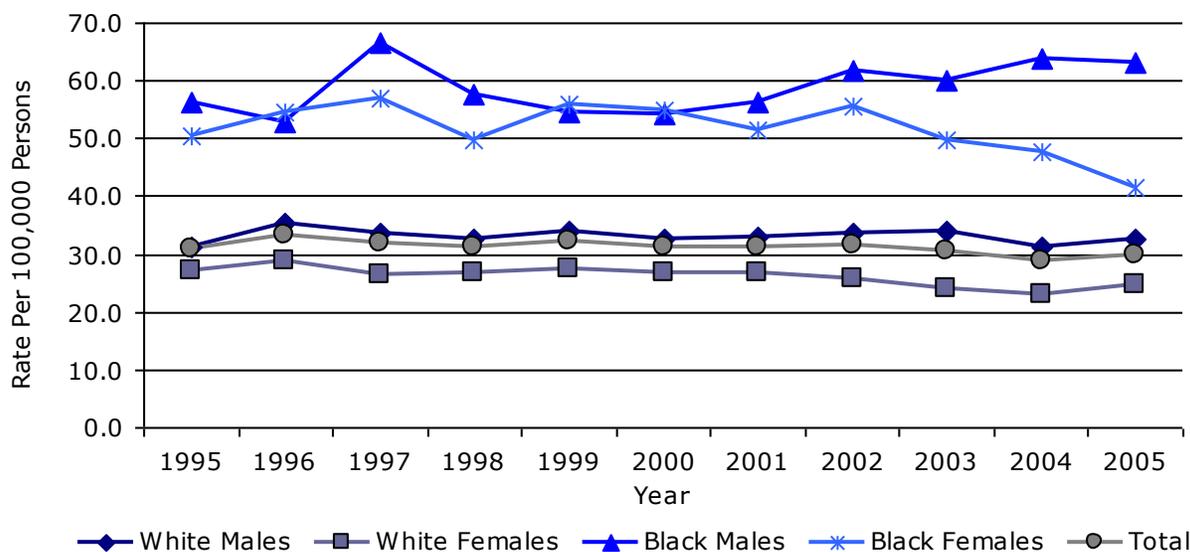
Table 5.2

The Number of Deaths and Age-Adjusted Mortality Rates of Diabetes per 100,000 Persons, by Race and Sex, Ohio 1995-2005 ^{[1][2][3]}

Year	White				Black				Total	
	Males		Females		Males		Females		Number of Deaths	Rate
	Number of Deaths	Rate								
1995	1,258	31.3	1,703	27.2	212	56.4	279	50.4	3,457	30.9
1996	1,445	35.3	1,797	28.7	210	52.8	308	54.5	3,766	33.2
1997	1,387	33.6	1,673	26.4	244	66.7	326	57.0	3,639	31.8
1998	1,356	32.6	1,716	26.8	232	57.5	289	49.7	3,600	31.1
1999	1,444	34.1	1,784	27.6	212	54.6	331	56.1	3,783	32.3
2000	1,397	32.5	1,736	26.7	218	54.1	328	54.9	3,694	31.2
2001	1,423	32.8	1,752	26.7	242	56.3	312	51.5	3,746	31.3
2002	1,487	33.6	1,711	25.8	252	61.8	342	55.5	3,806	31.4
2003	1,528	33.8	1,611	24.2	266	60.1	312	49.8	3,728	30.4
2004	1,455	31.2	1,559	23.0	277	63.8	309	47.8	3,612	28.9
2005	1,554	32.7	1,677	24.7	285	63.1	274	41.6	3,792	30.0

Figure 5.01

Trend in Age-adjusted Mortality Rates of Diabetes, per 100,000 Persons, by Race and Sex, Ohio 1995-2005. ^{[1][2][3]}



Source: Chronic Disease and Behavioral Epidemiology Section BHSIOS- Prevention, Ohio Department of Health.

[1]The direct age-adjusted rate was calculated using the inter-censal population estimates for 1995-1999 (July 1), bridged race census estimates for 2000 (April 1) and the bridged race post-censal estimates for 2001-2005 (July 1) as a denominator and the U.S. 2000 standard population for age-adjustment.

[2] Ohio residents where the underlying cause of death was determined to be Diabetes Mellitus; International Classification of Diseases, Injuries, and Causes of Death, ICD-9 code 250 for 1995-1998 deaths (World Health Organization, Geneva, Switzerland, 1979, Volume 9), and ICD-10 codes E10-E14 for 1999-2005 deaths (World Health Organization Geneva, Switzerland, 1992, Volume 10).

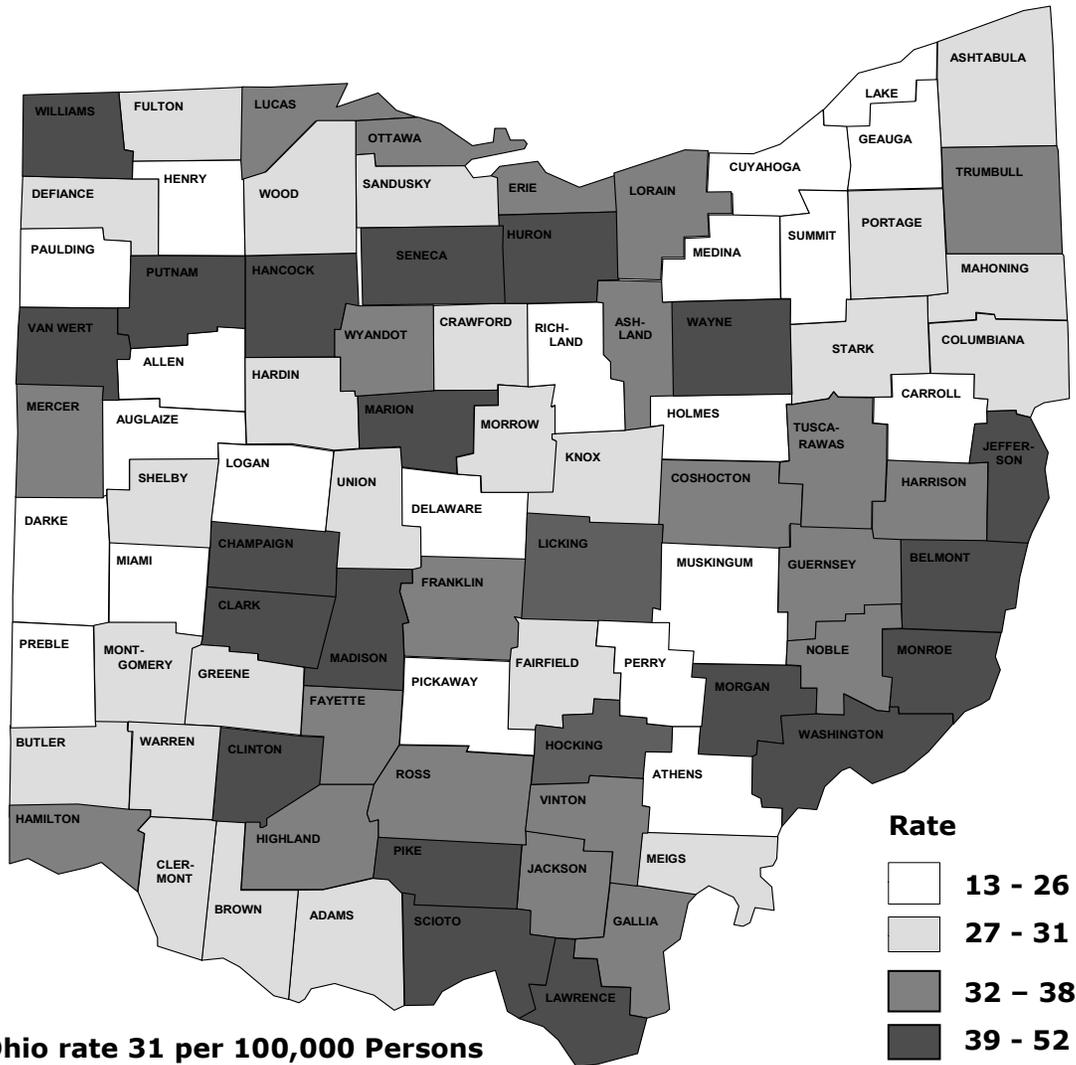
[3] "Total" category includes all races.

County Mortality (2001-2005)

The average annual age-adjusted mortality rate for Ohio was 31 per 100,000 persons for the five-year period of 2001 – 2005. The mortality rates among Ohio’s 88 counties ranged from a high of 52 per 100,000 persons for Van Wert County to a low of 13 per 100,000 persons for Carroll and Paulding counties (Appendix F). The rates for diabetes mortality did not follow a set geographical pattern. Ohioans died from diabetes regardless of whether they resided in urban, rural or suburban counties. (Figure 5.02).

Figure 5.02

Annual Age-adjusted Mortality Rate of Diabetes, per 100,000 Persons, by County, Ohio 2001-2005. [1][2][3][4][5]



Source: Chronic Disease and Behavioral Epidemiology Section BHSIOS- Prevention, Ohio Department of Health.

[1] The direct age-adjusted rate was calculated using bridged race census estimates for 2000 (April 1) and the bridged race post-censal estimates for 2001-2005 (July 1) as a denominator and the U.S. 2000 standard population for age-adjustment.

[2] Ohio residents where the underlying cause of death was determined to be Diabetes Mellitus; International Classification of Diseases, Injuries, and Causes of Death, ICD-10 codes E10-E14 for 2000-2005 deaths (World Health Organization Geneva, Switzerland, 1992, Volume 10).

[3] "Total" category includes all races.

[4] Annual rate is average rate from five years of data, 2001-2005.

[5] Ranges were determined by quartiles.

Appendix A

Description of Databases

The four databases were analyzed by the Chronic Disease and Behavioral Epidemiology Section, Division of Prevention, Bureau of Health Surveillance, Information and Operational Support, Ohio Department of Health.

BRFSS

The Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing, state-based, random-digit-dialed telephone survey for adults 18 years of age and older for the U.S. non-institutionalized civilian population (6). The survey is coordinated by the Centers for Disease Control and Prevention (CDC) and is conducted annually by all states. Ohio BRFSS data collected between 1995–2007 were analyzed for this report unless otherwise noted. A person was considered to have diabetes if they answered yes to the question, “Have you ever been told by a doctor that you have diabetes?” Female respondents who answered yes to the question, “Was this only when you were pregnant?” were excluded from analysis.

The following variables were analyzed in the BRFSS: age; gender; race; county of residence; income; education; weight; physical activity; cigarette smoking; physician visit; eye and foot exams; pneumonia and influenza vaccination; HbA1c testing; diabetes self-management education; blood glucose and foot self-monitoring; blood pressure; cholesterol; coronary heart disease; myocardial infarction; and stroke. The national medians in the trend tables and figures were obtained from CDC, BRFSS Atlanta.

The BRFSS provides a comprehensive description of Ohioans. The only criteria to be included in the BRFSS is to be ≥ 18 years of age. Adults who are Medicaid and Medicare eligibles or have other insurance and no insurance would be included in the BRFSS database. For statistical purposes, they were not removed from analysis even though they were described elsewhere in the report.

The BRFSS prevalence of diabetes for each county was determined by combining three years of data and grouping together certain counties to obtain a sufficiently large sample for analysis. Combining more than one year of data and combining certain counties is necessary because some Ohio counties have a relatively small number of residents, and thus a small number of persons diagnosed with diabetes—too small to estimate a prevalence rate. The estimated prevalence was then applied to Ohio’s 2006 census population estimates for each county, obtained from the U.S. Census Bureau (12) to get a count of the number of persons with diabetes in that county. All analysis was completed using SAS version 9.1 (SAS Institute, Cary, NC) and SUDAAN (13).

Ohio Medicaid Program

The diabetes Medicaid data were obtained from the Ohio Department of Job and Family Services, Office of Ohio Health Plans' Bureau of Health Plan Policy. Diabetes was defined according to diagnosis and procedure code combinations in the National Committee for Quality Assurance (NCQA) Healthcare Effectiveness Data and Information Set (HEDIS) measure for the year 2004. Note the HEDIS approach differs from Medstat and some classifications that rely solely on diagnosis. All Medicaid figures and tables except table C.1 in the appendix were considered Medicaid eligibles also know as "Medicaid any-month eligibles." Missing county data were included in the missing category in the table. Table C.1 included long-term Medicaid eligibles who were covered for at least 11 of 12 months during the year, and were covered in June 2004. County Medicaid any-month eligibles data were not available at the time of analysis. The variables analyzed included age, gender, race, county of residence and expenditures related to alcohol and drug services; mental health; chiropractor or podiatry; prescriptions, supplies and medical equipment; federally qualified health centers; home health care; inpatient care; intermediate care facilities for the mentally retarded; skilled nursing facilities; outpatient care; physicians; clinic; and others (vision, home health, independent labs and transportation). All analysis was completed using SAS version 9.1 (SAS Institute, Cary, NC).

Ohio Medicare Program

The Medicare data were obtained from Ohio KePRO, the Medicare Quality Improvement Organization for Ohio. Diabetes was defined by the following range of ICD-9-CM Codes: Diabetes (250.0–250.9). The variables analyzed included beneficiaries age, gender, race and county of residence. Medicare beneficiaries with unknown age, gender, race and county were excluded from analysis. All analysis was completed using SAS 9.1 (SAS Institute, Cary, NC).

Mortality

All diabetes deaths between 1995 through 2005 (numerator) were identified through the population-based, computerized database maintained by the Office of Vital Statistics, Ohio Department of Health. Any person who had diabetes listed on their death certificate as an underlying cause of death was included in the analysis. Diabetes deaths could be two to three times larger because only underlying cause was included. Ohio residents where the underlying cause of death was determined to be Diabetes Mellitus; International Classification of Diseases, Injuries, and Causes of Death, ICD-9 code 250 for 1995–1998 deaths (World Health Organization, Geneva, Switzerland, 1979, Volume 9), and ICD-10 codes E10-E14 for 1999–2005 deaths (World Health Organization Geneva, Switzerland, 1992, Volume 10). The Ohio inter-censal population estimate from the U.S. Bureau of Census was used as the denominator. The Ohio inter-censal population estimates for 1995–1999 (July 1), bridged race census estimates for 2000 (April 1) and the bridged race post-censal estimates for 2001–2005 (July 1) were used as a denominator. The rates were age-adjusted using the U.S. 2000 standard population (3).

Two methods of calculating mortality rates were used, direct age-adjusted mortality rates were calculated for different race and gender groups (white male, black male, white female, black female and total) for all 11 years between 1995–2005. Average annual direct age-adjusted rates were calculated for Ohio's 88 counties for the five-year period, 2001–2005. Because some Ohio counties have a relatively small number of residents, and thus a small number of diabetes deaths, five years of data were combined to obtain a sufficiently large sample for analysis. All analysis was completed using SAS 9.1 (SAS Institute, Cary, NC).

Appendix B

County and State Tables

Table B.1**Estimated Prevalence of Diabetes and Number of Persons Diagnosed with Diabetes, by County and Sex, Ohio 2005-2007^{[1][2][3][4][5][6]}**

	Males		Females		All	
	Prevalence (%)	Estimated number of persons	Prevalence (%)	Estimated number of persons	Prevalence (%)	Estimated number of persons
Ohio	8.3	345,939	7.7	348,096	8.0	695,093
County						
Adams	7.5	775	7.2	786	7.3	1,551
Allen	8.0	3,097	8.6	3,472	8.3	6,564
Ashland	7.4	1,479	7.5	1,614	7.4	3,072
Ashtabula	7.4	2,760	7.5	2,979	7.4	5,700
Athens	8.8	2,246	9.2	2,495	9.0	4,737
Auglaize	8.0	1,347	8.6	1,550	8.3	2,894
Belmont	8.8	2,350	9.2	2,564	9.0	4,912
Brown	7.5	1,196	7.2	1,201	7.3	2,382
Butler	7.5	9,572	7.2	9,870	7.3	19,325
Carroll	8.8	961	9.2	1,045	9.0	2,005
Champaign	7.5	1,086	7.2	1,107	7.3	2,179
Clark	7.5	3,822	7.2	4,094	7.3	7,871
Clermont	7.5	5,110	7.2	5,231	7.3	10,278
Clinton	7.5	1,166	7.2	1,192	7.3	2,344
Columbiana	7.4	3,118	7.5	3,218	7.4	6,293
Coshocton	8.8	1,181	9.2	1,315	9.0	2,495
Crawford	8.0	1,308	8.6	1,532	8.3	2,836
Cuyahoga	8.2	37,788	7.5	40,077	7.8	77,624
Darke	7.5	1,445	7.2	1,467	7.3	2,894
Defiance	8.0	1,146	8.6	1,292	8.3	2,436
Delaware	5.3	2,907	7.5	4,319	6.5	7,308
Erie	8.0	2,312	8.6	2,678	8.3	4,983
Fairfield	5.3	2,717	7.5	3,982	6.5	6,783
Fayette	7.5	773	7.2	795	7.3	1,559
Franklin	8.6	34,335	6.0	25,638	7.2	59,510
Fulton	8.0	1,231	8.6	1,405	8.3	2,634
Gallia	8.8	1,004	9.2	1,130	9.0	2,132
Geauga	7.4	2,559	7.5	2,731	7.4	5,253
Greene	7.5	4,314	7.2	4,499	7.3	8,761
Guernsey	8.8	1,295	9.2	1,471	9.0	2,764
Hamilton	7.7	23,086	6.7	22,704	7.2	45,985
Hancock	8.0	2,146	8.6	2,503	8.3	4,643
Hardin	8.0	953	8.6	1,087	8.3	2,038
Harrison	8.8	509	9.2	586	9.0	1,094
Henry	8.0	852	8.6	967	8.3	1,817
Highland	7.5	1,142	7.2	1,177	7.3	2,304
Hocking	8.8	958	9.2	1,016	9.0	1,974
Holmes	7.4	996	7.5	1,046	7.4	2,028
Huron	8.0	1,704	8.6	1,950	8.3	3,650
Jackson	8.8	1,052	9.2	1,217	9.0	2,267
Jefferson	8.8	2,285	9.2	2,714	9.0	4,992
Knox	5.3	1,137	7.5	1,747	6.5	2,909
Lake	7.4	6,425	7.5	6,984	7.4	13,316
Lawrence	8.8	1,990	9.2	2,343	9.0	4,327

Table B.1, Continued

County	Males		Females		All	
	Prevalence (%)	Estimated number of persons	Prevalence (%)	Estimated number of persons	Prevalence (%)	Estimated number of persons
Licking	5.3	2,982	7.5	4,558	6.5	7,608
Logan	7.5	1,252	7.2	1,283	7.3	2,520
Lorain	7.4	8,146	7.5	8,750	7.4	16,780
Lucas	13.4	21,104	8.9	15,521	11.0	36,508
Madison	5.3	920	7.5	1,068	6.5	2,055
Mahoning	10.5	9,369	11.7	11,726	11.1	21,029
Marion	5.3	1,394	7.5	1,815	6.5	3,283
Medina	7.4	4,548	7.5	4,811	7.4	9,295
Meigs	8.8	758	9.2	844	9.0	1,601
Mercer	8.0	1,185	8.6	1,298	8.3	2,482
Miami	7.5	2,782	7.2	2,859	7.3	5,607
Monroe	8.8	490	9.2	531	9.0	1,021
Montgomery	8.0	15,579	8.1	17,620	8.1	33,394
Morgan	8.8	482	9.2	536	9.0	1,017
Morrow	5.3	678	7.5	971	6.5	1,673
Muskingum	8.8	2,681	9.2	3,169	9.0	5,841
Noble	8.8	588	9.2	434	9.0	1,026
Ottawa	8.0	1,276	8.6	1,431	8.3	2,705
Paulding	8.0	575	8.6	643	8.3	1,216
Perry	8.8	1,110	9.2	1,212	9.0	2,321
Pickaway	5.3	1,154	7.5	1,428	6.5	2,653
Pike	7.5	749	7.2	790	7.3	1,531
Portage	7.4	4,332	7.5	4,733	7.4	9,002
Preble	7.5	1,182	7.2	1,175	7.3	2,342
Putnam	8.0	1,009	8.6	1,099	8.3	2,107
Richland	8.0	3,882	8.6	4,171	8.3	8,053
Ross	7.5	2,296	7.2	1,999	7.3	4,262
Sandusky	8.0	1,785	8.6	2,056	8.3	3,836
Scioto	7.5	2,089	7.2	2,206	7.3	4,270
Seneca	8.0	1,706	8.6	1,896	8.3	3,600
Shelby	7.5	1,304	7.2	1,290	7.3	2,578
Stark	7.4	10,137	7.5	11,503	7.4	21,487
Summit	11.3	22,252	7.4	16,101	9.3	38,548
Trumbull	7.4	5,890	7.5	6,565	7.4	12,368
Tuscarawas	8.8	2,936	9.2	3,340	9.0	6,270
Union	5.3	841	7.5	1,361	6.5	2,211
Van Wert	8.0	846	8.6	983	8.3	1,826
Vinton	8.8	435	9.2	470	9.0	905
Warren	7.5	5,513	7.2	5,228	7.3	10,667
Washington	8.8	2,035	9.2	2,320	9.0	4,352
Wayne	7.4	3,065	7.5	3,246	7.4	6,267
Williams	8.0	1,158	8.6	1,278	8.3	2,436
Wood	8.0	3,761	8.6	4,388	8.3	8,136
Wyandot	8.0	668	8.6	761	8.3	1,428

Source: Ohio Behavioral Risk Factors Surveillance System, Chronic Disease and Epidemiology Section, BHSIOS- Prevention, Ohio Department of Health.

[1]The weighted percentage was adjusted to: 1) Probability of selection, i.e. the number of different phone numbers that reached the household, the number of adults in each household and the number of completed interviews in each cluster; 2) demographic distribution, i.e. age, sex and race.

[2] "Don't know/Not sure" and "Refused" were excluded from the denominator.

[3] For adults (18 years and older).

[4] Three years of data 2005-2007, were used to calculate the prevalence.

[5] Number of persons with diabetes were estimated based on the U.S. 2006 annual census population estimates (U.S. Census Bureau; U.S. Dept. of Commerce).

[6] The following counties were grouped together to create a sample size large enough for analysis. The groups were dependent on geographic locations. Northeast Counties: Ashland, Ashtabula, Columbiana, Geauga, Holmes, Lake, Lorain, Medina, Portage, Stark, Trumbull and Wayne counties. Northwest: Allen, Auglaize, Crawford, Defiance, Erie, Fulton, Hancock, Hardin, Henry, Huron, Mercer, Ottawa, Paulding, Richland, Seneca, Sandusky, Van Wert, Williams, Wood and Wyandot. Central Counties: Delaware, Fairfield, Knox, Licking, Madison, Morrow, Pickaway and Union. Southwest Counties: Adams, Brown, Butler, Champaign, Clark, Clermont, Clinton, Darke, Fayette, Greene, Highland, Miami, Pike, Preble, Ross, Scioto, Shelby, and Warren. Southeast Counties: Athens, Belmont, Carroll, Coshocton, Gallia, Guernsey, Harrison, Hocking, Jackson, Lawrence, Meigs, Monroe, Morgan, Muskingum, Noble, Perry, Tuscarawas, Vinton and Washington.

Table B.2**Prevalence of Diabetes among Long-term Medicaid Eligibles by County, Ohio 2004.** ^{[1][2][3][4]}

County	Long-term Medicaid Eligibles	Long-term Eligibles with Diabetes	Diabetes Prevalence for Long-term Eligibles
Adams	6,283	607	9.7%
Allen	11,326	904	8.0%
Ashland	4,448	293	6.6%
Ashtabula	14,539	1,087	7.5%
Athens	8,924	705	7.9%
Auglaize	2,662	207	7.8%
Belmont	10,069	829	8.2%
Brown	5,325	462	8.7%
Butler	28,312	2,237	7.9%
Carroll	3,401	222	6.5%
Champaign	3,446	288	8.4%
Clark	18,984	1,476	7.8%
Clermont	15,023	1,088	7.2%
Clinton	4,361	384	8.8%
Columbiana	15,145	1,043	6.9%
Coshocton	4,687	375	8.0%
Crawford	5,675	467	8.2%
Cuyahoga	206,219	14,343	7.0%
Darke	3,642	273	7.5%
Defiance	3,386	214	6.3%
Delaware	5,820	428	7.4%
Erie	7,039	575	8.2%
Fairfield	11,893	808	6.8%
Fayette	3,776	393	10.4%
Franklin	129,617	8,481	6.5%
Fulton	2,932	198	6.8%
Gallia	6,500	568	8.7%
Geauga	3,139	240	7.6%
Greene	11,159	822	7.4%
Guernsey	7,552	567	7.5%
Hamilton	87,060	6,538	7.5%
Hancock	4,681	368	7.9%
Hardin	2,946	284	9.6%
Harrison	2,398	201	8.4%
Henry	2,106	137	6.5%
Highland	6,072	497	8.2%
Hocking	4,400	318	7.2%
Holmes	2,443	222	9.1%
Huron	5,811	400	6.9%
Jackson	6,515	584	9.0%
Jefferson	10,523	944	9.0%
Knox	6,026	411	6.8%
Lake	13,974	844	6.0%
Lawrence	13,114	1,345	10.3%
Licking	14,651	1,049	7.2%

County	Long-term Medicaid Eligibles	Long-term Eligibles with Diabetes	Diabetes Prevalence for Long-term Eligibles
Logan	4,490	330	7.3%
Lorain	30,652	2,039	6.7%
Lucas	65,096	4,678	7.2%
Madison	3,127	266	8.5%
Mahoning	35,794	2,607	7.3%
Marion	7,866	586	7.4%
Medina	7,764	478	6.2%
Meigs	4,649	402	8.6%
Mercer	2,310	176	7.6%
Miami	7,141	614	8.6%
Monroe	2,338	187	8.0%
Montgomery	59,571	4,567	7.7%
Morgan	2,904	192	6.6%
Morrow	3,544	261	7.4%
Muskingum	14,070	1,034	7.3%
Noble	1,752	142	8.1%
Ottawa	3,022	207	6.8%
Paulding	1,607	131	8.2%
Perry	5,790	338	5.8%
Pickaway	5,579	487	8.7%
Pike	6,604	606	9.2%
Portage	10,868	731	6.7%
Preble	3,340	252	7.5%
Putnam	1,892	153	8.1%
Richland	14,470	1,095	7.6%
Ross	11,446	825	7.2%
Sandusky	5,151	459	8.9%
Scioto	16,569	1,805	10.9%
Seneca	5,489	403	7.3%
Shelby	3,637	242	6.7%
Stark	40,306	2,891	7.2%
Summit	59,659	4,154	7.0%
Trumbull	26,645	1,827	6.9%
Tuscarawas	9,566	765	8.0%
Union	2,906	215	7.4%
Van Wert	2,257	168	7.4%
Vinton	2,925	234	8.0%
Warren	7,650	683	8.9%
Washington	7,386	682	9.2%
Wayne	8,953	704	7.9%
Williams	3,159	228	7.2%
Wood	6,659	508	7.6%
Wyandot	1,469	159	10.8%
Missing	7,003	310	4.4%
TOTAL	1,283,079	94,547	7.4%

Source: Ohio Medicaid Program, analysis completed by Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] Long-term Medicaid eligibles only include all those eligibles covered for at least 11 of 12 months during the year, and were covered in June 2004.

[2] Diabetes is defined according by diagnosis and procedure code combinations in the National Committee for Quality Assurance Health-care Effectiveness Data and Information Set measure.

[3] Eligibles who moved during the year were counted in the county of their most recent month of eligibility.

[4] Fiscal Year 2004 (July 1, 2003 - June 30, 2004).

* Fee for service only.

Table B.3**Health Service Category Total Expenditures and Percentages for Medicaid Eligibles* with Diabetes, Ohio FY 2004** ^{[1][2][3][4]}

Health Service Category/Code	Total Expenditures for Diabetes Eligibles	Percent of Diabetes Eligibles Total Expenditures
11 SKILLED NURSING FACILITY	\$807,156,422.01	33.05%
30 PRESCRIBED DRUGS	\$527,023,839.69	21.58%
01 INPATIENT HOSPITAL	\$322,195,083.02	13.19%
43 PHYSICIAN SERVICES	\$114,502,662.71	4.69%
07 OUTPATIENT HOSPITAL GENERAL	\$103,144,333.32	4.22%
66 PASSPORT WAIVER III	\$92,624,952.01	3.79%
32 SUPPLIES AND MEDICAL EQUIPMENT	\$59,456,103.10	2.44%
67 MR/DD WAIVER	\$50,895,247.97	2.08%
20 HOME HEALTH SERVICES	\$49,324,167.49	2.02%
35 CORE SERVICES - WAIVER RECIPIENT	\$43,021,187.68	1.76%
41 MENTAL HEALTH SERVICES	\$40,354,476.62	1.65%
16 INTERMEDIATE CARE FACILITIES	\$34,698,157.05	1.42%
25 CLINIC	\$28,172,120.30	1.15%
42 MENTAL RETARDATION SERVICES	\$25,989,021.46	1.06%
18 ICFMR PRIVATE	\$25,611,858.11	1.05%
65 HOSPICE SERVICES	\$22,929,962.00	0.94%
38 AMBULETTE SERVICES	\$16,324,016.73	0.67%
13 ICFMR PUBLIC	\$13,987,957.74	0.57%
37 AMBULANCE SERVICES	\$13,445,644.85	0.55%
45 DENTAL SERVICES	\$10,385,135.35	0.43%
49 PRIVATE DUTY NURSING SERVICES	\$5,410,770.79	0.22%
46 WAIVERED SERVICES	\$4,501,592.50	0.18%
86 NURSING HOME THERAPIES	\$4,347,472.26	0.18%
23 INDEPENDENT LABORATORY	\$4,337,766.13	0.18%
55 PODIATRISTS THERAPY	\$3,754,788.21	0.15%
36 HOME CARE CASE MANAGEMENT	\$2,853,125.85	0.12%
84 OHIO DEPT ALC/DRUG ADDICT SVCS	\$2,533,626.07	0.10%
85 FEDERALLY QUALIFIED HEALTH CTR	\$2,415,529.06	0.10%
44 AMBULATORY SURGERY	\$1,916,907.62	0.08%
47 OPTOMETRIC SERVICES	\$1,725,628.51	0.07%
08 PACE	\$1,421,286.78	0.06%
50 CRNA SERVICES	\$1,097,065.25	0.05%
34 EYEGLASSES	\$886,122.04	0.04%
22 PHYSIOLOGICAL LABORATORY	\$845,727.72	0.04%
21 ADVANCED PRACTICE NURSE SVCS	\$843,372.68	0.04%
48 PSYCHOLOGY SERVICES	\$436,756.91	0.02%
57 CHIROPRACTER SERVICES	\$390,453.79	0.02%
51 PHYSICAL THERAPY SERVICES	\$321,236.63	0.01%
29 OUTPATIENT HEALTH SERVICES	\$220,702.74	0.01%
31 RURAL HEALTH SERVICES	\$219,191.11	0.01%
03 MENTAL INPATIENT HOSPITAL	\$195,943.36	0.01%
27 FAMILY PLANNING	\$44,934.01	> 0.01%
XX UNKNOWN	\$381.87	> 0.01%
53 SPEECH THERAPY	\$243.70	> 0.01%
60 MR SUPPORT SERVICES	\$46.96	> 0.01%
TOTAL	\$2,441,963,021.76	

Source: Ohio Medicaid Program, analysis completed by Chronic Disease and Behavioral Epidemiology Section; BHSIOS- Prevention, Ohio Department of Health.

[1] Other includes: Asian, Hispanic, Native American and other races.

[2] Medicaid eligibles that had coverage for any part of the year (one month or more). Also called Medicaid any-month eligibles.

[3] Diabetes is defined according by diagnosis and procedure code combinations in the National Committee for Quality Assurance Healthcare Effectiveness Data and Information Set measure.

[4] Fiscal Year 2004 (July 1, 2003 - June 30, 2004).

* Fee for service only.

Table B.4

Prevalence of Diabetes among Medicare Beneficiaries by County, Ohio 2005. [1][2][3]

County	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes (%)
Ohio	273,684	1,839,500	14.9
Adams	1,068	5,609	19.0
Allen	3,183	17,903	17.8
Ashland	1,413	8,543	16.5
Ashtabula	3,335	18,805	17.7
Athens	1,504	8,365	18.0
Auglaize	1,396	9,012	15.5
Belmont	1,692	14,501	11.7
Brown	1,109	6,721	16.5
Butler	7,332	47,474	15.4
Carroll	510	3,752	13.6
Champaign	1,052	6,016	17.5
Clark	4,305	26,082	16.5
Clermont	2,756	20,308	13.6
Clinton	1,217	6,941	17.5
Columbiana	3,679	21,199	17.4
Coshocton	1,247	6,446	19.3
Crawford	1,809	8,988	20.1
Cuyahoga	30,628	234,900	13.0
Darke	1,444	9,259	15.6
Defiance	1,199	6,710	17.9
Delaware	1,642	12,139	13.5
Erie	2,732	15,064	18.1
Fairfield	2,748	18,326	15.0
Fayette	780	4,752	16.4
Franklin	19,070	134,852	14.1
Fulton	1,223	7,158	17.1
Gallia	1,169	6,162	19.0
Geauga	1,565	12,002	13.0
Greene	2,597	17,203	15.1
Guernsey	1,598	7,948	20.1
Hamilton	16,956	136,839	12.4
Hancock	1,755	10,499	16.7
Hardin	975	5,077	19.2
Harrison	542	3,468	15.6
Henry	745	4,983	15.0
Highland	1,276	7,122	17.9
Hocking	907	4,599	19.7
Holmes	474	3,343	14.2
Huron	2,008	10,842	18.5
Jackson	1,146	5,855	19.6
Jefferson	2,523	16,646	15.2
Knox	1,464	9,701	15.1
Lake	5,596	39,881	14.0
Lawrence	2,422	12,597	19.2

County	Number of Beneficiaries with Diabetes	Total Number of Medicare Beneficiaries	Prevalence of Diabetes (%)
Licking	3,476	22,351	15.6
Logan	1,352	7,828	17.3
Lorain	7,364	45,106	16.3
Lucas	9,727	69,576	14.0
Madison	956	6,488	14.7
Mahoning	7,360	51,364	14.3
Marion	2,072	11,454	18.1
Medina	2,822	21,729	13.0
Meigs	782	4,155	18.8
Mercer	1,122	6,993	16.0
Miami	2,766	17,337	16.0
Monroe	465	3,004	15.5
Montgomery	14,363	100,425	14.3
Morgan	463	2,484	18.6
Morrow	721	4,056	17.8
Muskingum	3,044	16,333	18.6
Noble	337	1,841	18.3
Ottawa	1,405	8,594	16.3
Paulding	588	3,227	18.2
Perry	1,039	6,021	17.3
Pickaway	1,235	7,554	16.3
Pike	929	4,746	19.6
Portage	2,886	21,187	13.6
Preble	1,059	6,953	15.2
Putnam	891	5,607	15.9
Richland	4,412	23,543	18.7
Ross	2,190	12,521	17.5
Sandusky	1,674	9,396	17.8
Scioto	3,305	15,673	21.1
Seneca	2,252	11,433	19.7
Shelby	1,000	6,770	14.8
Stark	9,762	72,245	13.5
Summit	11,201	88,915	12.6
Trumbull	6,129	41,054	14.9
Tuscarawas	2,607	16,723	15.6
Union	753	4,496	16.7
Van Wert	772	4,674	16.5
Vinton	430	2,020	21.3
Warren	2,935	21,087	13.9
Washington	2,244	12,313	18.2
Wayne	2,815	18,230	15.4
Williams	1,043	6,734	15.5
Wood	2,387	16,480	14.5
Wyandot	758	4,188	18.1

Source: Ohio KePRO, analysis completed by Community Health Assessments Section, BHSIOS, Ohio Department of Health.

[1] For adults ages 18 years and older.

[2] Fiscal Year 2005 (July 1, 2004 - June 30, 2005).

[3] Medicare beneficiaries with unknown county were excluded from the analysis.

Table B.5**The Total Number of Deaths and Annual Age-adjusted Mortality Rates of Diabetes, per 100,000 Persons, by County, Ohio 2001–2005^{[1][2][3]}**

County	Total Number of Deaths	Annual Rate per 100,000 Persons	County	Total Number of Deaths	Annual Rate per 100,000 Persons
Ohio	18,586	31			
Adams	41	28	Licking	301	42
Allen	165	28	Logan	57	22
Ashland	107	35	Lorain	486	33
Ashtabula	194	33	Lucas	736	31
Athens	54	23	Madison	69	37
Auglaize	73	26	Mahoning	508	30
Belmont	223	46	Marion	163	46
Brown	62	31	Medina	160	23
Butler	465	31	Meigs	41	30
Carroll	30	18	Mercer	65	27
Champaign	94	44	Miami	128	24
Clark	354	43	Monroe	33	33
Clermont	239	32	Montgomery	909	30
Clinton	82	40	Morgan	39	43
Columbiana	189	29	Morrow	42	26
Coshocton	72	34	Muskingum	97	20
Crawford	78	28	Noble	20	28
Cuyahoga	2,021	24	Ottawa	91	34
Darke	89	27	Paulding	21	20
Defiance	62	30	Perry	44	26
Delaware	107	25	Pickaway	67	29
Erie	172	35	Pike	52	34
Fairfield	169	28	Portage	186	27
Fayette	51	32	Preble	59	26
Franklin	1,468	33	Putnam	84	44
Fulton	61	27	Richland	188	26
Gallia	60	36	Ross	150	41
Geauga	107	23	Sandusky	116	32
Greene	221	31	Scioto	172	38
Guernsey	78	33	Seneca	142	44
Hamilton	1,530	34	Shelby	63	26
Hancock	159	41	Stark	686	30
Hardin	39	24	Summit	781	26
Harrison	53	49	Trumbull	488	35
Henry	42	25	Tuscarawas	179	33
Highland	78	35	Union	57	34
Hocking	56	38	Van Wert	89	49
Holmes	30	18	Vinton	18	28
Huron	108	36	Warren	199	30
Jackson	51	29	Washington	169	45
Jefferson	204	40	Wayne	218	38
Knox	111	36	Williams	92	40
Lake	322	25	Wood	161	29
Lawrence	141	41	Wyandot	52	36

Source: Chronic Disease and Behavioral Epidemiology Section; BHSIOS-Prevention, Ohio Department of Health.

[1] The direct age-adjusted rate was calculated using bridged race census estimates for 2000 (April 1) and the bridged race post-censal estimates for 2001-2005 (July 1) as a denominator and the U.S. 2000 standard population for age-adjustment.

[2] Ohio residents where the underlying cause of death was determined to be Diabetes Mellitus; International Classification of Diseases, Injuries, and Causes of Death, ICD-10 codes E10-E14 for 2000-2005 deaths (World Health Organization Geneva, Switzerland, 1992, Volume 10).

[3] Annual Rate is the average of the five years of data.

Appendix C

Glossary of Terms^{7, 8, 14}

adult-onset diabetes: former term for type 2 diabetes.

age-adjusted rates: age-adjustment is a statistical process applied to rates of disease, death, injuries or other health outcomes that allows communities with different age structures to be compared.

ambulatory care sensitive conditions (ACS): certain diabetes diagnosis (i.e. diabetes with ketoacidosis, diabetes with hyperosmolarity and diabetes with other coma) that with timely and effective ambulatory care, a hospital admission may have been prevented.

any mention of diabetes: referred to a diagnosis of diabetes being present in one of the available diagnosis fields in a hospital record.

atherosclerosis: clogging, narrowing and hardening of the body's large arteries and medium-sized blood vessels. Atherosclerosis can lead to stroke, heart attack, eye problems and kidney problems.

arteriosclerosis: hardening of the arteries.

Behavioral Risk Factor Surveillance System (BRFSS): an ongoing, state-based, random-digit-dialed telephone survey for adults 18 years and older for the U.S. non-institutionalized civilian population. The survey is coordinated by the Centers for Disease Control and Prevention and is conducted annually by all states. The BRFSS is the primary source of information on health-related behaviors of Americans.

blood glucose: The main sugar the body makes from the three elements of food - proteins, fats and carbohydrates - but mostly from carbohydrates. Glucose is the major source of energy for living cells and is carried to each cell through the bloodstream. However, the cells cannot use glucose without the help of insulin.

body mass index (BMI): a measure used to evaluate body weight relative to a person's height. BMI is used to find out if a person is underweight, normal weight, overweight or obese.

cholesterol: a type of fat produced by the liver and found in the blood; it is also found in some foods. Cholesterol is used by the body to make hormones and build cell walls.

complications: harmful effects of diabetes such as damage to the eyes, heart, blood vessels, nervous system, teeth and gums, feet and skin or kidneys.

congestive heart failure: loss of the heart's pumping power, which causes fluids to collect in the body, especially in the feet and lungs.

confidence interval (C.I.): a range of numbers in which the true values of the estimate would be found (95 percent of the time). Confidence interval ranges are related to sample size; the larger the sample size, the more reliable will be the estimate, and the confidence interval will be smaller.

coronary heart disease: heart disease caused by narrowing of the arteries that supply blood to the heart. If the blood supply is cut off, the result is a heart attack.

crude rates: are the actual rate for the disease incidence and mortality unadjusted for other factors. They should be used for planning purposes.

diabetes-related hospital discharges: hospital discharges of Ohio residents with diabetes as a primary or secondary diagnosis.

diabetes mellitus: a condition characterized by hyperglycemia resulting from the body's inability to use blood glucose for energy. In type 1 diabetes, the pancreas no longer makes insulin and therefore blood glucose cannot enter the cells to be used for energy. In type 2 diabetes, either the pancreas does not make enough insulin or the body is unable to use insulin correctly.

diabetic ketoacidosis (DKA): an emergency condition in which extremely high blood glucose levels, along with a severe lack of insulin, result in the breakdown of body fat for energy and an accumulation of ketones in the blood and urine. Signs of DKA are nausea and vomiting, stomach pain, fruity breath odor and rapid breathing. Untreated DKA can lead to coma and death.

diabetic retinopathy: diabetic eye disease; damage to the small blood vessels in the retina. Loss of vision may result.

dilated eye exam: a test done by an eye care specialist in which the pupil (the black center) of the eye is temporarily enlarged with eye drops to allow the specialist to see the inside of the eye more easily.

gestational diabetes mellitus (GDM): a type of diabetes mellitus that develops only during pregnancy and usually disappears upon delivery, but increases the risk that the mother will develop diabetes later. GDM is managed with meal planning, activity and, in some cases, insulin.

gangrene: the death of body tissue, most often caused by a lack of blood flow and infection. It can lead to amputation.

hospital discharge data: information collected on patients discharged from the hospital.

hypertension: a condition present when blood flows through the blood vessels with a force greater than normal. Also called high blood pressure. Hypertension can strain the heart, damage blood vessels and increase the risk of heart attack, stroke, kidney problems and death.

hypoglycemia: a condition that occurs when one's blood glucose is lower than normal, usually less than 70 mg/dL. Signs include hunger, nervousness, shakiness, perspiration, dizziness or light-headedness, sleepiness and confusion. If left untreated, hypoglycemia may lead to unconsciousness. Hypoglycemia is treated by consuming a carbohydrate-rich food such as a glucose tablet or juice. It may also be treated with an injection of glucagon if the person is unconscious or unable to swallow. Also called an insulin reaction.

impaired fasting glucose (IFG): a condition in which a blood glucose test, taken after an eight- to 12-hour fast, shows a level of glucose higher than normal but not high enough for a diagnosis of diabetes. IFG, also called pre-diabetes, is a level of 100 mg/dL to 125 mg/dL. Most people with pre-diabetes are at increased risk for developing *type 2 diabetes*.

impaired glucose tolerance (IGT): a condition in which blood glucose levels are higher than normal but are not high enough for a diagnosis of diabetes. IGT, also called pre-diabetes, is a level of 140 mg/dL to 199 mg/dL two hours after the start of an oral glucose tolerance test. Most people with pre-diabetes are at increased risk for developing type 2 diabetes. Other names for IGT that are no longer used are "borderline," "subclinical," "chemical" or "latent" diabetes.

insulin: a hormone that helps the body use glucose for energy. The beta cells of the pancreas make insulin. When the body cannot make enough insulin, insulin is taken by injection or through use of an insulin pump.

ICD-9: International Classification of Diseases, Ninth Revision; this is a system of classifying diseases using specific diagnoses code numbers to describe a patient's health care condition.

ischemic heart disease: a group of heart diseases related to circulatory disturbances caused by coronary atherosclerosis and inadequate oxygen supply to the myocardium.

juvenile diabetes: former term for insulin-dependent diabetes mellitus (IDDM), or type 1.

diabetes kidney failure: a chronic condition in which the body retains fluid and harmful wastes build up because the kidneys no longer work properly. A person with kidney failure needs dialysis or a kidney transplant. Also called end-stage renal disease or ESRD.

kidneys: the two bean-shaped organs that filter wastes from the blood and form urine. The kidneys are located near the middle of the back. They send urine to the bladder.

maturity-onset diabetes of the young: a kind of type 2 diabetes that accounts for 1 to 5 percent of people with diabetes. Of the six forms identified, each is caused by a defect in a single gene.

Medicaid: program provides medical assistance for certain individuals and families with low incomes and resources. Medicaid eligibility is limited to individuals who fall into specific categories. Although the federal government establishes general guidelines for the program, Medicaid program requirements are actually established by each state. Whether a person can be eligible for Medicaid will depend on the state where he or she lives.

Medicaid eligibles: (also called Medicaid any-month eligibles) eligibles who have coverage for any part of the year (one or more months).

Medicaid long-term eligibles: eligibles that include the additional criteria that they were covered for at least 11 of 12 months during the year, and were covered in the final month of the year.

Medicare: the federal health program that provides medical coverage for people 65 or older, for certain disabled people and for some people with end-stage renal disease.

Medicare Part A: (also called hospital insurance): part of the federal health program that helps to pay for (not limited to) inpatient hospital care; inpatient care in a skilled nursing facility following a covered hospital stay; home health care; and hospice care. Most people do not have to pay for Medicare Part A because they or their spouse paid Medicare taxes while they were working.

Medicare Part B: (also called medical insurance): part of the federal health program that helps to pay for doctor's services; outpatient hospital care, clinical laboratory and diagnostic services; surgical supplies and durable medical equipment; ambulance services; and other medical services that are not covered by Part A. The covered service or supply must be medically necessary. After age 65, individuals may choose to enroll in the program, and pay monthly premiums and an annual deductible for services covered by Medicare Part B.

morbidity: a descriptive measurement of sickness.

mortality rate: number of deaths in a time period divided by the population at risk.

myocardial infarction: commonly known as a heart attack.

nephropathy: disease of the kidneys. Hyperglycemia and hypertension can damage the kidneys' glomeruli. When the kidneys are damaged, protein leaks out of the kidneys into the urine. Damaged kidneys can no longer remove waste and extra fluids from the bloodstream.

neuropathy: disease of the nervous system. The three major forms in people with diabetes are peripheral neuropathy, autonomic neuropathy and mononeuropathy. The most common form is peripheral neuropathy, which affects mainly the legs and feet.

non-insulin-dependent diabetes mellitus (NIDDM): former term for type 2 diabetes.

non-traumatic lower extremity amputation: loss of extremities due to diabetes.

obesity: a condition in which a greater than normal amount of fat is in the body; more severe than overweight; having a body mass index of 30 or more.

principal diagnosis: the principal diagnosis (also referred to as primary diagnosis) is submitted as the first of several possible diagnoses coded on the discharge record. The condition established after study to be chiefly responsible for admitting the patient to the hospital for care.

prevalence: the number of people in a given group or population who are reported to have a disease.

risk factor: anything that raises the chances of a person developing a disease.

secondary diagnosis: a diagnoses listed as a condition or disease in the medical record but is not the cause of admittance to the hospital.

self-management: in diabetes, the ongoing process of managing diabetes. Includes meal planning, planned physical activity, blood glucose monitoring, taking diabetes medicines, handling episodes of illness related to low and high blood glucose, managing diabetes when traveling and more. The person with diabetes designs his or her own self-management treatment plan in consultation with a variety of health care professionals such as physicians, nurses, dentists, dieticians, pharmacists, podiatrists and others.

stroke: condition caused by damage to blood vessels in the brain; may cause loss of ability to speak or to move parts of the body.

type 1 diabetes: a condition characterized by high blood glucose levels caused by a total lack of insulin. Occurs when the body's immune system attacks the insulin-producing beta cells in the pancreas and destroys them. The pancreas then produces little or no insulin. Type 1 diabetes develops most often in young people but can appear in adults.

type 2 diabetes: a condition characterized by high blood glucose levels caused by either a lack of insulin or the body's inability to use insulin efficiently. Type 2 diabetes develops most often in middle-aged and older adults but can appear in young people.

type I diabetes: former term for type 1 diabetes.

type II diabetes: former term for type 2 diabetes.

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The Burden of Diabetes in Ohio

Ohio Diabetes Prevention and Control Program
Office of Healthy Ohio
Ohio Department of Health

Ted Strickland
GOVERNOR

Alvin D. Jackson, M.D.
DIRECTOR OF HEALTH

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