

# The Burden of Diabetes in Iowa

1990-2009

Iowa Department of Public Health

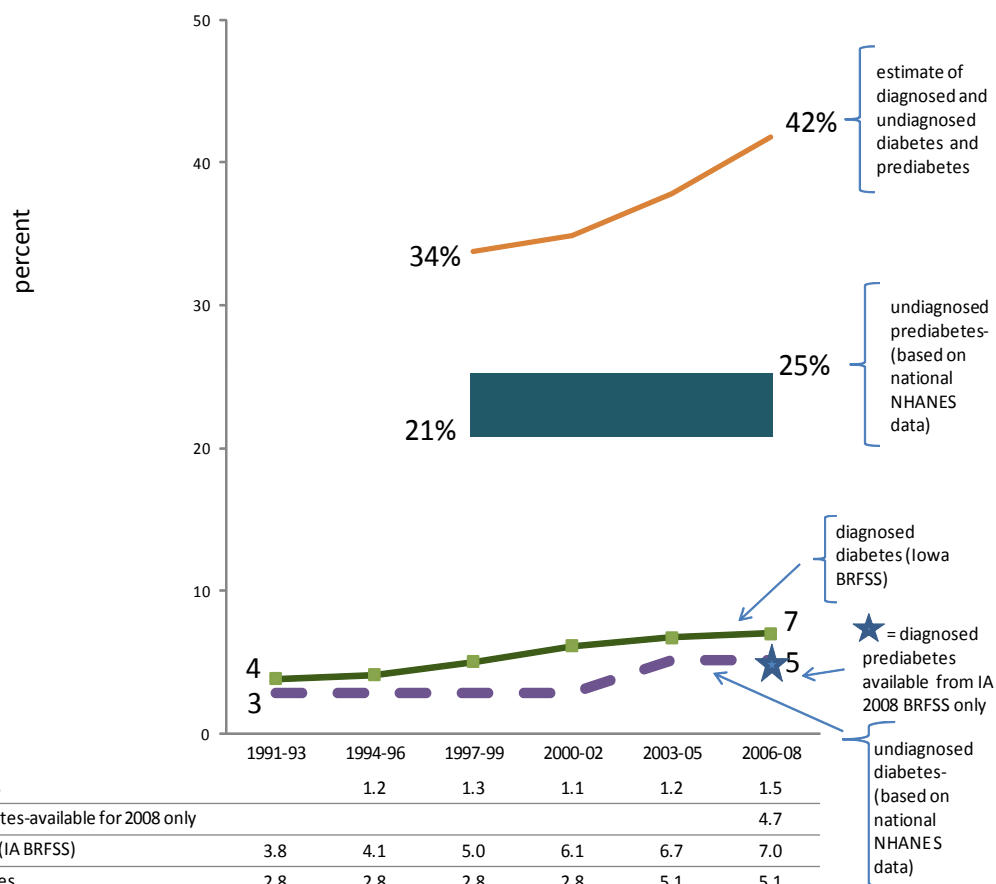


# Adult Diabetes Prevalence

Iowa Behavioral Risk Factor Surveillance System

1990-2009

# Diagnosed and Undiagnosed Adult Diabetes, Pre-diabetes, Iowa



gestational diabetes		1.2	1.3	1.1	1.2	1.5
diagnosed prediabetes-available for 2008 only						4.7
diagnosed diabetes (IA BRFSS)	3.8	4.1	5.0	6.1	6.7	7.0
undiagnosed diabetes	2.8	2.8	2.8	2.8	5.1	5.1
undiagnosed prediabetes			21.0	21.0	25.0	25
diabetes, prediabetes, undiagnosed/undiagnosed			33.8	34.9	37.8	41.8

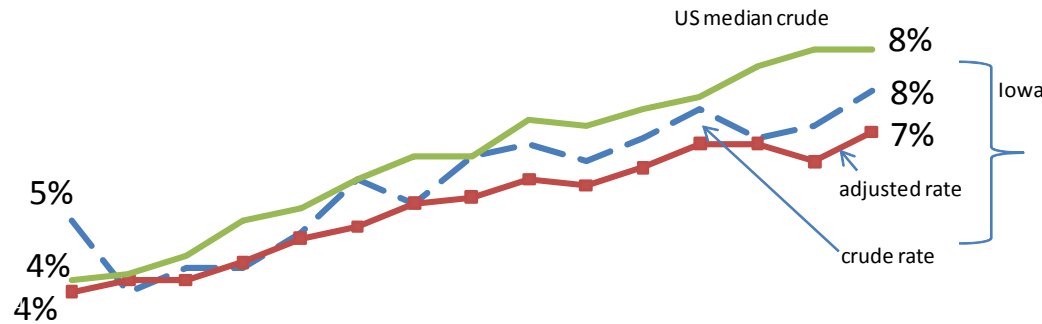
Estimated average annual crude prevalence rate of diagnosed and undiagnosed diabetes/prediabetes per 100 adults ages 18 years and older (percent of adults with diabetes/prediabetes), Iowa, 1991-2008. Diagnosed prediabetes estimates are based on a separate question about prediabetes that was asked in the Iowa BRFSS in 2008 for the first time. Undiagnosed diabetes and prediabetes rates are based on national-level data from the NHANES database, 1988-94 and 2005-06.

Sources: *Diabetes Care*, 2006, 2009 (Cowie et al, data from the National Health and Nutrition Examination (NHANES) survey), CDC BRFSS Web site, CDC MMWR 9/5/2003, Iowa BRFSS, IA Dept. of Public Health

Almost 42% of the Iowa adult population has diabetes or pre-diabetes.

About 40% of adult diabetes and 75% of adult pre-diabetes cases are undiagnosed.

## Trends in adult diabetes prevalence, Iowa vs. U.S.



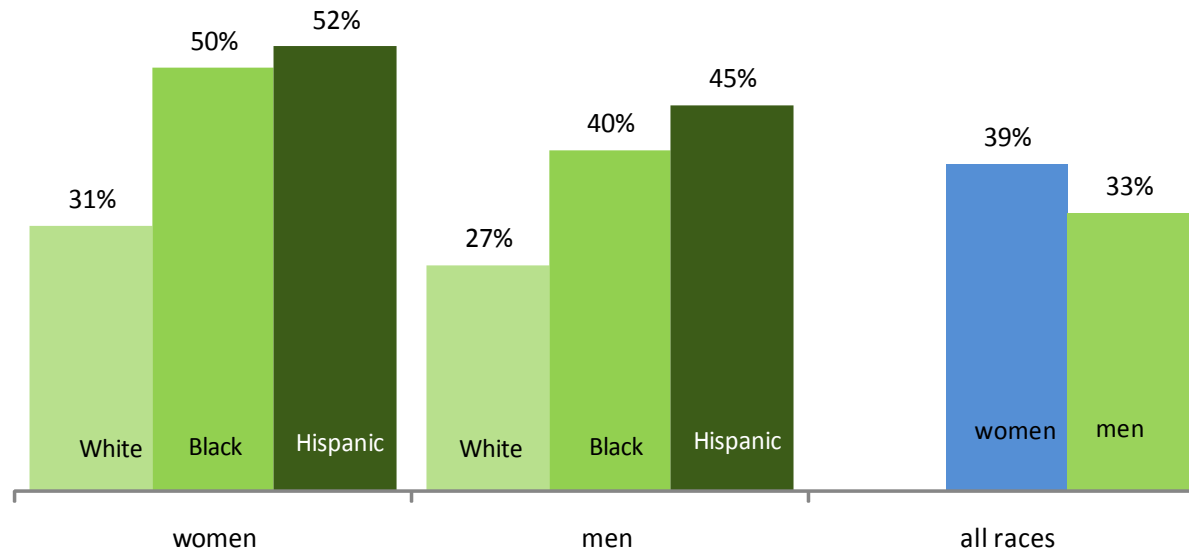
	1995	1996	1997	1997	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Iowa crude rate	5.4	4.2	4.6	4.6	5.2	6.1	5.7	6.5	6.7	6.4	6.8	7.3	6.8	7.0	7.6
Iowa adjusted rate	4.2	4.4	4.4	4.7	5.1	5.3	5.7	5.8	6.1	6.0	6.3	6.7	6.7	6.4	6.9
U.S. median crude rate	4.4	4.5	4.8	5.4	5.6	6.1	6.5	6.5	7.1	7.0	7.3	7.5	8.0	8.3	8.3

Estimated annual crude and age-adjusted prevalence rate of diabetes per 100 adults age 18 and older, (percent of adults who self-report ever having been diagnosed with non-gestational diabetes), Iowa, 1995-2009. U.S. rates are the median of all state crude rates using BRFSS data.

Sources: CDC Division of Diabetes Translation Web site and CDC BRFSS Web site (national data)  
Iowa BRFSS, IA Dept. Public Health

Iowa's crude rate of diagnosed adult diabetes prevalence has remained about the same as or slightly below the national median rate of adult diagnosed diabetes for every year since 1995.

## Lifetime risk of developing diabetes among persons born in 2000, U.S.



By race and sex, estimated lifetime risk at birth of developing diabetes among persons born in the U.S. in 2000 (chance of developing diabetes at sometime during one's life).

Source: *National Diabetes Factsheet 2007*, CDC, (from Narayan et al., JAMA, 2003)

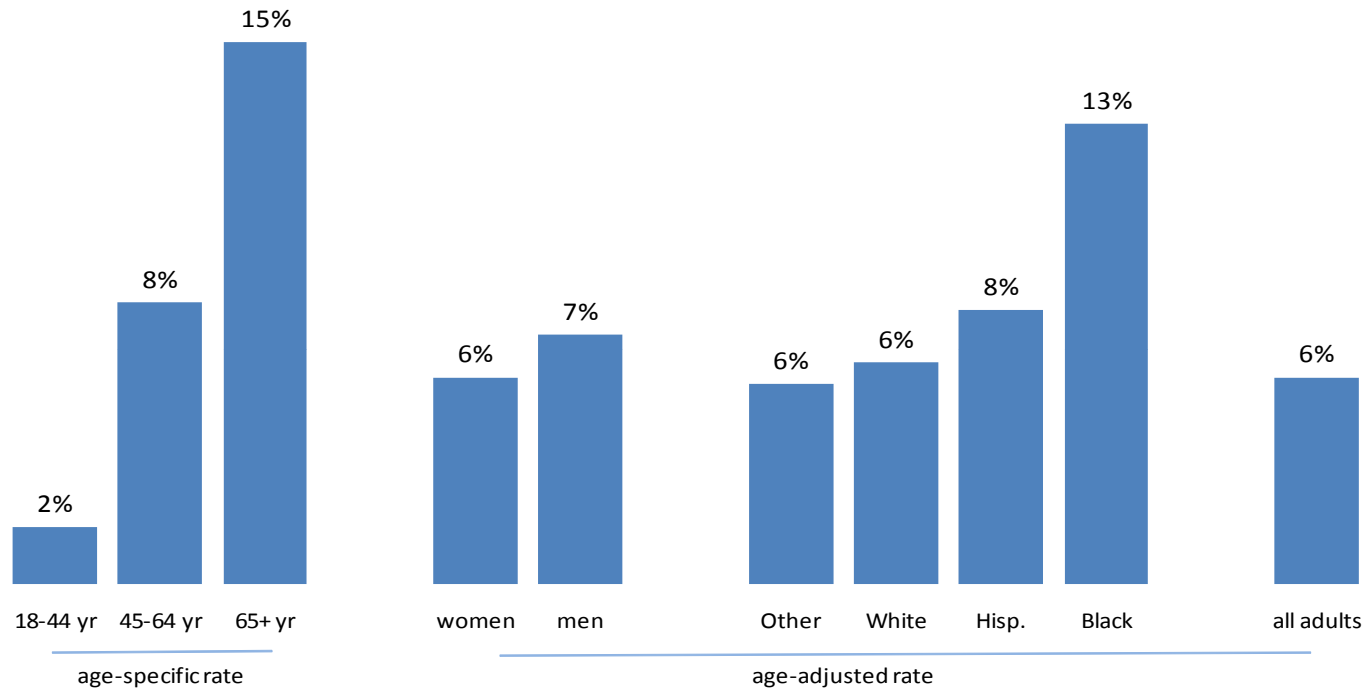
Chart prepared by IA Dept. of Public Health

Nationally, for women of all races, the lifetime risk of developing diabetes was higher than men of the same race.

At least half of Hispanic and Black American women born in 2000 are expected to develop diabetes sometime during their lives.

Compared to White men and women, both Black and Hispanic men and women are at greater risk of developing diabetes.

## Overview: Adult diabetes prevalence by age, race and sex, Iowa



Among Iowa adults, the diabetes prevalence rate increases greatly with age.

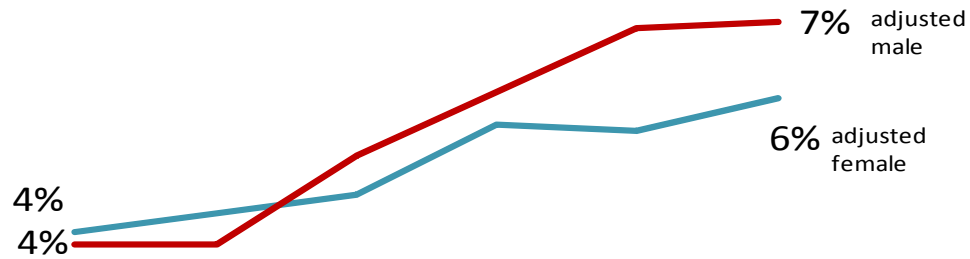
The age-adjusted diabetes prevalence rate in Iowa men is slightly higher than the prevalence rate in women.

African-American adults in Iowa have age-adjusted rates of diabetes prevalence double that of White and Other Race Iowa adults.

Estimated three year average annual prevalence rate of diabetes per 100 adults age 18 and older (percent of adults who self-report ever having been diagnosed with diabetes, exclusive of gestational diabetes), by age, by sex, race/ethnicity (sex and race rates are age-adjusted), Iowa, 2006-08.

Source: Iowa BRFSS, IA Dept. of Public Health

## Trends in adult diabetes prevalence by sex, Iowa



	1991-93	1994-96	1997-99	2000-02	2003-05	2006-08
crude female	4.1	4.6	5.0	6.1	6.2	6.7
crude male	3.4	3.6	5.1	6.1	7.4	7.4
adjusted female	3.8	4.1	4.4	5.5	5.4	5.9
adjusted male	3.6	3.6	5.0	6.0	7.0	7.1

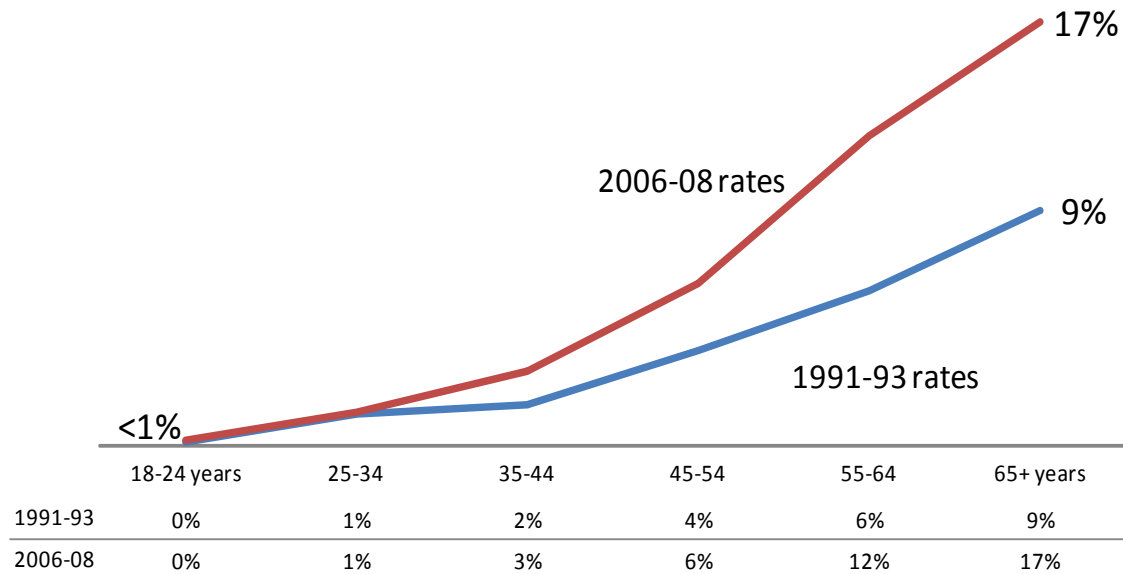
Estimated average annual crude and age-adjusted, sex-specific prevalence rate of diabetes per 100 adults ages 18 years and older (percent of men and women who self-report ever having been diagnosed with diabetes, exclusive of gestational diabetes), Iowa, 1991-2008.

Sources: Iowa BRFSS, IA Dept. of Public Health

The age-adjusted diabetes prevalence rate for both men and women has increased steadily since 1991-93.

Since 1997-99, the age-adjusted diabetes prevalence rate for men has exceeded that of women.

## Adult diabetes prevalence by age, Iowa



Estimated three-year average annual prevalence rate of diabetes per 100 adults age 18 and older by age (percent of adults who self-report ever having been diagnosed with diabetes, exclusive of gestational diabetes), by age, Iowa, 1991-93 vs. 2006-2008 rates.

Source: Iowa BRFSS, IA Dept. of Public Health

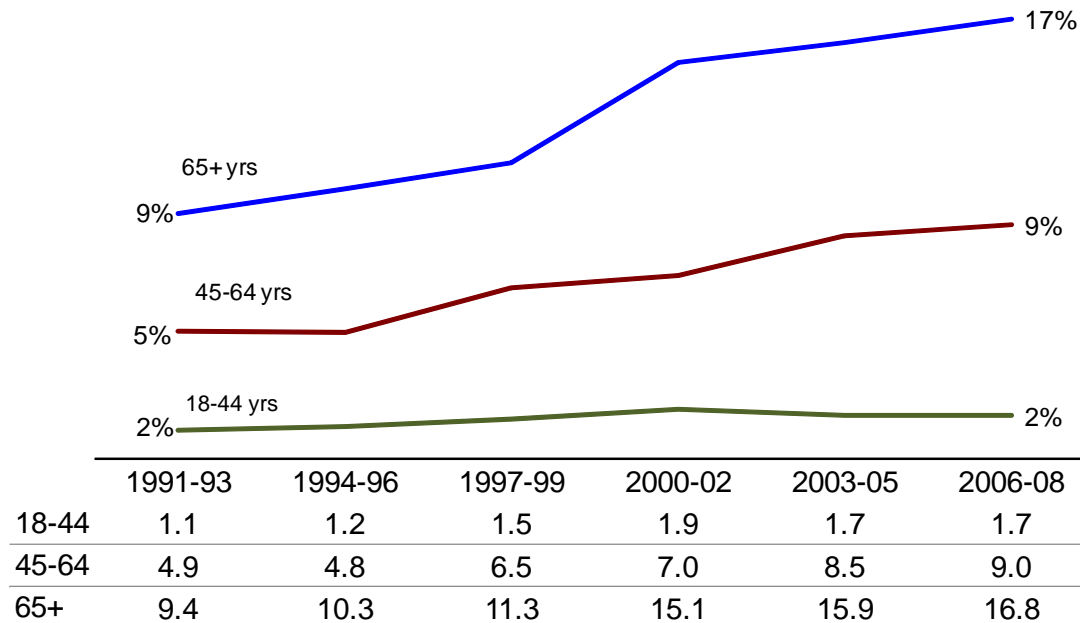
Beginning with middle age, the diabetes prevalence rate increases dramatically among Iowa adults.

In 2006-08, the prevalence rate for Iowans age 65 and older (16.8%) was 55 times that of Iowans 18-24 years of age (0.3%) and 80% higher than the prevalence rate of adults 65 years and older in 1991-93 (9%).

Diabetes prevalence rates were substantially higher in 2006-08 than in 1991-93 for all age groups 35-44 years of age and older.



## Trends in adult diabetes prevalence by age, Iowa



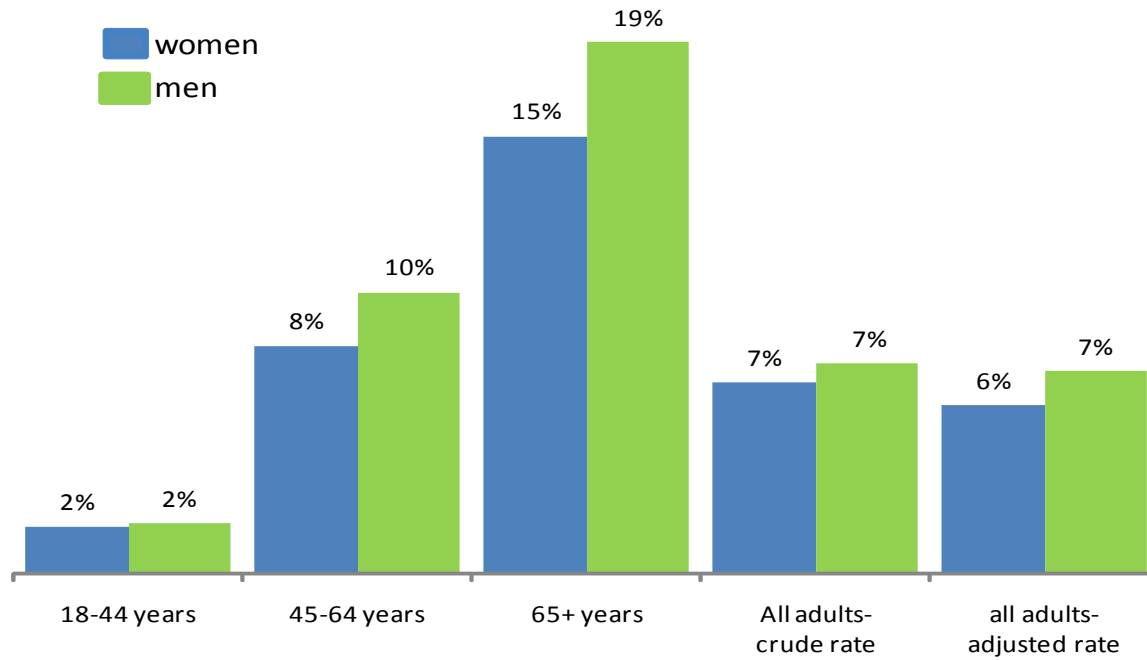
In 2006-08, the prevalence rate for lowans age 65 and older (16.8%) was 80% higher than was their rate in 1991-93 (9.4%).

The diabetes prevalence rate for lowans 45-46 years of age almost doubled between 1991-93 and 2006-08 (rising from 4.9% to 9%).

Estimated three-year average annual age-specific prevalence rate of diabetes per 100 adults age 18 years and older (percent of adults by age who self-report ever having been diagnosed with diabetes, exclusive of gestational diabetes), Iowa, 1991-2008.

Source: Iowa BRFSS, IA Dept. of Public Health

## Trends in adult diabetes prevalence by sex and age, Iowa



Estimated three year average annual age/sex-specific prevalence rate of diabetes per 100 Iowa adults age 18 and older (percent of adults by age and sex who self-report ever having been diagnosed with diabetes, exclusive of gestational diabetes), Iowa, 2006-08;

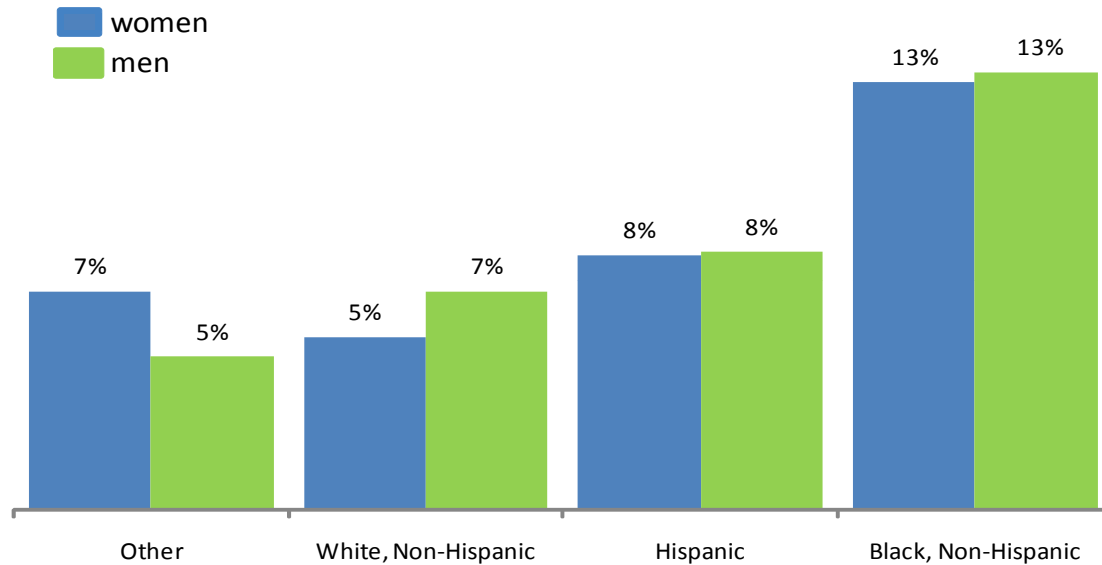
Source: Iowa BRFSS, IA Dept. of Public Health

During all years 1991-93 through 2006-08, the dramatic increase in diabetes prevalence rates among adults as they age held true not only overall but for both sexes.

For all age groups, diabetes was more prevalent in men than women.

The diabetes prevalence rate in Iowa men 65 years and older (18.7%) was more than nine times that of men 18-44 years of age (2%) ( and more than 88 times that of men 18-24 years of age (0.2%)-rate for men 18-24 years men not shown in this graph. (See document of BRFSS tables supplement to the Iowa diabetes burden report )

## Adult diabetes prevalence by sex and race, Iowa

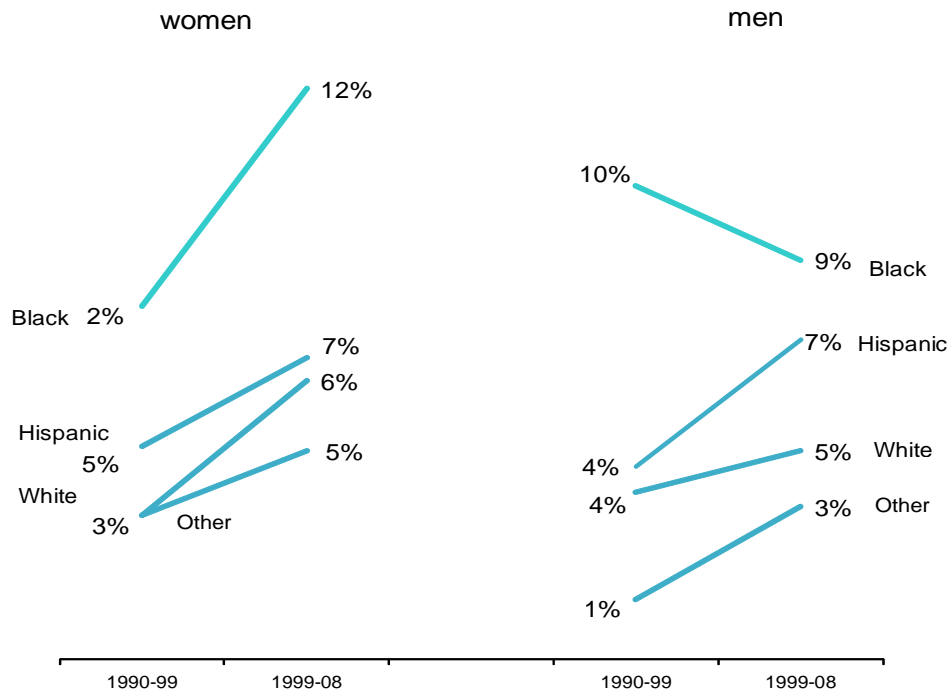


Ten-year average annual age-adjusted diabetes prevalence rate per 100 adults, by race and Hispanic ethnicity, Iowa BRFSS, 1999-2008

Men: The age-adjusted rates of diabetes among African-American men (13%) is almost double the rate among Caucasian, Non-Hispanic men (7%) .

Women: The age-adjusted rates of diabetes among African-American women (13%) is more than double the rate among Caucasian, Non-Hispanic women (5%) .

## Trends in adult diabetes prevalence by sex and race, Iowa



Estimated ten-year average crude rate of diabetes per 100 adults age 18 and older (percent with of adults who self-report ever having been diagnosed with diabetes, exclusive of gestational diabetes), by race and sex, Iowa, 1990-99 vs. 1999-2008.

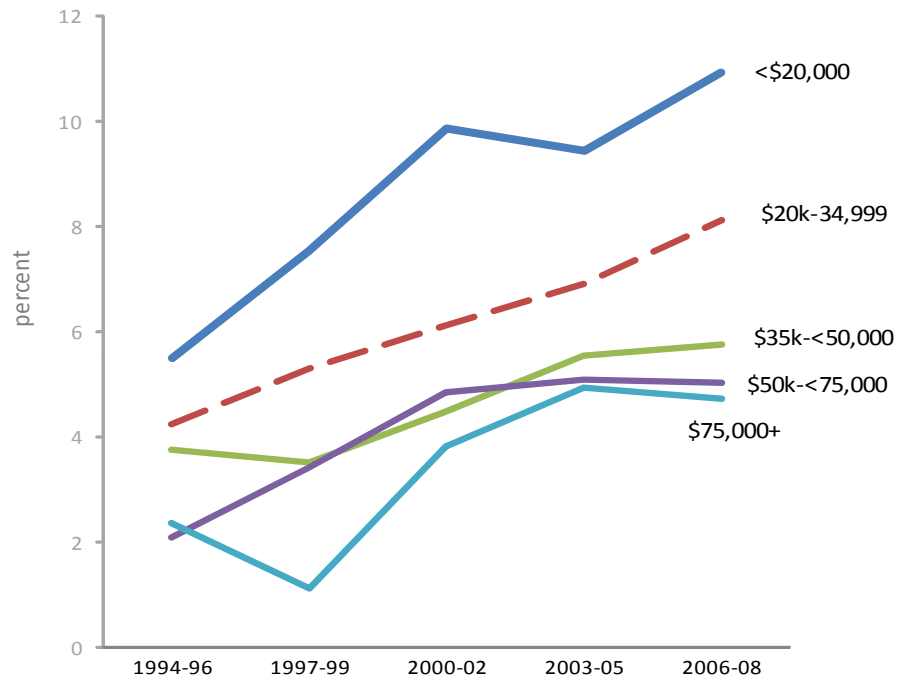
Source: Iowa BRFSS, IA Dept. of Public Health

For all racial groups of women and men, diabetes prevalence rates increased during the two ten-year periods compared, with the exception of the rate for African-American men.

The decrease among African-American men was small (1%) and not statistically significant, given the small sample size.

(Ten years of data were combined in this chart due to small BRFSS sample size when sex and race specific breakouts for Minorities are calculated.)

## Trends in adult diabetes prevalence by income, Iowa



	1994-96	1997-99	2000-02	2003-05	2006-08
less than \$20,000	5.5	7.5	9.9	9.4	10.9
\$20,000 - <\$35,000	4.2	5.3	6.1	6.9	8.1
\$35,000 - <\$50,000	3.8	3.5	4.5	5.5	5.8
\$50,000 - <\$75,000	2.1	3.4	4.9	5.1	5.0
\$75,000+	2.4	1.1	3.8	4.9	4.7

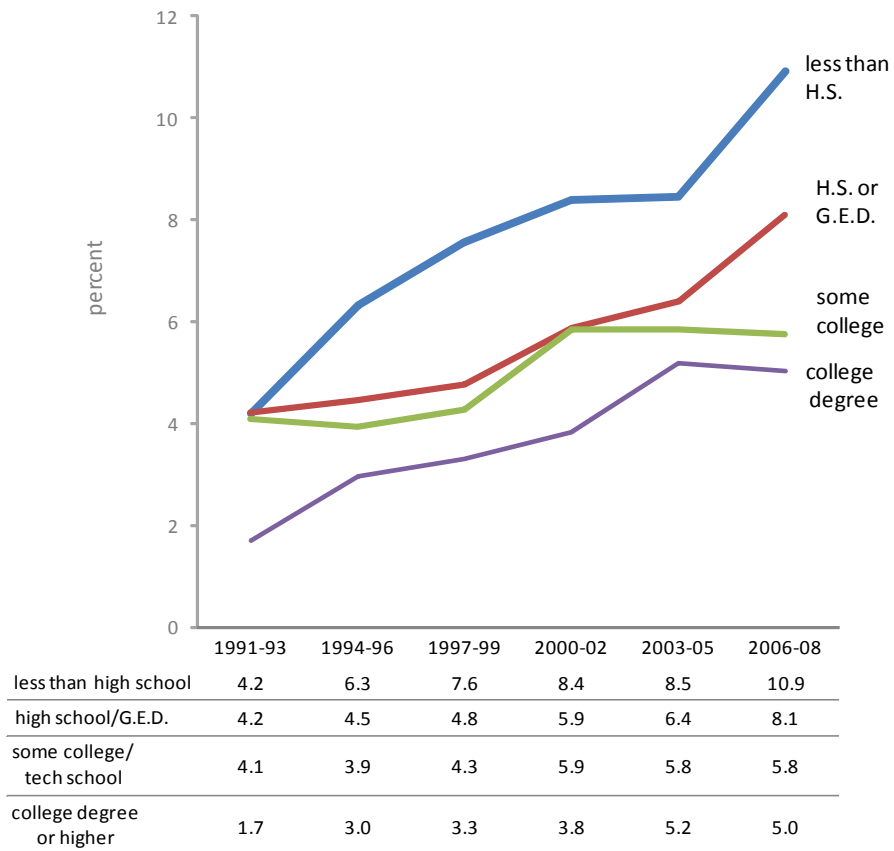
Three-year average annual age-adjusted diabetes prevalence rate per 100 adults  
Iowa BRFSS, 1991-2008

The lower one's income the greater are the chances of having diabetes.

Age-adjusted income-specific rates of diabetes for 2006-08 show that adults with a household income of less than \$20,000 were more than twice as likely to have diabetes as adults with a household income of \$75,000 or more (10.9% vs. 4.7%).



## Trends in adult diabetes prevalence by level of education, Iowa

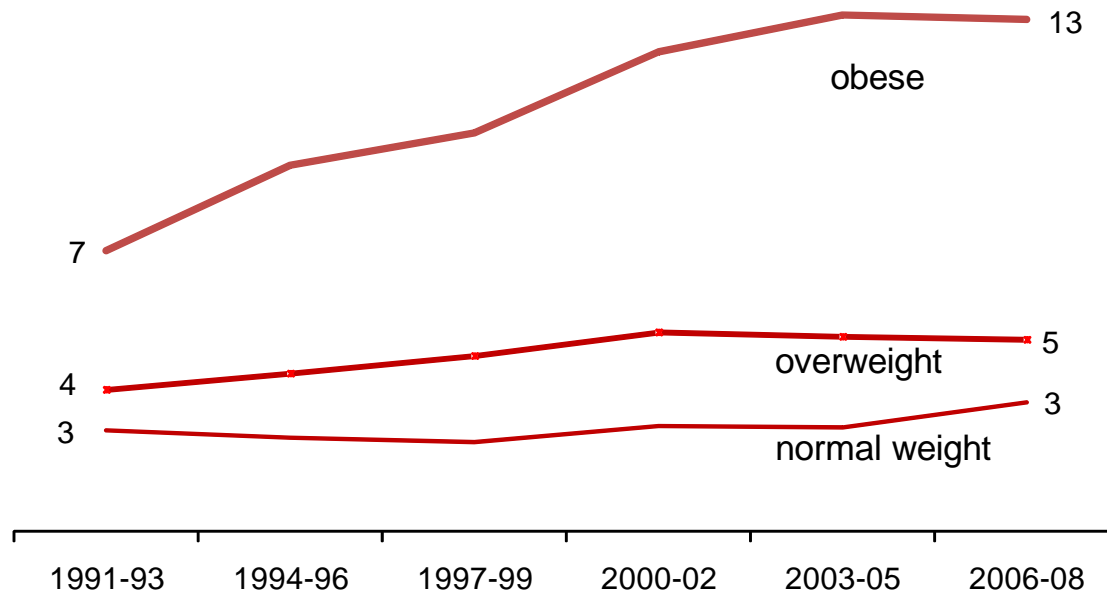


Three-year average annual age-adjusted diabetes prevalence rate per 100 adults, Iowa BRFSS, 1991-2008

The lower one's level of education, the greater one's chance of having diabetes.

Having less than a high school education puts adults at 74% greater risk of having diabetes compared to adults with a college degree or higher educational attainment (5% vs. 8.7% age-adjusted rates) in 2006-08.

## Trends in diabetes prevalence by body weight, Iowa



Three-year average annual age-adjusted rate of diabetes per 100 adults (percent of adults who self-report ever having been diagnosed with diabetes, exclusive of gestational diabetes), by body weight (body mass index (BMI) status), Iowa 1991-2008

Source: Iowa BRFSSs, Iowa Dept. of Public Health

Between 1991-93 and 2006-08, among obese adults, diabetes prevalence increased 70% (rising from 7% to 13%).

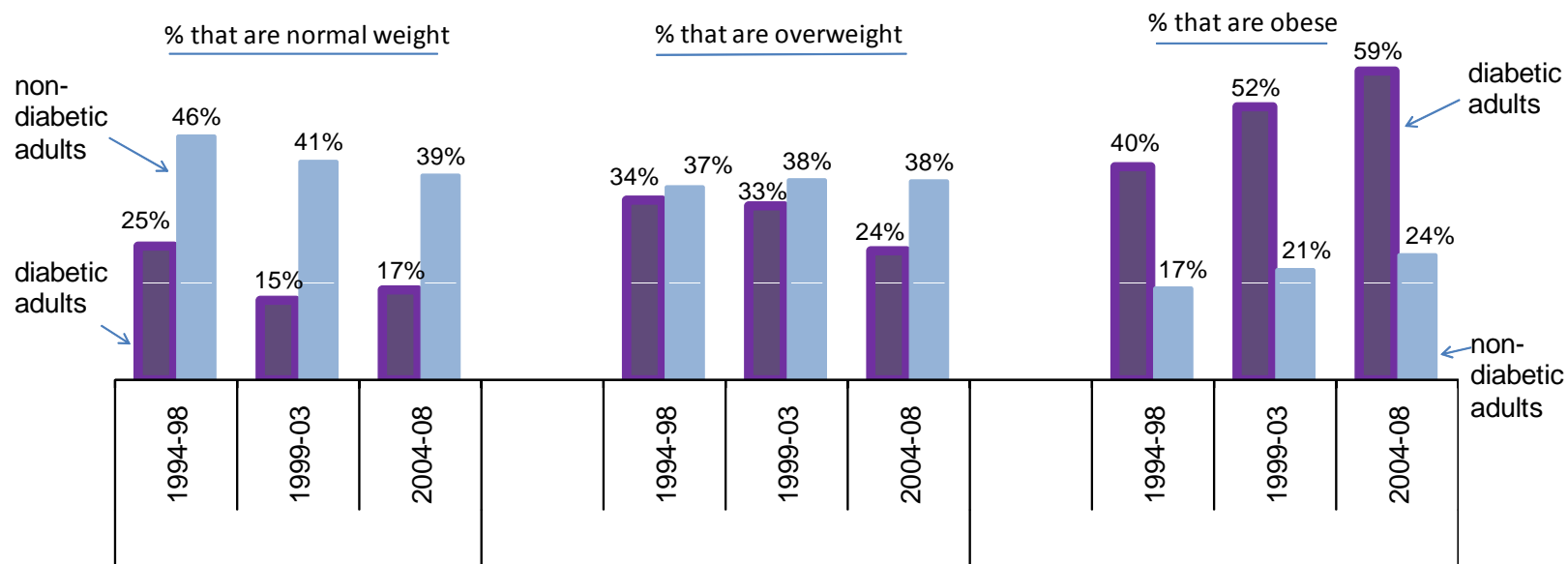
Among overweight adults, diabetes prevalence increased 14%, (rising from 3.5% to 4.7%).

Among adults of normal weight, the diabetes prevalence increased about 20% (rising from 2.5% to 3.2%)

The age-adjusted rate of diabetes among the obese was more than three times that of normal weight Iowa adults in 2006-08.

Obese adults have a body mass index of 30 or greater, overweight adults have a body mass index of 25-29.9. Normal weight adults have a body mass index of 18.5 - 25.

## Trends in percent of adults that are obese, overweight and normal weight diabetic vs. non-diabetic adults, Iowa

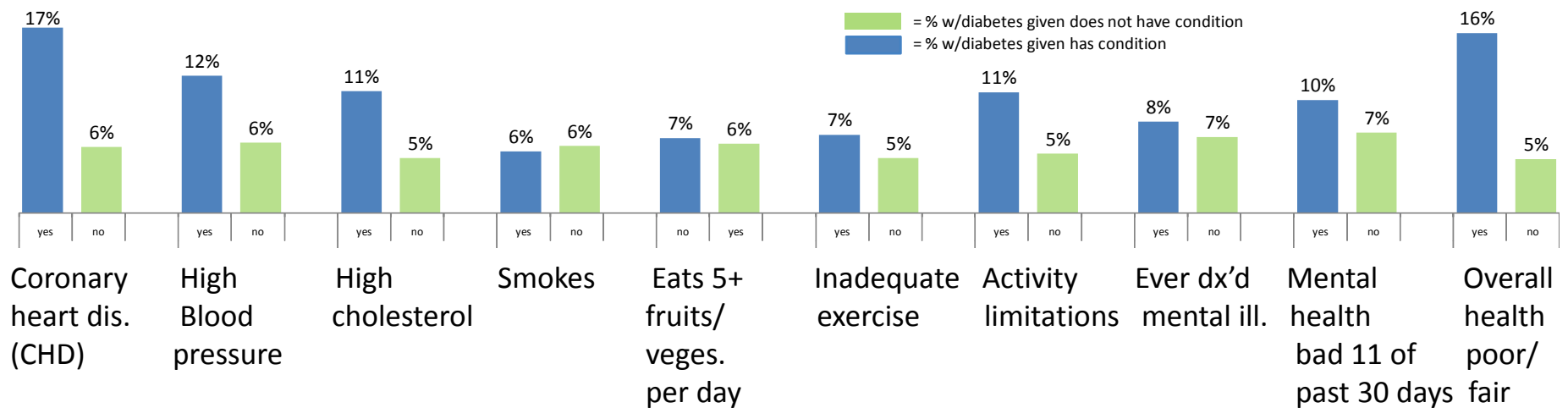


Five-year average annual age-adjusted percent of adults who are diabetic versus non diabetic that are normal weight, overweight and obese, 1994-2008. Source: Iowa BRFSS, Iowa BRFSSs, IA Dept. of Public

In 2004-08, 83% of Iowa adults with diabetes were overweight or obese. Almost 60% of Iowa adults with diabetes were obese. Adults who are diabetic are much more likely than adults who are not diabetic to be obese (59% of diabetic adults vs. 24% of non-diabetic adults are obese, 2004-08).

Conversely, Iowa adults who are non-diabetic are much more likely to normal weight or overweight compared to diabetic adults. In 2004-08, 39% of non-diabetic adults were of normal weight while only 17% of diabetic adults were of normal weight. During that time, 38% of non-diabetic adults were overweight while 24% of diabetic adults were overweight.

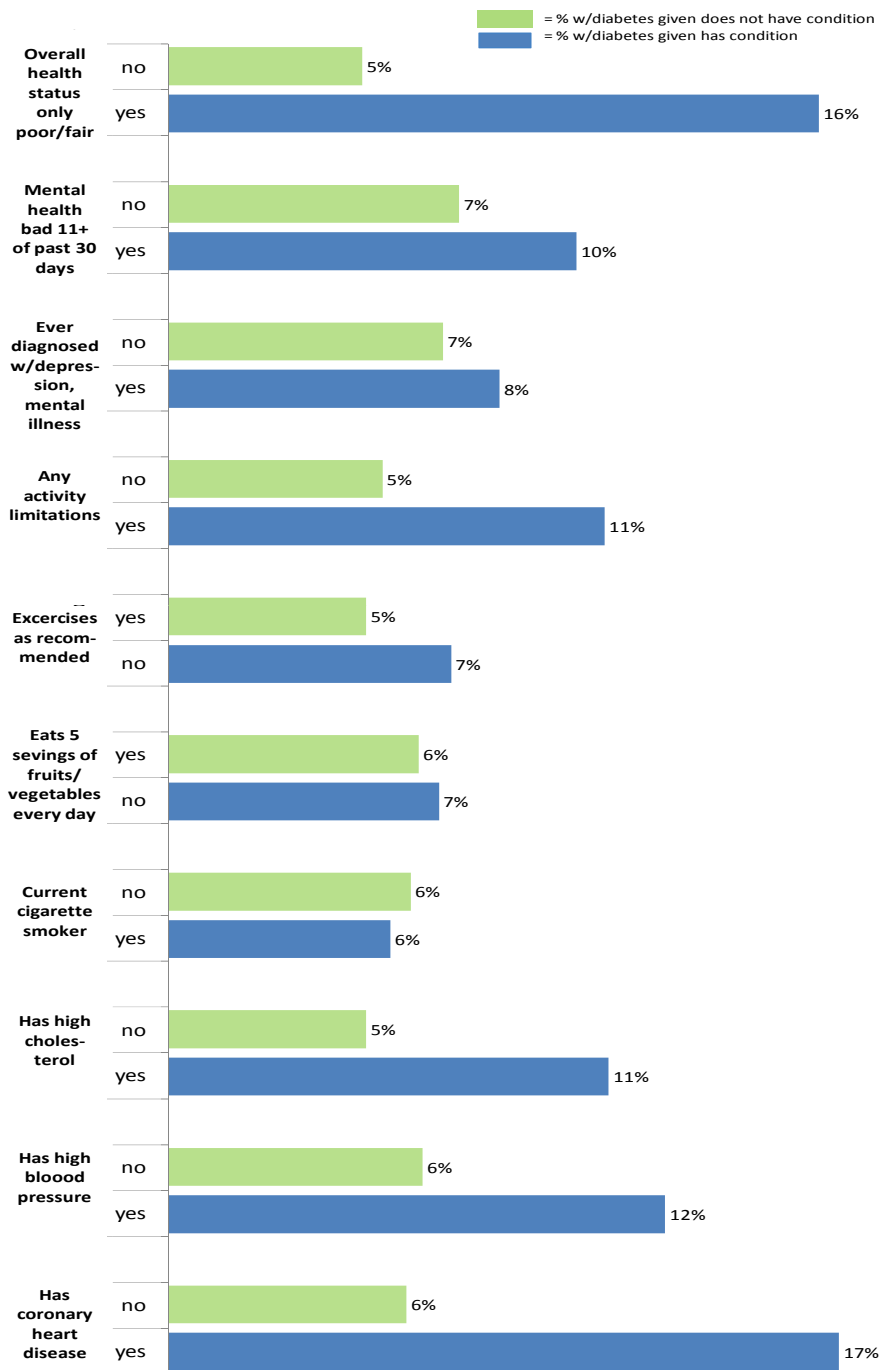
## Percent of adults with diabetes by health status, at-risk behaviors and presence of other chronic diseases, Iowa



With the exception of cigarette smoking, adults in Iowa who have the chronic conditions/risky behaviors shown were more likely to have diabetes than were adults without these chronic conditions. i.e., Diabetes is very frequently a co-morbid condition found in conjunction with other chronic illnesses.

Of adults with coronary heart disease (CHD), 17% had diabetes while among those adults without CHD only 6% had diabetes. Of adults with only fair or poor overall health, 16% had diabetes vs. 5% of those with whose health was better than poor/fair (health good/excellent). Adults with activity limitations, mental illness, high blood pressure and high cholesterol were all more likely to have diabetes than were adults without these chronic conditions. And, as shown in a previous slide, 13% of obese Iowa adults have diabetes, while on 3% of normal weight adults have diabetes.

Adults who smoked were about equally likely as those who did not smoke to have diabetes. All rates shown are age-adjusted to account for the fact that older Iowans are more likely to have chronic illness, including diabetes. (Iowa BRFSS, age-adjusted rates, 2006-08 average annual rate)



Percent of adults with diabetes by health status and presence of selected chronic conditions and behaviors

With the exception of cigarette smoking, in 2006-08, adults in Iowa who had the chronic conditions/behaviors shown were more likely to have diabetes than were adults without the risk factors shown.

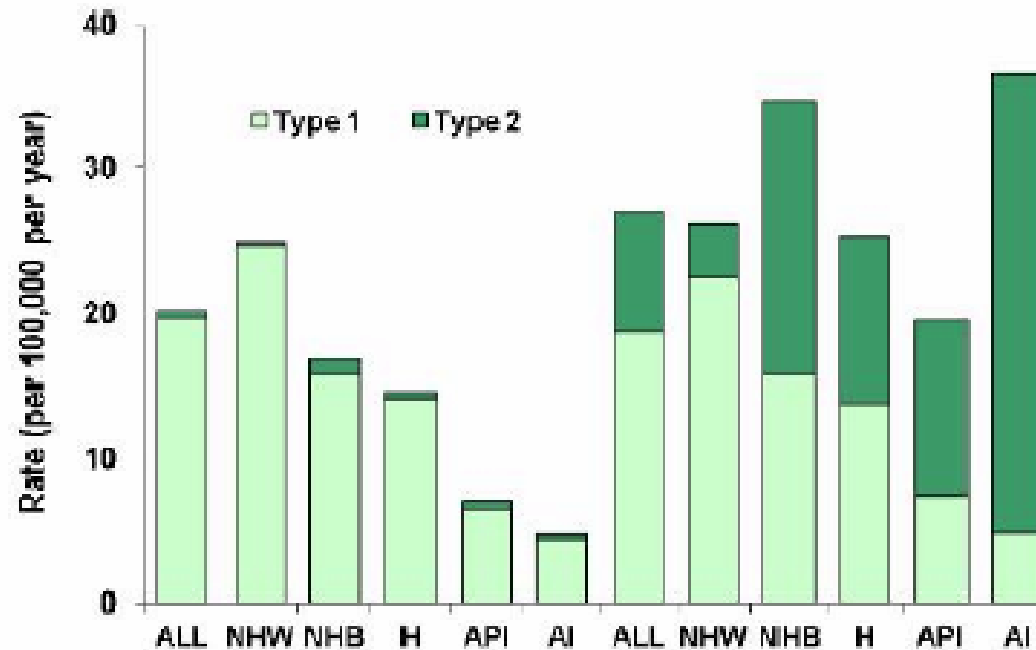
Adults who smoked were about equally likely as those who did not smoke to have diabetes. (Iowa BRFSS, age-adjusted rates, 2006-08 average annual rate)



# Diabetes Prevalence among Children and Youth

Iowa estimates based on national data

## Child and youth diabetes prevalence rate by race, 2002-2005, U.S.



Source: SEARCH for Diabetes in Youth Study

NHW=non-Hispanic whites; NHB=non-Hispanic blacks; H=Hispanics;  
API=Asians/Pacific Islanders; AI=American Indians

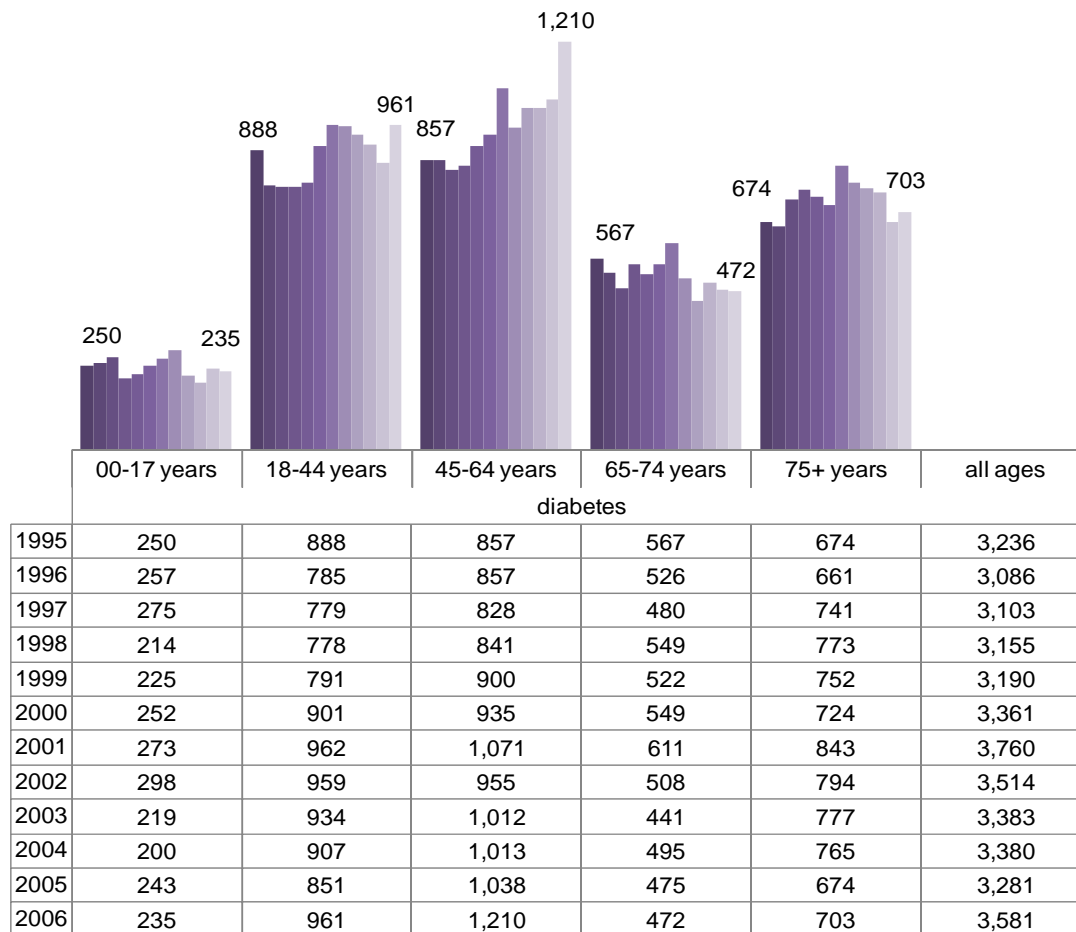
(See 2011 National Diabetes Factsheet, CDC Diabetes Program Web site for more details.)



# Diabetes-Related Hospitalizations

Iowa State Inpatient Database  
1995-2006

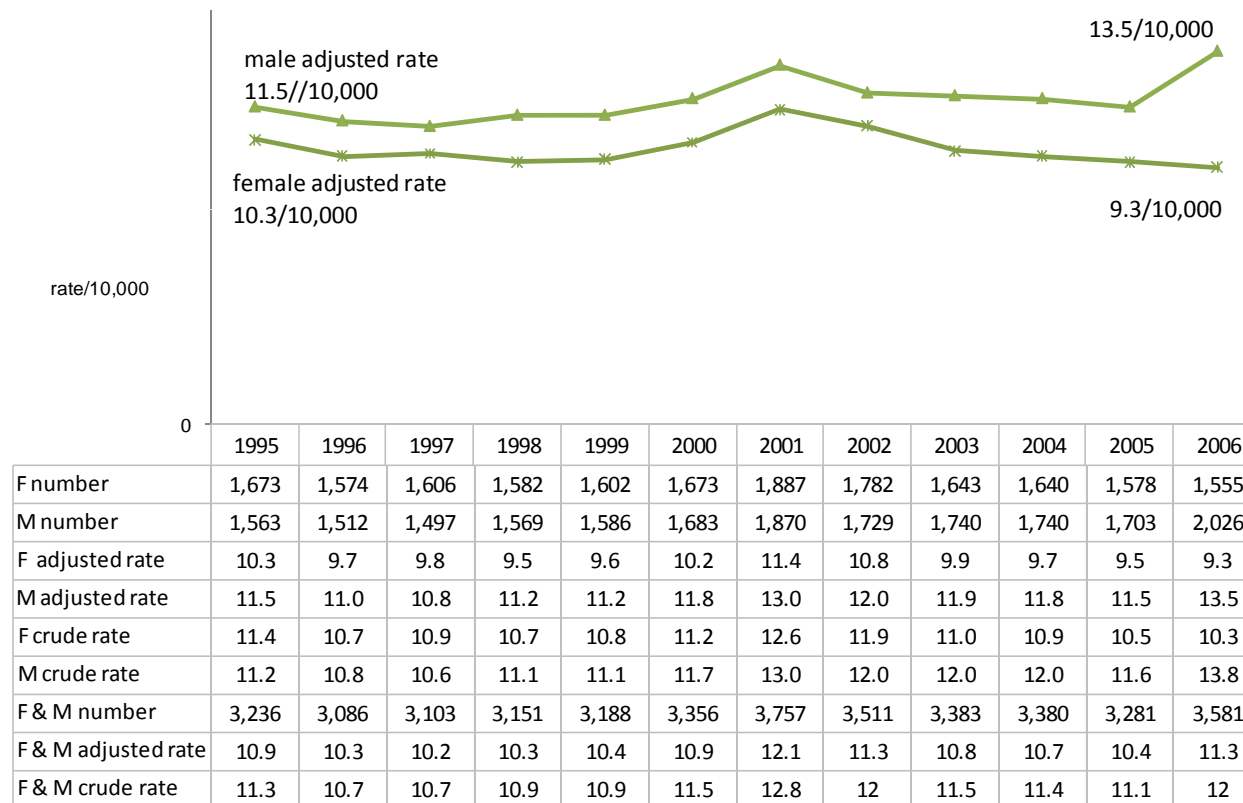
## Trends by age in the number of inpatient discharges from diabetes principal discharge diagnosis, Iowa residents



Between 1995 and 2006, the count of inpatient discharges from diabetes was up slightly for Iowans 18-44 years, 45-64 years and 75 years and older and down for Iowans 0-17 years of age and 65-74 years of age.

The overall count of inpatient hospitalizations from diabetes increased slightly during this time.

## Trends by sex, in rate of inpatient discharges from diabetes principal discharge diagnosis, Iowa residents

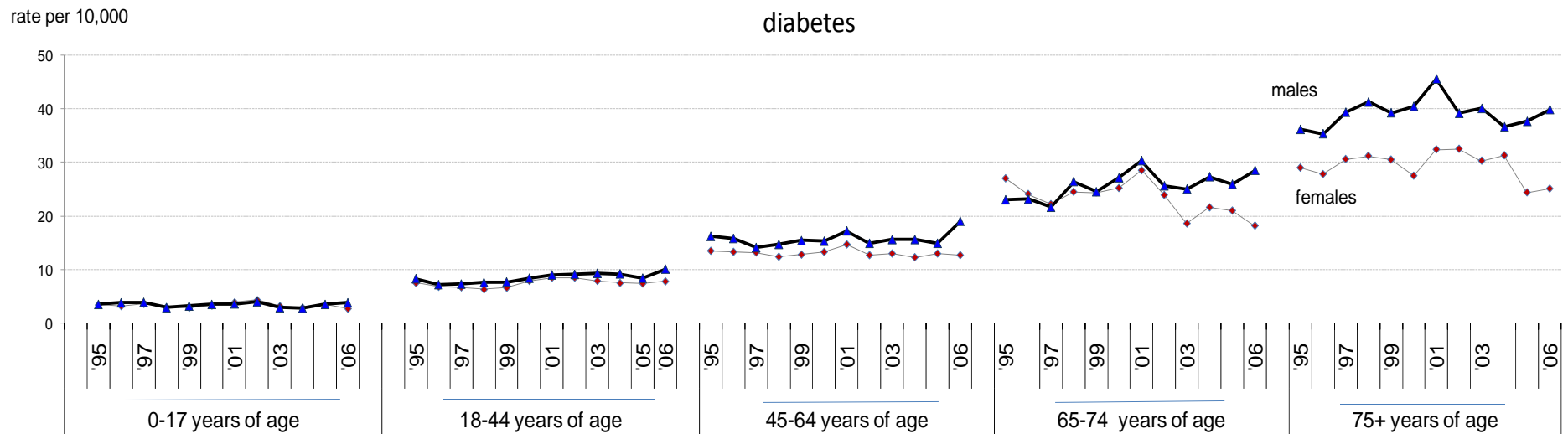


Between 1995 and 2006, for every year, the rate of inpatient discharges from diabetes higher for males than for females.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
F number	1,673	1,574	1,606	1,582	1,602	1,673	1,887	1,782	1,643	1,640	1,578	1,555
M number	1,563	1,512	1,497	1,569	1,586	1,683	1,870	1,729	1,740	1,740	1,703	2,026
F adjusted rate	10.3	9.7	9.8	9.5	9.6	10.2	11.4	10.8	9.9	9.7	9.5	9.3
M adjusted rate	11.5	11.0	10.8	11.2	11.2	11.8	13.0	12.0	11.9	11.8	11.5	13.5
F crude rate	11.4	10.7	10.9	10.7	10.8	11.2	12.6	11.9	11.0	10.9	10.5	10.3
M crude rate	11.2	10.8	10.6	11.1	11.1	11.7	13.0	12.0	12.0	12.0	11.6	13.8
F & M number	3,236	3,086	3,103	3,151	3,188	3,356	3,757	3,511	3,383	3,380	3,281	3,581
F & M adjusted rate	10.9	10.3	10.2	10.3	10.4	10.9	12.1	11.3	10.8	10.7	10.4	11.3
F & M crude rate	11.3	10.7	10.7	10.9	10.9	11.5	12.8	12	11.5	11.4	11.1	12



## Trends by age, in rate of inpatient discharges from diabetes principal discharge diagnosis, Iowa residents



Rates of hospitalizations increased with age for all years shown.

Between 1995 and 2006, rates of hospitalization were higher for males than females for all age groups 45-64 years of age and older. Overall, the difference between male and female rates of hospitalization were greatest in more recent years and among males and females age 75 years and older.

# Leading causes of death by age, Iowa residents

Leading Causes of Death, Iowa

Rank	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	All Ages
	Congenital Anomalies	Unintentional Injury	Unintentional Injury	Unintentional Injury	Unintentional Injury	Unintentional Injury	Malignant Neoplasm	Malignant Neoplasm	Malignant Neoplasm	Heart Disease	Heart Disease
1	54	15	14	15	138	91	134	476	947	6,626	7,702
	SIDS	Congenital Anomalies	Malignant Neoplasm	Malignant Neoplasm	Suicide	Suicide	Unintentional Injury	Heart Disease	Heart Disease	Malignant Neoplasm	Malignant Neoplasm
2	29	4	6	6	53	48	117	337	587	4,792	6,415
	Short Gestation	Malignant Neoplasms	Congenital Anomalies	Suicide	Malignant Neoplasm	Malignant Neoplasm	Heart Disease	Unintentional Injury	Chronic Low. Resp.Dis.	Cerebrovascular	Cerebrovascular
3	24	4	2	3	18	34	115	129	129	1,849	1,997
	Maternal Pregnancy Comp.	Homicide	Homicide	Congenital Anomalies	Homicide	Heart Disease	Suicide	Suicide	Unintentional Injury	Chronic Low. Resp.Dis.	Chronic Low. Resp.Dis.
4	16	3	1	2	12	23	68	68	90	1,429	1,610
	Placenta Cord Membranes	Perinatal Period	Benign Neoplasms	Heart Disease	Heart Disease	Homicide	Liver Disease	Liver Disease	Diabetes	Alzheimer's Disease	Unintentional Injury
5	9	1	1	2	9	9	17	48	81	966	1,141
	Unintentional Injury	Heart Disease	Chronic Low. Resp.Dis.	Homicide	Congenital Anomalies	Diabetes	Cerebrovascular	Cerebrovascular	Cerebrovascular	Influenza & Pneumonia	Alzheimer's Disease
6	6	1	1	1	4	5	17	46	80	825	974
	Bacterial Sepsis	Influenza & Pneumonia	Heart Disease	Chronic Low. Resp.Dis.	Influenza & Pneumonia	Influenza & Pneumonia	Diabetes	Diabetes	Liver Disease	Diabetes	Influenza & Pneumonia
7	6	1	1	1	3	5	14	38	45	584	887
	Respiratory Distress	Cerebrovascular	Cerebrovascular	Septicemia	Chronic Low. Resp.Dis.	Stroke	Homicide	Chronic Low. Resp.Dis.	Suicide	Unintentional Injury	Diabetes
8	5	1	1	1	3	4	13	36	36	526	725
	Neonatal Hemorrhage	Acute Bronchitis	Influenza & Pneumonia	Diabetes	Diabetes	Congenital Anomalies	Chronic Low. Resp.Dis.	Influenza & Pneumonia	Influenza & Pneumonia	Parkinson's Disease	Suicide
9	5	<1	<1	<1	2	3	9	17	27	246	324
	Intrauterine Hypoxia	Chronic Low. Resp.Dis.	Perinatal Period	Influenza & Pneumonia	Stroke	Chronic Low. Resp.Dis.	HIV	Septicemia	Septicemia	Pneumonitis	Pneumonitis
10	4	0	0	0	1	3	9	15	22	245	262
	Atelectasis	Nutritional Deficiencies	Septicemia	Anemias	Meningococcal Infection	HIV	Influenza & Pneumonia	Viral Hepatitis	Nephritis	Atherosclerosis	Nephritis
11	4	<1	<1	<1	1	2	8	13	17	240	256
	Circulatory System Disease	Anemias	Pneumonitis	Cerebrovascular	Septicemia	Complicated Pregnancy	Congenital Anomalies	Congenital Anomalies	Aortic Aneurysm	Nephritis	Atherosclerosis
12	4	<1	<1	<1	1	2	7	9	14	227	252
	Homicide	Benign Neoplasms	Suicide	Acute Bronchitis	Complicated Pregnancy	Liver Disease	Septicemia	Homicide	Benign Neoplasms	Hypertension	Parkinson's Disease
13	2	<1	<1	<1	1	2	4	7	9	214	249
	Septicemia	Diseases Of Appendix	Acute Bronchitis	Alzheimer's Disease	Benign Neoplasms	Septicemia	Nephritis	Nephritis	Congenital Anomalies	Septicemia	Septicemia
14	2	<1	<1	<1	1	2	3	7	9	193	239
	Interstitial Emphysema	Liver Disease	Anemias	Meningitis	Meningitis	Pneumonitis	Viral Hepatitis	Aortic Aneurysm	Pneumonitis	Aortic Aneurysm	Hypertension
15	2	<1	<1	<1	1	1	3	6	8	173	227
# deaths in top 15	171	29	26	30	247	232	535	1,252	2,101	19,133	23,260
# all deaths	214	41	32	36	277	271	633	1,442	2,368	22,322	27,636
# deaths from diabetes	<1	<1	<1	<1	2	5	14	38	81	584	725
% of all deaths w/diabetes as primary cause	<1%	<1%	<1%	<1%	<1%	2%	2%	3%	3%	3%	3%

Diabetes is among the 10 leading causes of death in Iowa for age groups 10-14 years and older.

By age, 15 leading causes of death ranked by average annual number of deaths, Iowa residents, 2000-2007

All average annual counts rounded to nearest whole number. Sources: CDC WISQARS website: <http://www.cdc.gov/ncipc/wisqars/default.htm> (rankings); CDC Wonder website: <http://www.cdc.wonder> (total death counts 2000-06); IDPH: Vital Statistics of Iowa, 2007 (total death counts 2007).

## Percent of all deaths from diabetes, Iowa residents

Percent of deaths	Age group										All Ages
	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	
from diabetes (diabetes was primary cause)	<1%	<1%	<1%	<1%	<1%	2%	2%	3%	3%	3%	3%
from or with diabetes (diabetes was primary or secondary cause of death)	<1	<1	<1	<1	1%	3%	6%	7%	11%	10%	10%
Number of deaths											
from diabetes	0	0	0	0	1	5	14	37	79	581	719
from or with diabetes	<1	<1	<1	<1	3	8	35	107	259	2,252	2,666
all causes of death	212	41	33	36	281	269	635	1,431	2,334	22,437	27,709

By age, average annual number and percent of deaths for which diabetes was listed as the: primary cause of death or as either the primary or a secondary cause of death and count of deaths that had diabetes listed as a primary or secondary cause, Iowa residents, 2000-2006. Source: <http://www.cdc.wonder> (compressed mortality data)

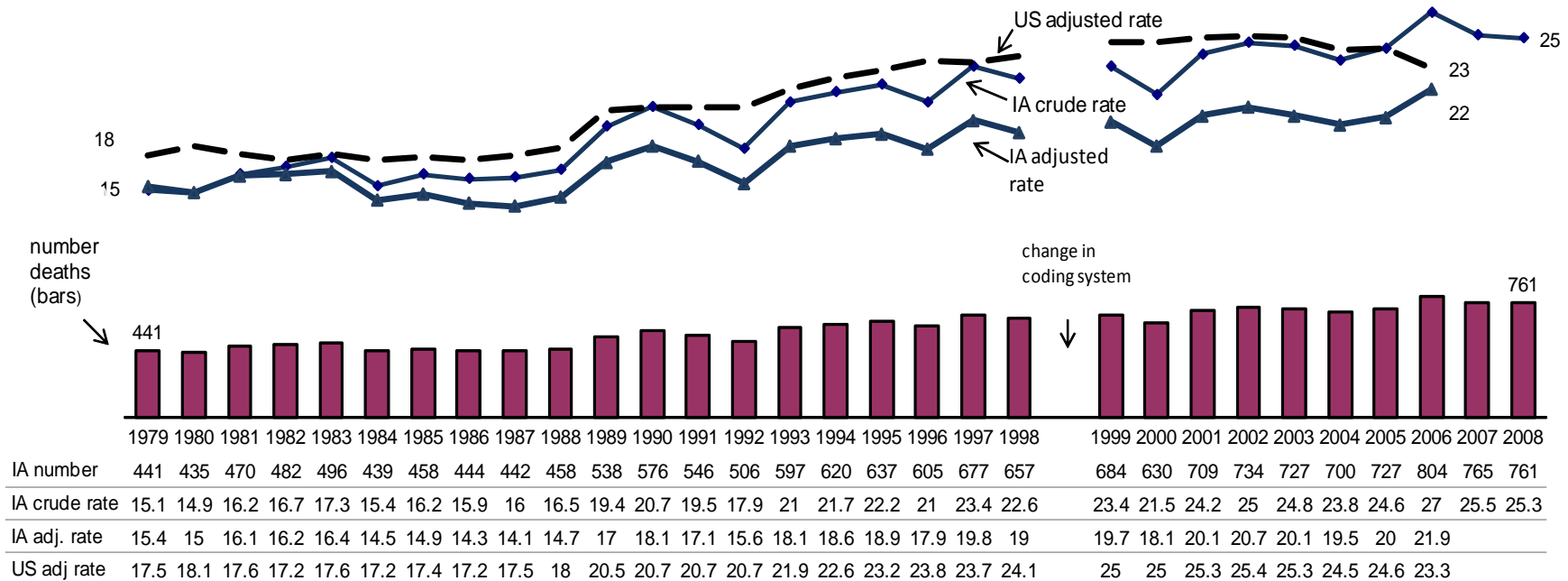
All average annual counts >1 rounded to nearest whole number.

Diabetes was listed as the primary cause of death for 3% (719) of all Iowa resident deaths between 2000-2006.

Diabetes was listed as a secondary or primary cause of death for about 10% (2,666) of all Iowa resident deaths during that time.

*Only about 35% to 40% of Iowans who die with diabetes each year (estimated to be about 6,700) have diabetes listed as either the primary or a secondary cause of death on their death certificates. This due both to underdiagnosis and lack of recording of diagnosed diabetes on death certificates.*

## Trends in rate of death from diabetes, Iowa residents



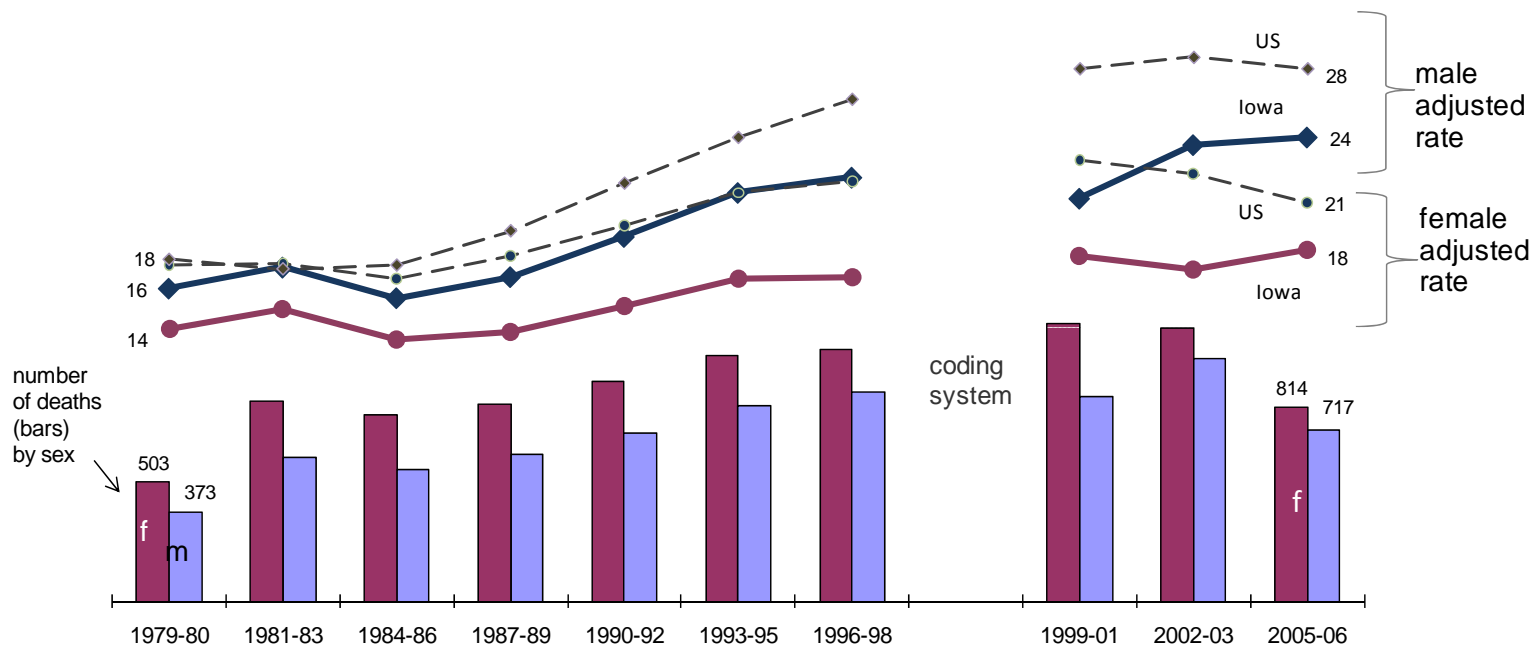
Iowa resident deaths from diabetes (diabetes was the primary (underlying) cause of death), rates and counts, 1979-2008. All rates are per 100,000 population.

National cause of death coding system changed from ICD9 to ICD10 beginning with 1999. Source: <http://www.cdc.wonder> (compressed mortality data)

The age-adjusted mortality rate from diabetes (diabetes listed as primary cause of death on death certificate) increased steadily during the past three decades.

The age-adjusted mortality rate from diabetes was 42% greater in 2006 (21.9/100,000 lowans) than in 1979 (15.4/100,000 lowans). National age-adjusted rates of death from diabetes increased 33% during this time, rising from 17.5/100,000 in 1979 to 23.3/100,000 in 2006.

## Trends in rate of death from diabetes by sex, Iowa residents

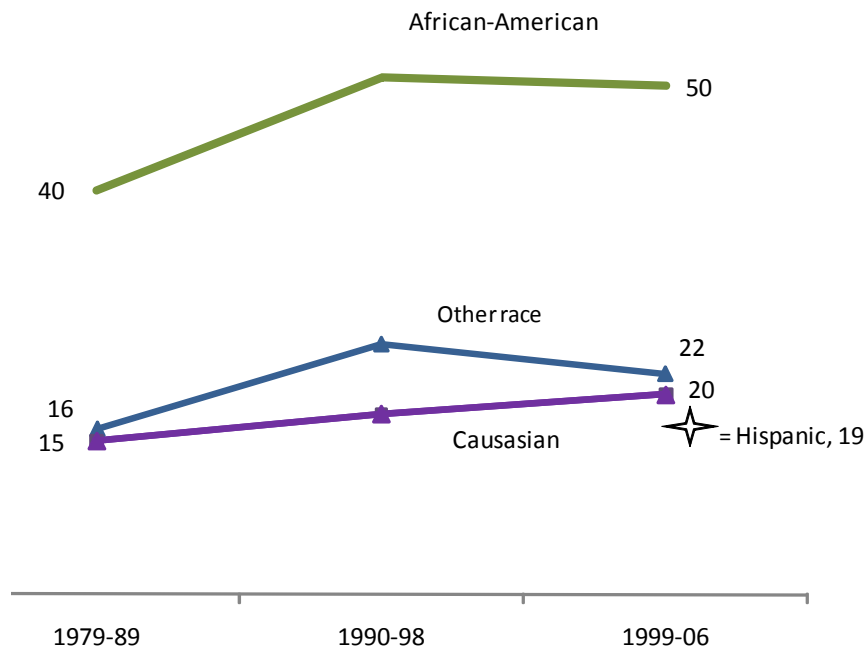


Both the crude and age-adjusted mortality rate from diabetes rose for males and for females between 1979-80 and 2005-06.

The *crude* diabetes rate of death for males rose 87% from 13/1/100,000 to 24.5/100,000, while crude rates for females rose 61% from 16.8/100,000 to 27.1/100,000 population.

The *Age-adjusted* death rates from diabetes rose 56% for males from 17.9/100,000 to 27.9/100,000 and 19% for females from 17.6/100,000 to 20.9/100,000.

## Trends in age-adjusted rate of death from diabetes by race, Iowa residents



Iowa resident deaths from diabetes (diabetes was the primary (underlying) cause of death), rates and counts, 1979-2006. All rates are per 100,000 population.

National cause of death coding system changed from ICD9 to ICD10 beginning with 1999. Source: <http://www.cdc.wonder> (compressed mortality data)

Both the crude and age-adjusted rates of death from diabetes rose for all racial/ethnic groups in Iowa between 1979-89 and 1999-2006.

In 1999-2006, the *crude* rate of death from diabetes was slightly higher among non-Hispanic Caucasians (24.7/100,000) than non-Hispanic African-Americans (23.3/100,000) (not shown).

However, as seen in the chart at left, the *age adjusted* rate for African-Americans was significantly higher than for all other racial and ethnic groups for all three time periods 1979-99, 1990-98 and 1999-2006.

In 1999-2006, the age-adjusted death rate from diabetes (50.1/100,000) for African-Americans was 150% higher than the rate for non-Hispanic Caucasians (19.7/100,000), 130% higher than the age-adjusted death rate for Non-Hispanic Other Races (21.9/100,000), and 170% higher than the age-adjusted death rate for Hispanics (18.9/100,000).

Because of the historically relatively small number of Minorities in Iowa relative to the number of Caucasians, for all of the years 1979-2006, 95% or more of all diabetes related deaths were of Caucasian Iowans (756 of 786 deaths per year during 2006-2007).



This slideshow is based on:  
The Burden of Diabetes in Iowa: Full Report: 1991-2009  
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For further information about the Iowa Diabetes Prevention and Control Program, visit the Web site listed above or call  
Laurene Hendricks , program coordinator, at 515/242-6204.