Report from the National Diabetes Surveillance System:
Diabetes in Canada, 2009

Canada

To promote and protect the health of Canadians through leadership, partnership, innovation and action in public health.

— Public Health Agency of Canada

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Executive Summary

Diabetes

- Diabetes is a chronic condition that stems from the body's inability to produce and/or properly use insulin. The body needs insulin to use sugar as an energy source. Diabetes can lead to serious complications and premature death. However, if someone has diabetes, steps can be taken to control the disease and lower the risk of complications.

National Diabetes Surveillance System (NDSS)

- The NDSS is a collaborative network of provincial and territorial diabetes surveillance systems, supported by the Public Health Agency of Canada. It was created to improve the breadth of information about the burden of diabetes in Canada so that policymakers, researchers, health practitioners, and the general public can make better public and personal health decisions. The NDSS regularly seeks advice from Aboriginal groups, non-governmental organizations, and researchers in order to enhance and interpret the information from the system.

- The NDSS summarized data about residents of Canada who have used the Canadian health care system. If there was sufficient evidence of use due to diabetes it was assumed that a person had diagnosed diabetes. The minimum requirement was at least 1 hospitalization or 2 physician claims, with a diabetes specific code(s), over a 2-year period.

NDSS Highlights

- This report features the most recent data available, fiscal year 2006-07, as well as some trend data back to 2000-01. Data from Nunavut were not available for this report and data from Quebec were not available for certain statistics which are noted in the applicable section.

Prevalence

- The age-standardized prevalence of diagnosed diabetes increased by 21% from 2002-03 to 2006-07.

- Approximately 2 million Canadians aged one and older—6.2% or about 1 in 16 people—were living with diagnosed diabetes in 2006-07; 5.9% of girls/women and 6.6% of boys/men (prevalence).

- Projections indicate that by 2012 almost 2.8 million Canadians will be living with diagnosed diabetes—an estimated annual percent increase of about 6% per year with an overall increase of about 25% from 2007.

- After adjusting for differences in age distributions between provinces and territories, the age-standardized prevalence of diagnosed diabetes was found to be higher in: Newfoundland and Labrador, Nova Scotia, Manitoba, and New Brunswick. Prevalence was lower in the west: Alberta, British Columbia, and Saskatchewan. The prevalence for Ontario was higher than the national average, and for Quebec, prevalence was lower than the national average. The prevalence of obesity, among the provinces and territories, followed a similar pattern; lower in the western provinces than the Canadian average.[1]

Incidence

- In 2006-07, 211,168 individuals were newly diagnosed with diabetes (6.7 individuals per 1,000 population aged 1 and older) 6.1 per 1,000 girls/women and 7.3 per 1,000 boys/men (incidence).

- The age-standardized rate of new diagnoses of diabetes increased almost 9% between 2002-03 and 2006-07. The increase in obesity and increased screening for diabetes are likely contributing to this increase in the number of people newly diagnosed with diabetes.[1]

- The age-standardized prevalence is increasing 3 times faster than the rate of age-standardized incidence rates reflecting the increase in survival of people with diabetes. This is particularly marked among men and women in the 40 to 69 year old age-group.

Mortality Rates[2]

- Among adults aged 20 years and older, mortality rates of individuals with diabetes were twice as high as those for individuals without diabetes.

- Diagnosed diabetes significantly shortens life expectancy for all ages. For example, women with diagnosed diabetes in the 20 to 39 year age groups had about a 9-year reduction in life expectancy, on average, while men had about an 8-year reduction.

Use of Health Services[2]

- Younger adults (aged 20 to 49) with diagnosed diabetes had almost twice as many visits to family physicians, and 3 to 4 times as many visits to specialists than individuals without diabetes.

- Adults with diagnosed diabetes had longer hospital stays than individuals without diabetes. For hospitalized adults with diagnosed diabetes, aged 20 to 29 and 35 to 49 years, the number of hospital days was 5 to 6 times and almost 5 times (respectively) the number of hospital days for adults without diabetes.

- Children and adolescents with diagnosed diabetes had about 5 times as many visits to specialists as those without diabetes.

- Hospitalized children and adolescents with diagnosed diabetes, had about 11 times the number of days in hospital as those without diabetes.

Diabetes and Other Health Problems

- 63% of adults[3] with diabetes (1.3 million) also had a diagnosis of hypertension—3 times more often than those without diabetes.

- Adults[4] with diabetes were hospitalized with selected health problems significantly more often than their counterparts without diabetes with selected health problems:

  – about 3 times more often with ischemic heart disease and with heart attack (a subset of ischemic heart disease);
  – almost 4 times more often with heart failure;
  – about 6 times more often with chronic kidney disease;
  – almost 3 times more often with stroke; and
  – almost 19 times more often with lower limb amputations.

British Columbia[5] First Nations Population

- The age-standardized prevalence of diagnosed diabetes among the First Nations population aged 1 and older was 6.7%—about 40% higher than that of other British Columbia residents.

- Between 2002-03 and 2006-07 age-standardized prevalence of diagnosed diabetes among the First Nations men and women increased by about 15.5%.

Introduction

Diabetes

Diabetes is a chronic condition that stems from the body's inability to produce and/or properly use insulin. The body needs insulin to use sugar as an energy source. Diabetes can lead to serious complications and premature death. However, controlling the disease can lower the risk of complications.

- **Type 1 diabetes** occurs when the beta cells of the pancreas are destroyed by the immune system and no longer produce insulin. Individuals with type 1 diabetes rely on an external supply of insulin for the body to function. Type 1 diabetes usually develops in childhood or adolescence and there is no known way to prevent it.

- **Type 2 diabetes** occurs when the body does not make enough insulin and/or does not respond well to the insulin it makes. People are usually diagnosed with type 2 diabetes after the age of 40, although it is now also being seen in younger adults, as well as children and adolescents.

- **Gestational diabetes** is a form of diabetes that develops in women during pregnancy and typically disappears after delivery. Gestational diabetes occurs in about 4% of all pregnancies, and increases the risk of developing type 2 diabetes.

The risk of developing type 2 diabetes can be reduced by making healthy lifestyle choices, such as having a healthy diet, losing excess weight and exercising regularly. Weight loss of 5% to 10%—about 4.5 to 9 kg (10 to 20 lbs.) for a 90/kg (200/lb.) person—has been shown to significantly reduce risk.

The management of diabetes depends on the type of diabetes and can include lifestyle modification and/or medications, including insulin. Regular physical activity and healthy weight are important factors for effective management of diabetes. Controlling blood glucose, blood pressure and blood lipids are necessary to reduce other diabetes related health problems. Self-management of diabetes is an essential part of overall care. Effective disease management may help prevent or delay many health problems related to diabetes such as cardiovascular disease, kidney failure, blindness, nerve damage, heart attack, and stroke.
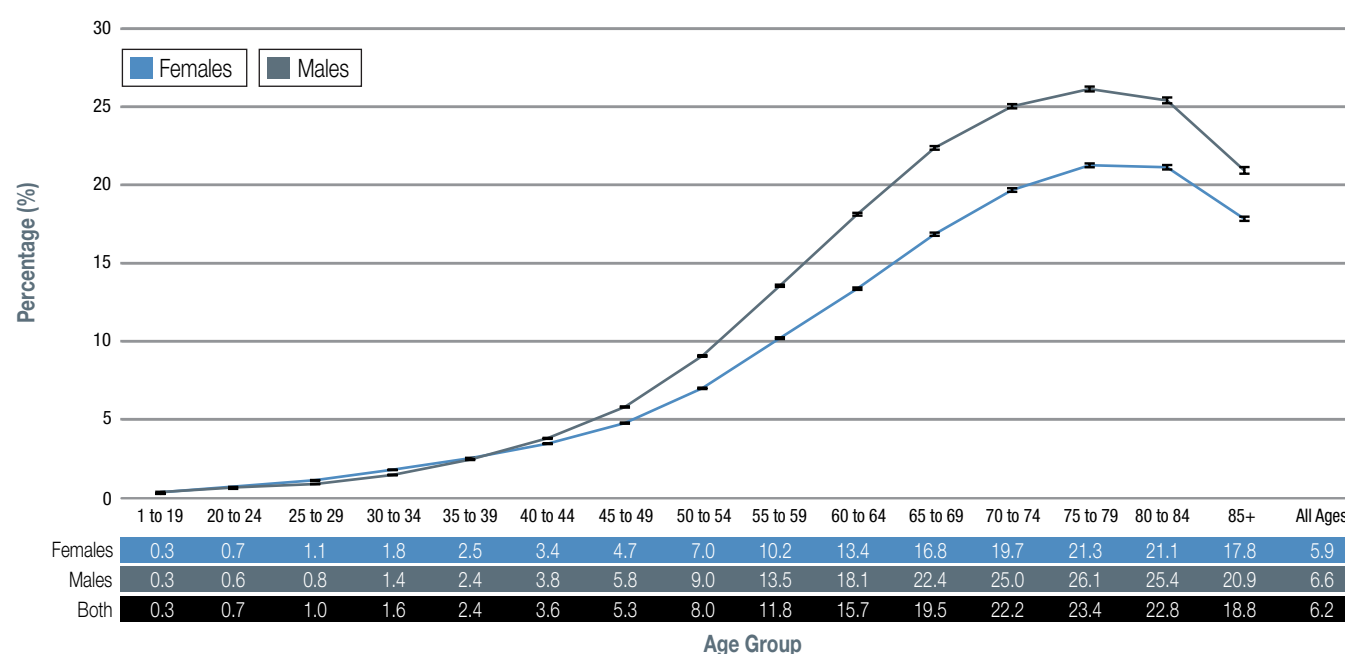
National Diabetes
Surveillance System (NDSS)

- The NDSS is a collaborative network of provincial and territorial diabetes surveillance systems, supported by the Public Health Agency of Canada. It was created to improve the breadth of information about the burden of diabetes in Canada so that policymakers, researchers, health practitioners, and the general public can make better public and personal health decisions. The NDSS regularly seeks advice from Aboriginal groups, non-governmental organizations, and researchers in order to enhance and interpret the information from the system.

- This report features the most recent data available, fiscal year 2006-07, as well as some trend data back to 2000-01. Data from Nunavut were not available for this report and data from Quebec were not available for certain statistics which are noted in the applicable section.

- In each province and territory, the health insurance registry database is linked to the physician billing and hospitalization databases. This surveillance system summarized data about residents of Canada who have used the Canadian health care system. If there was sufficient evidence of use due to diabetes it was assumed that a person had diagnosed diabetes. The minimum requirement was at least 1 hospitalization or 2 physician claims, with a diabetes specific code(s), over a 2-year period. The NDSS case criteria were designed to exclude women with gestational diabetes, because it typically disappears after delivery.

- Using administrative data for surveillance, as in the NDSS, often requires a compromise when trying to identify cases of a disease. It is necessary to balance the possibility of not capturing people who have been diagnosed with diabetes in the NDSS database (false-negatives) with the reverse where people who do not have diabetes have been captured by the NDSS using the case criteria (false-positives). Validation studies have indicated that the NDSS case criteria minimize both false-negatives and false-positives in order to depict a relatively accurate picture of diagnosed diabetes in Canada. The database does miss the people who have diabetes but have not yet been diagnosed with the condition.

- Type 1 and Type 2 diabetes represent about 5-10% and 90-95%, respectively, of the total population living with diabetes.[6] It is not possible with the current dataset to distinguish between diabetes type 1 and 2 due to limitations of the physician billing data and the hospital discharge abstract data. Therefore, it is assumed that the NDSS database reflects the same proportion of type 1 and type 2 diabetes.

- Recent changes to the coding procedures for hospitalization data may benefit the system in the future. For example, in the latest version of the International Classification of Disease (ICD) coding system (ICD-10-CA) used by hospitals to record the details of hospitalizations, separate codes for type 1 and type 2 diabetes are provided. It is anticipated that as ICD-10-CA coded hospital data are accumulated and validated, it will be possible to analyze and report rates associated with hospitalization stratified by diabetes type. Also, beginning with the 2006-07 data, the Canadian Coding Standards for ICD-10-CA and CCI, 2009[7] mandated that all provinces and territories include any information about patients with diabetes in their hospitalization data. This new practice could enable the NDSS to identify more people with diabetes, and find them earlier, from the hospitalization data. This situation will be monitored to determine the effect and magnitude on the data collected by the surveillance system.

2006-07 Findings

People with Diagnosed Diabetes (Prevalence)

- In 2006-07, after adjusting for changes in the age distribution, the age-standardized prevalence of diagnosed diabetes increased by 4% from the previous year, and by 21% from 2002-03 to 2006-07 **(Table 1 and Figure 2)**.

- Approximately 2 million Canadians aged 1 and older, or about 1 in 16, had diagnosed diabetes (2,086,212 overall—993,805 among girls/women and 1,092,407 among boys/men) **(Table 1)**.

- The prevalence of diagnosed diabetes among Canadians was 6.2% overall (5.9% of girls/women and 6.6% of boys/men) **(Tables 1 and 2)**.

- As anticipated, the prevalence of diagnosed diabetes was significantly lower among children and adolescents (0.3%) than adults (6.4%). The prevalence increased with age among adults from about 2% among individuals in their 30's to about 23%, or 1 in 5, adults aged 75 to 79 years **(Table 1, Figures 1 and 3)**.

- After adjusting for differences in age distributions between provinces and territories, the age-standardized prevalence of diagnosed diabetes was found to be higher in: Newfoundland and Labrador, Nova Scotia, Manitoba, and New Brunswick. Prevalence was lower in the west: Alberta, British Columbia, and Saskatchewan. The prevalence for Ontario was higher than the national average, and for Quebec, prevalence was lower than the national average. For Quebec, prevalence was lower than the national average. The prevalence of obesity, among the provinces and territories, followed a similar pattern; lower in the western provinces than the Canadian average **(Figure 3)**.[1]

Figure 1. Prevalence Percentages of Diagnosed Diabetes among People Aged 1 Year and Older by Age Group and Sex, Canada,[1] 2006-07

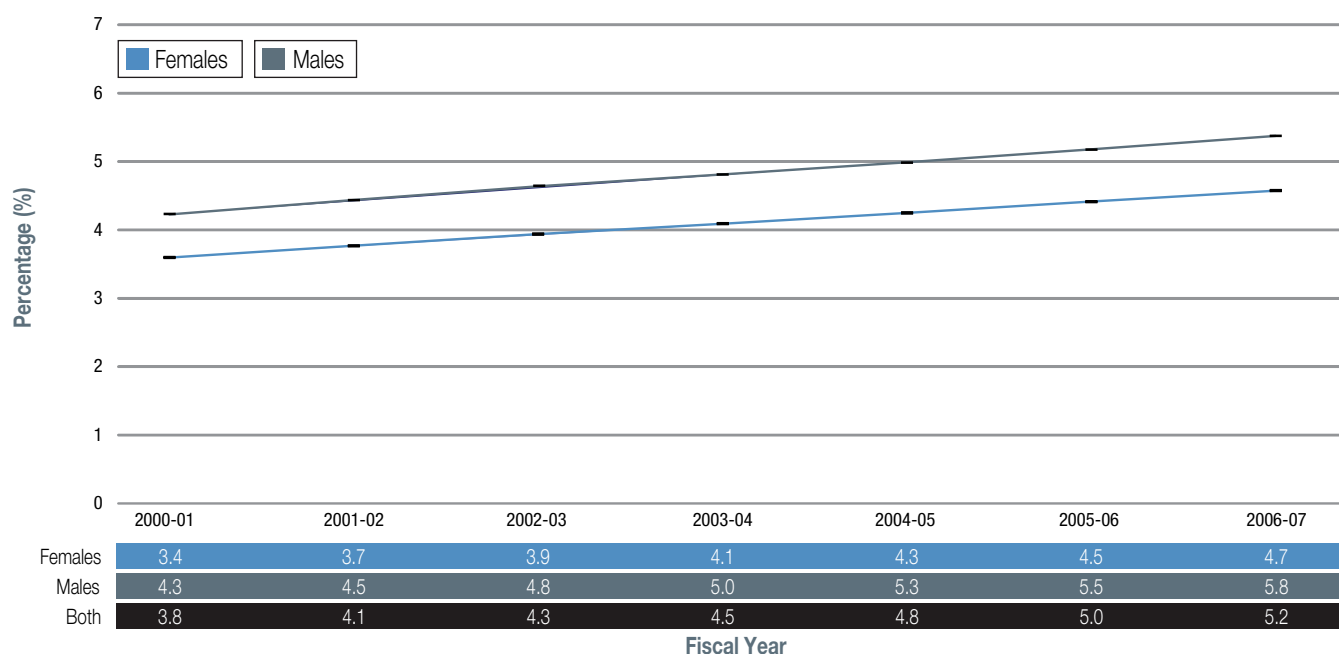|	1 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85+	All Ages
Females	0.3	0.7	1.1	1.8	2.5	3.4	4.7	7.0	10.2	13.4	16.8	19.7	21.3	21.1	17.8	5.9
Males	0.3	0.6	0.8	1.4	2.4	3.8	5.8	9.0	13.5	18.1	22.4	25.0	26.1	25.4	20.9	6.6
Both	0.3	0.7	1.0	1.6	2.4	3.6	5.3	8.0	11.8	15.7	19.5	22.2	23.4	22.8	18.8	6.2

Age Group

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Data for Nunavut were unavailable.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true prevalence rate 19 times out of 20.

Figure 2. Age-Standardized Prevalence Percentages[1] of Diagnosed Diabetes among People Aged 1 Year and Older, by Sex, Canada,[2] 2000-01 to 2006-07

Fiscal Year	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Females	3.4	3.7	3.9	4.1	4.3	4.5	4.7
Males	4.3	4.5	4.8	5.0	5.3	5.5	5.8
Both	3.8	4.1	4.3	4.5	4.8	5.0	5.2

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Age-standardized to the 1991 Canadian population. [2] Data for Nunavut were unavailable.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true prevalence rate 19 times out of 20.

Figure 3. Age-Standardized Prevalence Percentages[1] of Diagnosed Diabetes among People Aged 1 Year and Older, by Sex, Province and Territory, Canada,[2] 2006-07

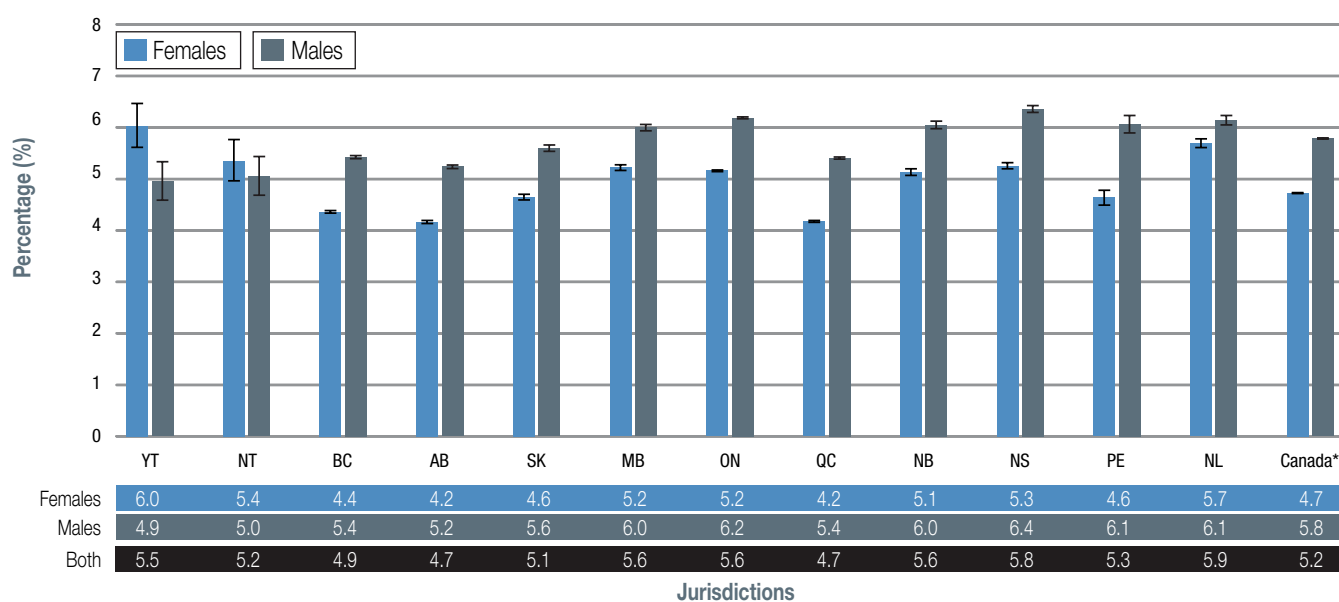| Jurisdictions	YT	NT	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	Canada*
Females	6.0	5.4	4.4	4.2	4.6	5.2	5.2	4.2	5.1	5.3	4.6	5.7	4.7
Males	4.9	5.0	5.4	5.2	5.6	6.0	6.2	5.4	6.0	6.4	6.1	6.1	5.8
Both	5.5	5.2	4.9	4.7	5.1	5.6	5.6	4.7	5.6	5.8	5.3	5.9	5.2

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Age-standardized to the 1991 Canadian population. [2] Data for Nunavut were unavailable.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true prevalence rate 19 times out of 20.
YT: Yukon, NT: Northwest Territories, BC: British Columbia, AB: Alberta, SK: Saskatchewan, MB: Manitoba, ON: Ontario, QC: Quebec, NB: New Brunswick,
NS: Nova Scotia, PE: Prince Edward Island, NL: Newfoundland and Labrador

Table 1. Prevalence Percentages, Number of Cases, and Incidence Rates per 1,000 of Diagnosed Diabetes by Age Group, Year, and Sex, Canada,* 2002-03 to 2006-07

Diagnosed Diabetes among Adults Aged 20 and Older

Crude Prevalence (Adults with Diagnosed Diabetes) Percentages, Cases and Populations

	2002-03			2003-04			2004-05			2005-06			2006-07		
	Women	Men	Total*	Women	Men	Total*	Women	Men	Total*	Women	Men	Total*	Women	Men	Total*
%	6.0	6.8	6.4	6.3	7.2	6.8	6.7	7.6	7.2	7.1	8.1	7.6	7.5	8.6	8.0
cases	734,932	805,069	1,540,001	790,679	866,603	1,657,282	850,277	931,602	1,781,879	914,258	1,001,914	1,916,172	982,241	1,079,754	2,061,995
pop	12,341,930	11,792,606	24,134,536	12,537,082	11,996,925	24,534,007	12,729,881	12,189,561	24,919,442	12,930,898	12,387,986	25,318,884	13,152,159	12,601,762	25,753,921

Crude Incidence (Adults with Newly Diagnosed Diabetes) Rates per 1,000 People, Cases and Populations

	2002-03			2003-04			2004-05			2005-06			2006-07		
	Women	Men	Total*	Women	Men	Total*	Women	Men	Total*	Women	Men	Total*	Women	Men	Total*
1,000	7.1	8.5	7.8	7.0	8.2	7.6	7.3	8.6	7.9	7.6	9.0	8.3	7.9	9.6	8.7
cases	83,403	94,233	177,636	82,188	91,790	173,978	87,667	97,284	184,951	92,419	103,224	195,643	96,713	111,191	207,904
pop	11,690,401	11,081,770	22,772,171	11,828,591	11,222,112	23,050,703	11,967,271	11,355,243	23,322,514	12,109,059	11,489,296	23,598,355	12,266,631	11,633,199	23,899,830

Diagnosed Diabetes among Children, Aged 1 Year to 19

Crude Prevalence (Children and Adolescents with Diagnosed Diabetes) Percentages, Cases and Populations

	2002-03			2003-04			2004-05			2005-06			2006-07		
	Girls	Boys	Total*	Girls	Boys	Total*	Girls	Boys	Total*	Girls	Boys	Total*	Girls	Boys	Total*
%	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
cases	9,954	10,873	20,827	10,470	11,385	21,855	10,887	11,798	22,685	11,216	12,233	23,449	11,564	12,653	24,217
pop	3,790,661	3,989,667	7,780,328	3,779,267	3,976,342	7,755,609	3,767,099	3,962,531	7,729,630	3,760,553	3,955,205	7,715,758	3,758,650	3,952,951	7,711,601

Crude Incidence (Children and Adolescents with Newly Diagnosed Diabetes) Rates per 1,000 People, Cases and Populations

	2002-03			2003-04			2004-05			2005-06			2006-07		
	Girls	Boys	Total*	Girls	Boys	Total*	Girls	Boys	Total*	Girls	Boys	Total*	Girls	Boys	Total*
1,000	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
cases	1,543	1,639	3,182	1,593	1,650	3,243	1,518	1,621	3,139	1,521	1,690	3,211	1,582	1,682	3,264
pop	3,782,250	3,980,433	7,762,683	3,770,390	3,966,607	7,736,997	3,757,730	3,952,354	7,710,084	3,750,858	3,944,662	7,695,520	3,748,668	3,941,980	7,690,648

Diagnosed Diabetes among People Aged 1 Year and Older

Crude Prevalence (People With Diagnosed Diabetes) Percentages, Cases and Populations for Canada

	2002-03			2003-04			2004-05			2005-06			2006-07		
	Females	Males	Canada*	Females	Males	Canada*	Females	Males	Canada*	Females	Males	Canada*	Females	Males	Canada*
%	4.6	5.2	4.9	4.9	5.5	5.2	5.2	5.8	5.5	5.5	6.2	5.9	5.9	6.6	6.2
cases	744,886	815,942	1,560,828	801,149	877,988	1,679,137	861,164	943,400	1,804,564	925,474	1,014,147	1,939,621	993,805	1,092,407	2,086,212
pop	16,132,591	15,782,273	31,914,864	16,316,349	15,973,267	32,289,616	16,496,980	16,152,092	32,649,072	16,691,451	16,343,191	33,034,642	16,910,809	16,554,713	33,465,522

Crude Incidence (People With Newly Diagnosed Diabetes) Rates per 1,000 People, Cases and Populations for Canada

	2002-03			2003-04			2004-05			2005-06			2006-07		
	Females	Males	Canada*	Females	Males	Canada*	Females	Males	Canada*	Females	Males	Canada*	Females	Males	Canada*
1,000	5.5	6.4	5.9	5.4	6.2	5.8	5.7	6.5	6.1	5.9	6.8	6.4	6.1	7.3	6.7
cases	84,946	95,872	180,818	83,781	93,440	177,221	89,185	98,905	188,090	93,940	104,914	198,854	98,295	112,873	211,168
pop	15,472,651	15,062,203	30,534,854	15,598,981	15,188,719	30,787,700	15,725,001	15,307,597	31,032,598	15,859,917	15,433,958	31,293,875	16,015,299	15,575,179	31,590,478

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
*Data for Nunavut were unavailable.

Table 2. Prevalence Percentages, Incidence Rates, and Number of Cases of Diagnosed Diabetes, by Sex and Age Group, Canada,* 2006-07

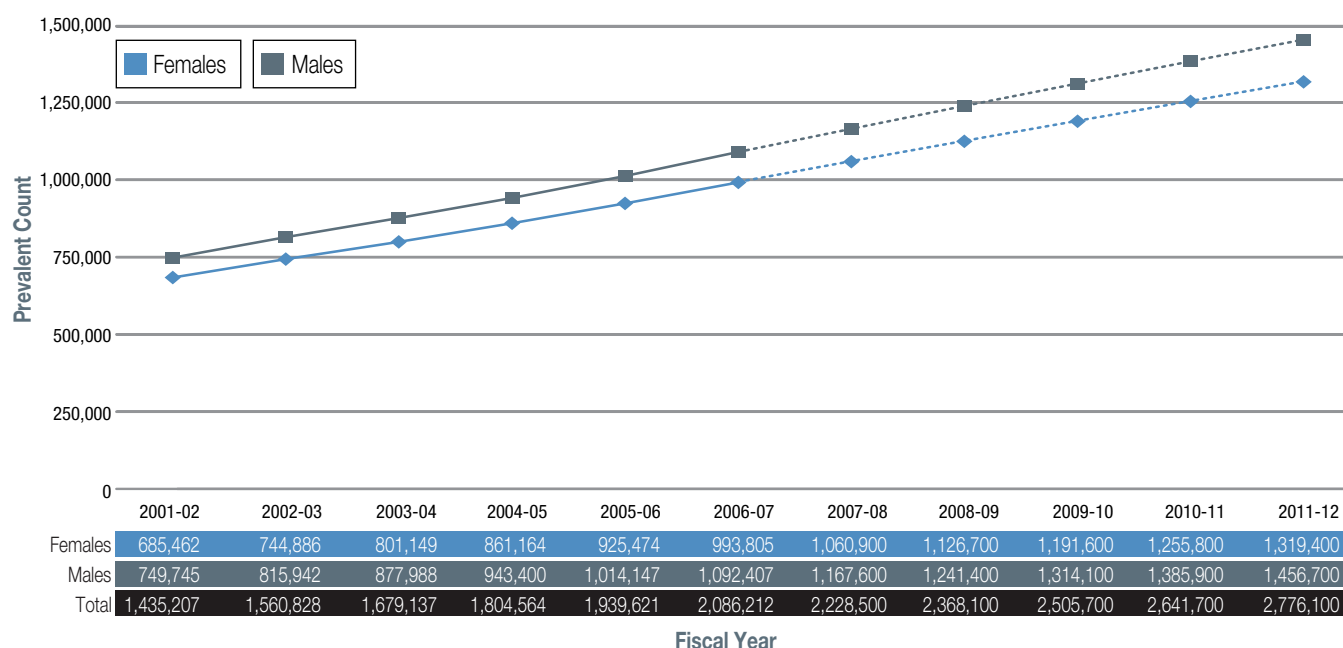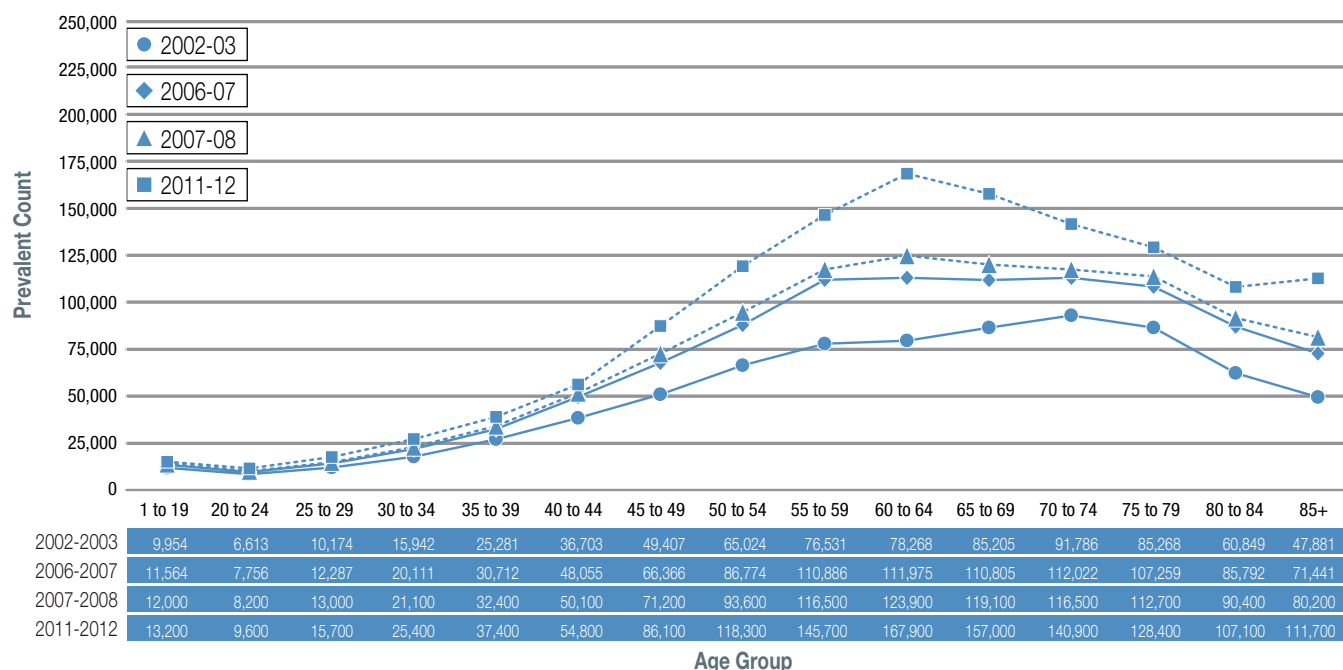| Age Group		Prevalence (%)			Incidence (per 1,000)		
		Females	Males	Canada*	Females	Males	Canada*
1-19	Crude Rates	0.3	0.3	0.3	0.4	0.4	0.4
	Cases	11,564	12,653	24,217	1,582	1,682	3,264
	Population	3,758,650	3,952,951	7,711,601	3,748,668	3,941,980	7,690,648
20-24	Crude Rates	0.7	0.6	0.7	0.8	0.6	0.7
	Cases	7,756	7,233	14,989	924	727	1,651
	Population	1,118,706	1,154,031	2,272,737	1,111,874	1,147,525	2,259,399
25-29	Crude Rates	1.1	0.8	1	1.4	1.1	1.3
	Cases	12,287	9,487	21,774	1,632	1,195	2,827
	Population	1,136,351	1,131,680	2,268,031	1,125,696	1,123,388	2,249,084
30-34	Crude Rates	1.7	1.4	1.6	2.4	2.2	2.3
	Cases	20,111	16,242	36,353	2,715	2,511	5,226
	Population	1,149,220	1,144,965	2,294,185	1,131,824	1,131,234	2,263,058
35-39	Crude Rates	2.5	2.4	2.4	3.2	3.8	3.5
	Cases	30,712	29,764	60,476	3,867	4,665	8,532
	Population	1,231,521	1,237,898	2,469,419	1,204,676	1,212,799	2,417,475
40-44	Crude Rates	3.4	3.8	3.6	4.4	5.8	5.1
	Cases	48,055	53,511	101,566	6,028	7,940	13,968
	Population	1,404,160	1,419,310	2,823,470	1,362,133	1,373,739	2,735,872
45-49	Crude Rates	4.7	5.8	5.3	6.2	8.5	7.3
	Cases	66,366	81,059	147,425	8,279	11,288	19,567
	Population	1,400,517	1,404,849	2,805,366	1,342,430	1,335,078	2,677,508
50-54	Crude Rates	7	9	8	9	12.3	10.6
	Cases	86,774	111,594	198,368	10,530	13,950	24,480
	Population	1,244,669	1,234,522	2,479,191	1,168,425	1,136,878	2,305,303
55-59	Crude Rates	10.2	13.5	11.8	12.6	17.2	14.8
	Cases	110,886	145,642	256,528	12,454	16,242	28,696
	Population	1,089,324	1,075,714	2,165,038	990,892	946,314	1,937,206
60-64	Crude Rates	13.4	18.1	15.7	15.3	21.4	18.2
	Cases	111,975	148,467	260,442	11,288	14,663	25,951
	Population	838,580	819,559	1,658,139	737,893	685,755	1,423,648
65-69	Crude Rates	16.8	22.4	19.5	18.8	25.7	22
	Cases	110,805	138,108	248,913	10,464	12,631	23,095
	Population	657,957	617,542	1,275,499	557,616	492,065	1,049,681
70-74	Crude Rates	19.7	25	22.2	20.1	26.2	22.9
	Cases	112,022	127,253	239,275	9,367	10,259	19,626
	Population	569,572	508,323	1,077,895	466,917	391,329	858,246
75-79	Crude Rates	21.3	26.1	23.4	20.1	24.9	22.1
	Cases	107,259	105,468	212,727	8,138	7,614	15,752
	Population	504,721	403,535	908,256	405,600	305,681	711,281
80-84	Crude Rates	21.1	25.4	22.8	18.6	23.6	20.5
	Cases	85,792	66,850	152,642	6,076	4,741	10,817
	Population	406,117	263,105	669,222	326,401	200,996	527,397
85+	Crude Rates	17.8	20.9	18.8	14.8	18.4	15.9
	Cases	71,441	39,076	110,517	4,951	2,765	7,716
	Population	400,744	186,729	587,473	334,254	150,418	484,672
Canada	Crude Rates	5.9	6.6	6.2	6.1	7.2	6.7
	Cases	993,805	1,092,407	2,086,212	98,295	112,873	211,168
	Population	16,910,809	16,554,713	33,465,522	16,015,299	15,575,179	31,590,478

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
*Data for Nunavut were unavailable.

Forecasted Prevalence[8]

- By 2012, the number of Canadians aged 1 and older with diagnosed diabetes is expected to be almost 2.8 million—an estimated annual percent increase of 6% and an increase of 25% from 2007 **(Figure 4)**.

- By 2012, 1 in 3 people with diabetes (38%) will be in the 55 to 69 year age range, due to the increased risk of developing diabetes over age 40 **(Figures 5 and 6)**. The risk of developing diabetes over age 40 will increase as the baby boom generation enters the older age groups and prevalence of obesity in these age groups continues to rise.[1]

- By 2012, almost 28,000 children and adolescents will be living with type 1 or 2 diagnosed diabetes—an overall increase of about 10% from 2007 **(Figures 5 and 6)**.

Figure 4. Observed and Projected Number of Prevalent Cases of Diagnosed Diabetes among People Aged 1 Year and Older, by Sex, Canada,[1] Observed: 2001-02 to 2006-07 and Projected: 2007-08 to 2011-12[2]

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Females	685,462	744,886	801,149	861,164	925,474	993,805	1,060,900	1,126,700	1,191,600	1,255,800	1,319,400
Males	749,745	815,942	877,988	943,400	1,014,147	1,092,407	1,167,600	1,241,400	1,314,100	1,385,900	1,456,700
Total	1,435,207	1,560,828	1,679,137	1,804,564	1,939,621	2,086,212	2,228,500	2,368,100	2,505,700	2,641,700	2,776,100

Fiscal Year

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Data for Nunavut were unavailable. Canadian average mortality rates replaced the mortality rates for Quebec. [2] Counts were rounded to the nearest 100.
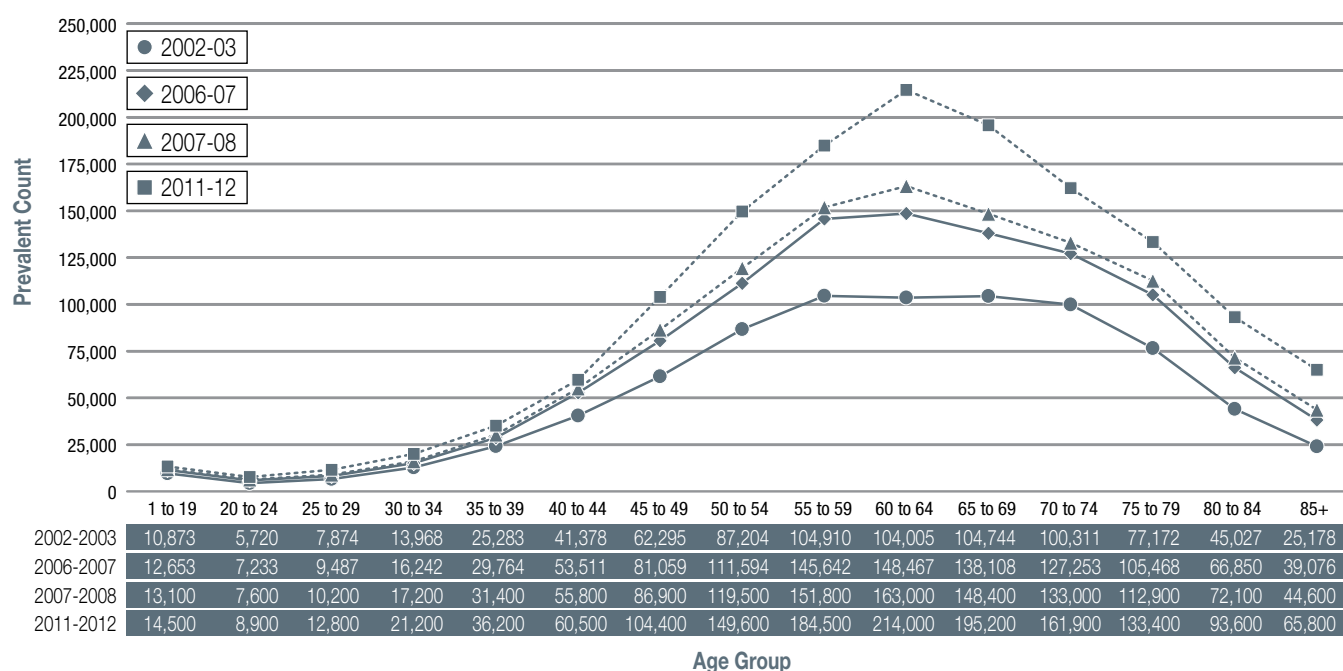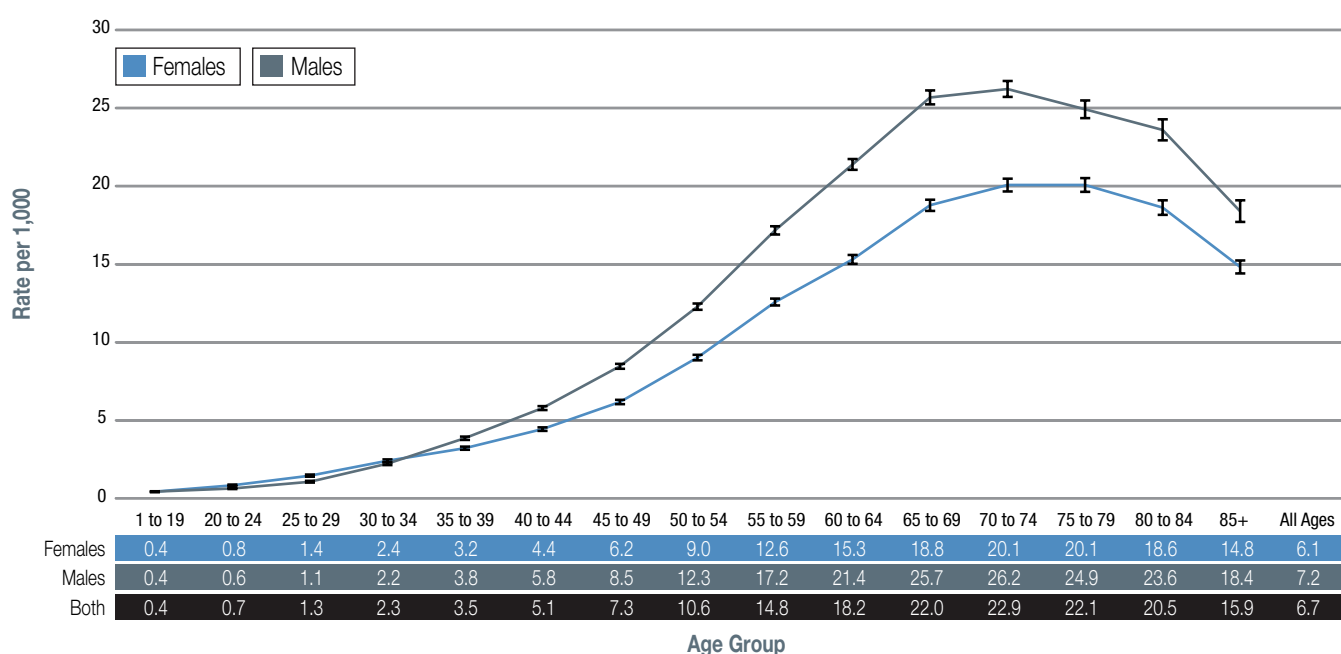
Figure 5. Observed and Projected Number Prevalent of Cases of Diagnosed Diabetes among Girls and Women Aged 1 Year and Older, by Age Group, Canada,[1] Observed: 2002-03, 2006-07 and Projected: 2007-08, 2011-12[2]

	1 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85+
2002-2003	9,954	6,613	10,174	15,942	25,281	36,703	49,407	65,024	76,531	78,268	85,205	91,786	85,268	60,849	47,881
2006-2007	11,564	7,756	12,287	20,111	30,712	48,055	66,366	86,774	110,886	111,975	110,805	112,022	107,259	85,792	71,441
2007-2008	12,000	8,200	13,000	21,100	32,400	50,100	71,200	93,600	116,500	123,900	119,100	116,500	112,700	90,400	80,200
2011-2012	13,200	9,600	15,700	25,400	37,400	54,800	86,100	118,300	145,700	167,900	157,000	140,900	128,400	107,100	111,700

Age Group

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Data for Nunavut were unavailable. Canadian average mortality rates replaced the mortality rates for Quebec. [2] Counts were rounded to the nearest 100.

Figure 6. Observed and Projected Number of Prevalent Cases of Diagnosed Diabetes among Boys and Men Aged 1 Year and Older, by Age Group, Canada,[1] Observed: 2002-03, 2006-07 and Projected: 2007-08, 2011-12[2]

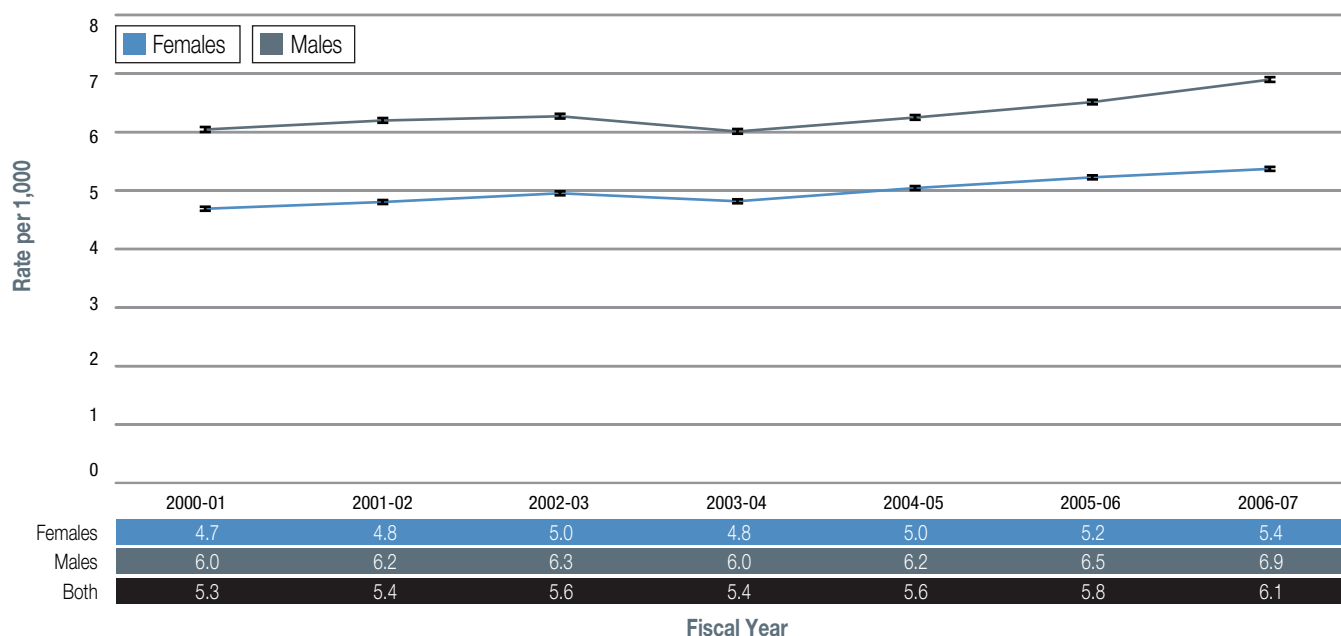|	1 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85+
2002-2003	10,873	5,720	7,874	13,968	25,283	41,378	62,295	87,204	104,910	104,005	104,744	100,311	77,172	45,027	25,178
2006-2007	12,653	7,233	9,487	16,242	29,764	53,511	81,059	111,594	145,642	148,467	138,108	127,253	105,468	66,850	39,076
2007-2008	13,100	7,600	10,200	17,200	31,400	55,800	86,900	119,500	151,800	163,000	148,400	133,000	112,900	72,100	44,600
2011-2012	14,500	8,900	12,800	21,200	36,200	60,500	104,400	149,600	184,500	214,000	195,200	161,900	133,400	93,600	65,800

Age Group

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Data for Nunavut were unavailable. Canadian average mortality rates replaced the mortality rates for Quebec. [2] Counts were rounded to the nearest 100.

People with Newly Diagnosed Diabetes (Incidence)

- 211,168 individuals aged 1 and up were newly diagnosed with diabetes in 2006-07—a rate of 6.7 per 1,000 population aged 1 and older—6.1 per 1,000 among girls/women and 7.3 per 1,000 boys/men **(Tables 1, 2, and Figure 7)** (incidence).

- Incidence rates of diagnosed diabetes were significantly lower for children and adolescents (0.4 per 1,000) than for adults (8.7 per 1,000). The rates rose steeply after age 45 and peaked among both men and women in the 70 to 74 year age group **(Figure 7)**.

- The incidence rates (0.4 per 1,000) of type 1 and 2 diagnosed diabetes, among children and adolescents, have remained stable between 2004-05 to 2006-07, while the incidence has increased from about 3,140 to 3,260 children and adolescents, during the same time period **(Table 1)**.

- The incidence rates of diagnosed diabetes were significantly higher among men than women over age 40, but the rates were higher for women of child-bearing age.

- The age-standardized incidence rates of new diagnoses of diabetes increased almost 9% between 2002-03 and 2006-07 **(Figure 8)**. The rise in obesity and increased screening for diabetes are likely contributing to the rise in the number of people newly diagnosed with diabetes.[1] The increase in the number of people newly diagnosed (incidence) with diabetes is contributing to the growth in the number of people in the population with diagnosed diabetes (prevalence), but this is not the only contributing factor. The age-standardized prevalence is increasing 3 times faster than the rate of age-standardized incidence rates, reflecting the added survival of people with diabetes.

Figure 7. Incidence Rates of Diagnosed Diabetes among People Aged 1 Year and Older, by Age Group and Sex, Canada,[1] 2006-07

	1 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85+	All Ages
Females	0.4	0.8	1.4	2.4	3.2	4.4	6.2	9.0	12.6	15.3	18.8	20.1	20.1	18.6	14.8	6.1
Males	0.4	0.6	1.1	2.2	3.8	5.8	8.5	12.3	17.2	21.4	25.7	26.2	24.9	23.6	18.4	7.2
Both	0.4	0.7	1.3	2.3	3.5	5.1	7.3	10.6	14.8	18.2	22.0	22.9	22.1	20.5	15.9	6.7

Age Group

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Data for Nunavut were unavailable.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true incidence rate 19 times out of 20.
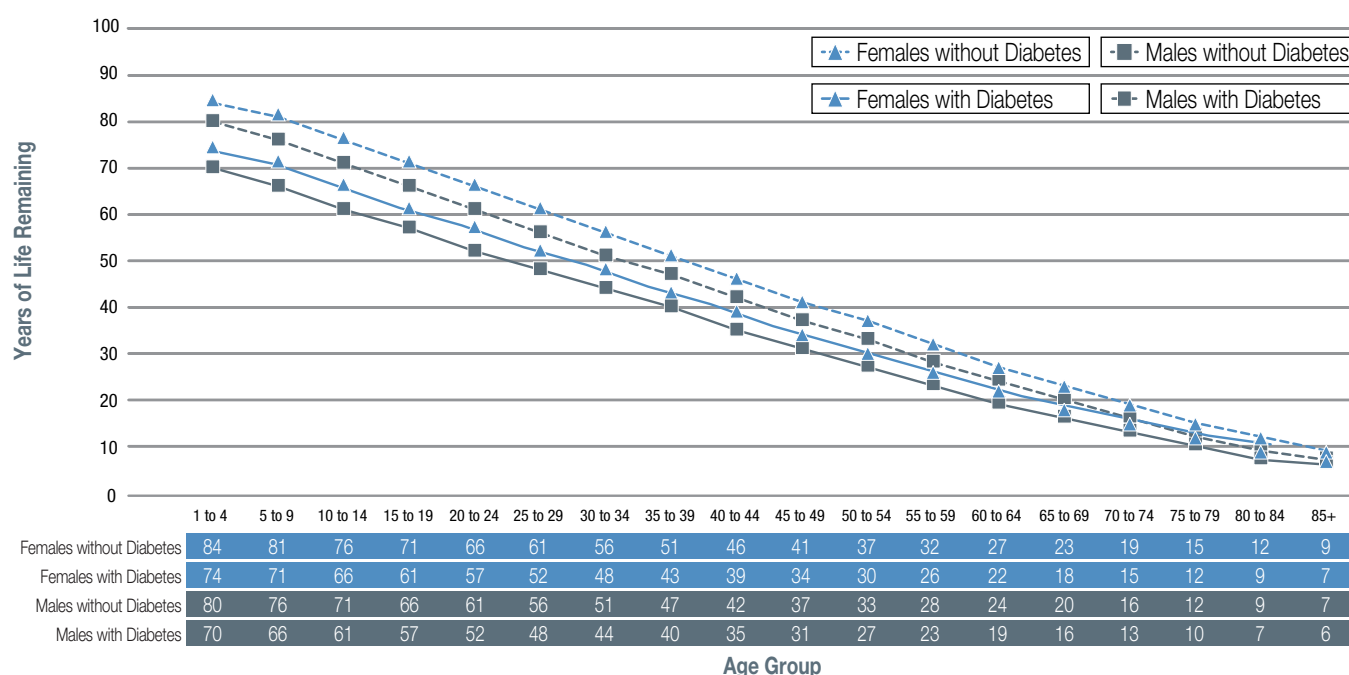
- For women aged 30 to 69 and men aged 40 to 69, the incidence rates for diagnosed diabetes were higher than the all-cause mortality rates among men and women with diagnosed diabetes in the same age groups **(Figures 7 and 9)**. If this pattern continues, the prevalence for diagnosed diabetes will continue to rise.

Figure 8. Age-Standardized Incidence Rates[1] of Diagnosed Diabetes among People Aged 1 Year and Older, by Sex, Canada,[2] 2000-01 to 2006-07

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Females	4.7	4.8	5.0	4.8	5.0	5.2	5.4
Males	6.0	6.2	6.3	6.0	6.2	6.5	6.9
Both	5.3	5.4	5.6	5.4	5.6	5.8	6.1

Fiscal Year

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Age-standardized to the 1991 Canadian population. [2] Data for Nunavut were unavailable.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true incidence rate 19 times out of 20.

Mortality Rates[2]

- Overall mortality rates were twice as high for individuals with diabetes compared to individuals without diabetes.

- The differences in mortality rates for people with and without diabetes were higher for the younger age groups. The mortality rates were 4 to 6 times higher than those without diabetes for adults aged 20 to 44. While for adults aged 45 to 79, the rates were 2 to 3 times higher for individuals with diabetes **(Figure 9)**.

- Diabetes significantly shortens life expectancy for all ages. For, the 20 to 39 year age groups, women with diagnosed diabetes had, on average, about a 9-year reduction in life expectancy, while men had about an 8-year reduction **(Figure 10)**.

- Both girls and boys with diagnosed diabetes in the 1 to 19 year age groups had about a 10-year reduction in life expectancy **(Figure 10)**. This is likely an underestimation, as studies in the United States showed that having type 1 diabetes reduced the life expectancy by about 15 years.[9]

Figure 9. **All-Cause Death Rates and Rate Ratios among Men and Women Aged 20 Years and Older with Diagnosed Diabetes Compared to those without Diagnosed Diabetes, Canada,[1] 2006-07**
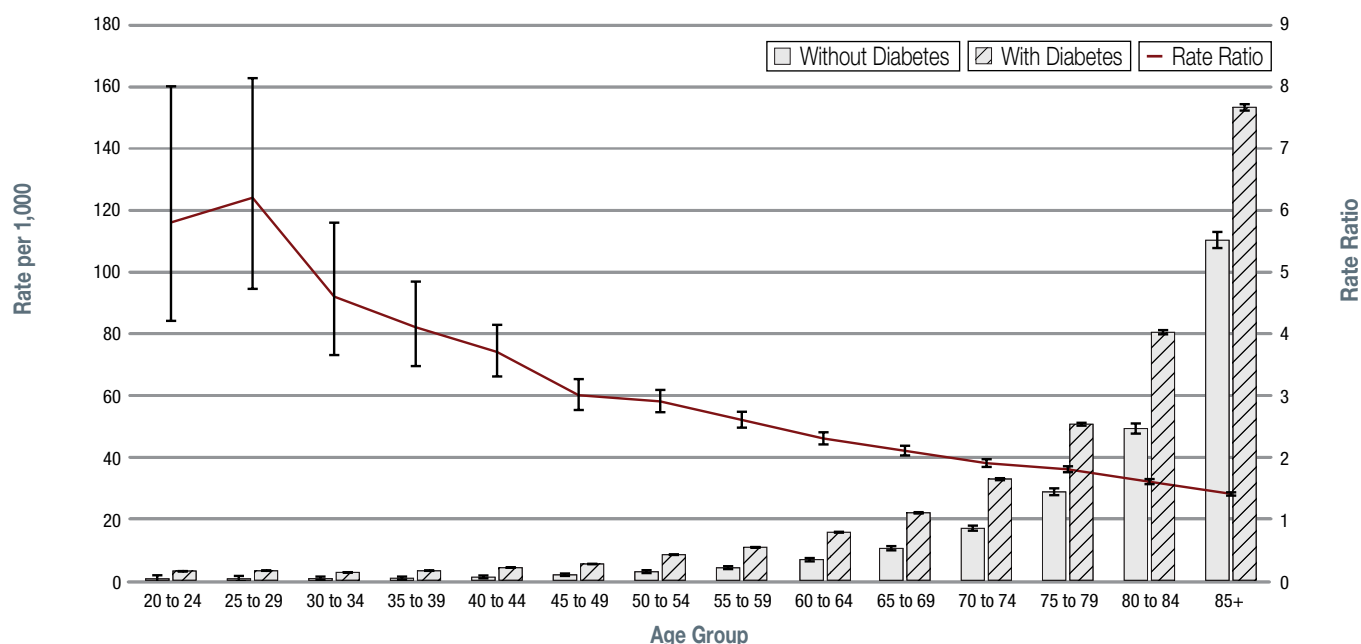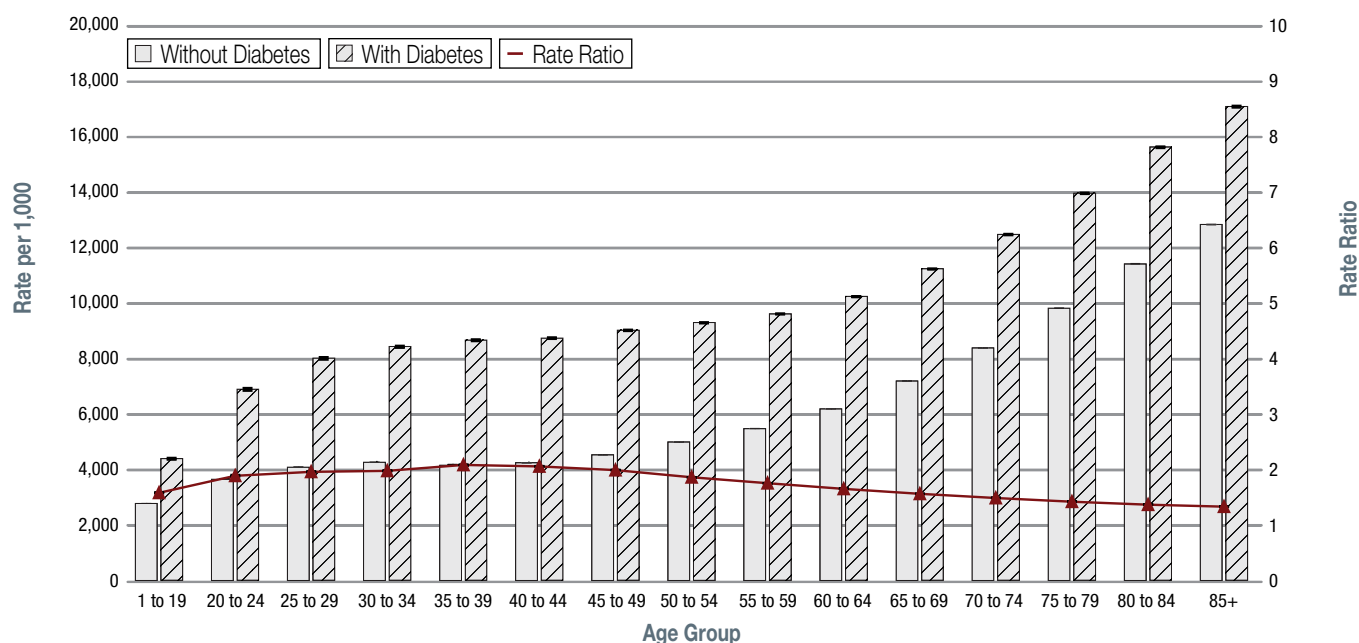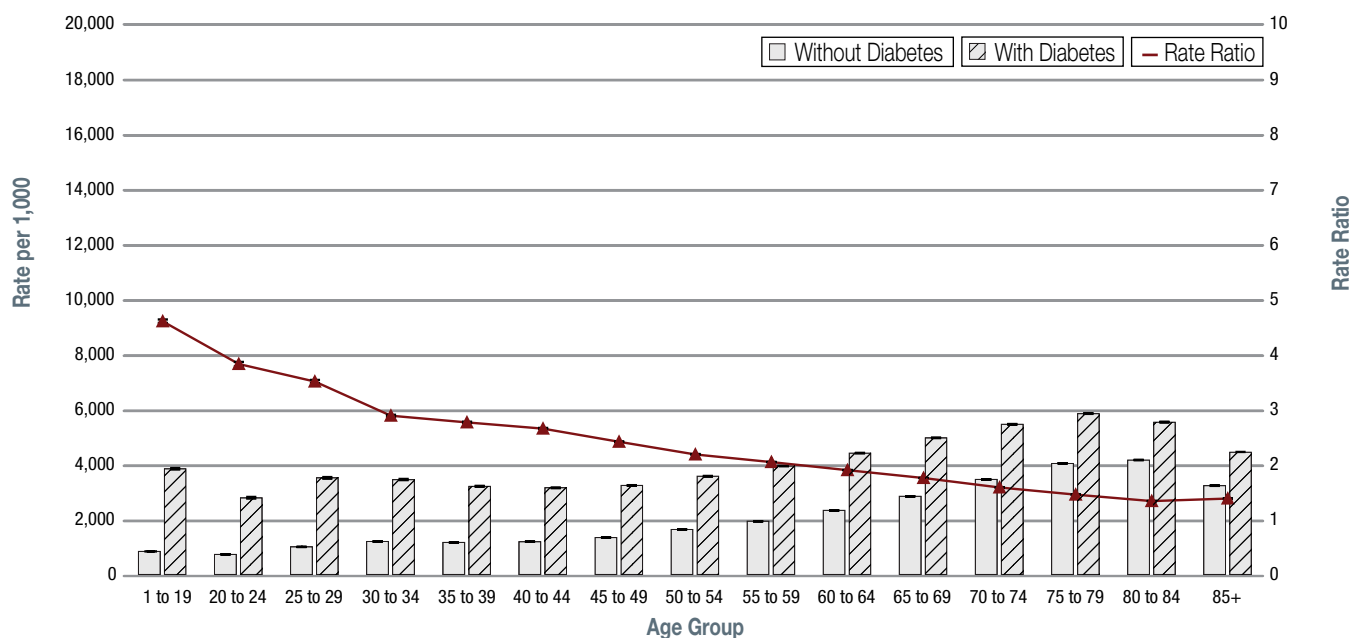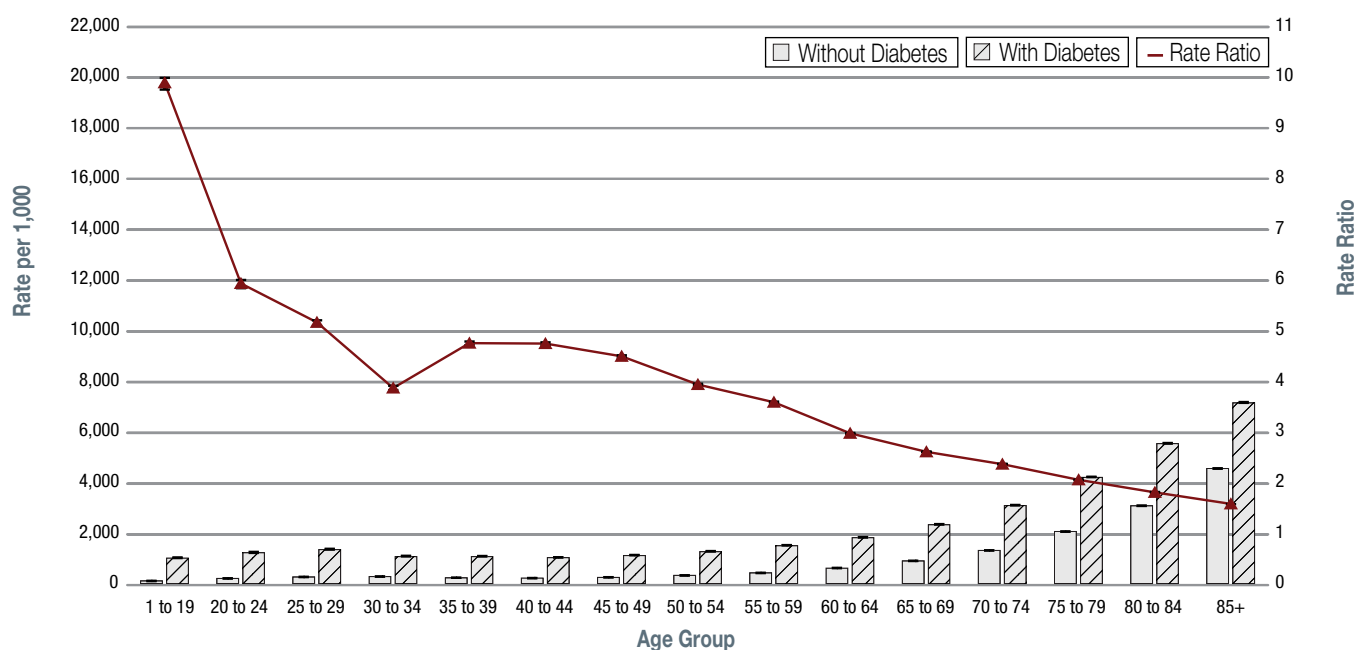

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Data for Quebec and Nunavut were excluded.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true death ratio 19 times out of 20.

Figure 10. **Years of Life Remaining for People with Diagnosed Diabetes Compared to Those without Diagnosed Diabetes, by Age Group and Sex, Canada,[1] 2004-05 to 2006-07**

	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85+
Females without Diabetes	84	81	76	71	66	61	56	51	46	41	37	32	27	23	19	15	12	9
Females with Diabetes	74	71	66	61	57	52	48	43	39	34	30	26	22	18	15	12	9	7
Males without Diabetes	80	76	71	66	61	56	51	47	42	37	33	28	24	20	16	12	9	7
Males with Diabetes	70	66	61	57	52	48	44	40	35	31	27	23	19	16	13	10	7	6

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Data for Quebec and Nunavut were excluded.

For more information, visit the NDSS website: www.ndss.gc.ca

Use of Health Services[2]

- Younger adults (aged 20 to 49) with diagnosed diabetes had almost twice as many visits to family physicians **(Figure 11)** and 3 to 4 times as many visits to specialists **(Figure 12)** than individuals without diabetes. Even in the oldest age groups, individuals with diagnosed diabetes visited physicians and specialists about 1.5 times more often than individuals without diabetes.

- Adults with diagnosed diabetes had more days in hospital than individuals without diabetes. For hospitalized adults with diagnosed diabetes, aged 20 to 29 and 35 to 49 years, the number of hospital days was 5 to 6 times and almost 5 times (respectively) the number of hospital days for adults without diabetes. While adults older than 50 years had 2 to 4 times the number of hospital days than their counterparts without diabetes **(Figure 13)**.

- Children and adolescents with diagnosed diabetes had 1.6 times more visits to family physicians **(Figure 11)** and about 5 times as many visits to specialists **(Figure 12)** as those without diabetes.

- Children and adolescents with diagnosed diabetes had 11 times the number of days spent in hospital than those without diabetes **(Figure 13)**.

Figure 11. Ratio of the Rates of Visits to Family Physicians among People Aged 1 Year and Older with Diagnosed Diabetes Compared to Those without Diagnosed Diabetes, by Age Group, Canada,[1] 2006-07

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Quebec and Nunavut data were unavailable.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true rate ratio 19 times out of 20.

Figure 12. Ratio of the Rates of Visits to Specialists among People Aged 1 Year and Older with Diagnosed Diabetes Compared to Those without Diagnosed Diabetes, by Age Group, Canada,[1] 2006-07

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Quebec and Nunavut data were unavailable.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true rate ratio 19 times out of 20.

Figure 13. Ratio of the Rates of Days in Hospital among People Aged 1 Year and Older with Diagnosed Diabetes Compared to Those without Diagnosed Diabetes, by Age Group, Canada,[1] 2006-07

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009
[1] Quebec and Nunavut data were unavailble.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true rate ratio 19 times out of 20.

Other Health Problems

Individuals with diabetes often develop other diabetes-related health problems. Seven health problems are currently tracked by the NDSS: hypertension, ischemic heart disease, heart attack (acute myocardial infarction), heart failure, chronic kidney disease, stroke (cerebrovascular disease) and lower limb amputations. All but hypertension are tracked using hospitalization data.

People with diabetes may not always be hospitalized with these health problems, leading to underestimates. Therefore, the NDSS tracked hypertension and plans to track other health problems using physician billing and hospitalizations, similar to the method used to track diabetes.

The case criteria for hypertension were 1 or more hospitalizations or 2 or more physician claims within 2 years for hypertension.

- Adults[3] with diagnosed diabetes were diagnosed 3 times more often with hypertension than those without diabetes. The number of adults with diabetes who also had hypertension was 1,307,188. The proportion among people with diabetes was 63%.

- Adults[4] with diabetes were hospitalized with selected health problems significantly more often than their counterparts without diabetes with selected health problems (Table 3).

  – about 3 times more often with ischemic heart disease (93,691 adults) and with heart attack (a subset of ischemic heart disease (26,895 adults));
  – almost 4 times more often with heart failure (49,665 adults);
  – about 6 times more often with chronic kidney disease (40,341 adults);
  – almost 3 times more often with stroke (23,912 adults); and
  – almost 19 times more often with lower limb amputations (3,001 adults).

Table 3. Rate Ratios[1] Comparing Adults with Diabetes Hospitalized with Other Health Problems[2] to Those Without Diabetes, the Number of Adults with Diabetes Hospitalized with Other Health Problems and the Proportion Among Adults With Diabetes (Ranked Highest to Lowest), Canada,[3] 2006-07

Other Health Problems	Rate Ratios	Adults with Diabetes Hospitalized with Other Health Problems	Proportion (%) of All Adults with Diabetes
Ischaemic Heart Disease	3.5	93,691	4.5
- Heart Attack[4] (Acute Myocardial Infarction)	3.3	26,895	1.3
Heart Failure	3.9	49,665	2.4
Chronic Kidney Disease	6.5	40,341	2.0
Stroke (Cerebrovascular Disease)	2.7	23,912	1.2
Lower Limb Amputations	18.6	3,001	0.2
Individuals with Diagnosed Diabetes		2,061,995	100.0

Source: Public Health Agency of Canada, using NDSS data files contributed by provinces and territories, as of April 2009.
[1] Data were rate ratios of age-standardized rates. Data from Quebec were not available for the rate ratio statistics, but were included in the number of adults with diabetes who had other health problems. [2] Other Health Problems were: ischemic heart disease, heart attack (acute myocardial infarction), heart failure (myocardial infarction), chronic kidney disease, stroke (cerebrovascular disease) and lower limb amputations. A person with diabetes hospitalized with more than one health problem was counted once in each category. [3] Data from Nunavut were unavailable. [4] When more than one hospitalization is recorded in the heart attack category, an individual with diagnosed diabetes is counted only once under the broader ischemic heart disease category.
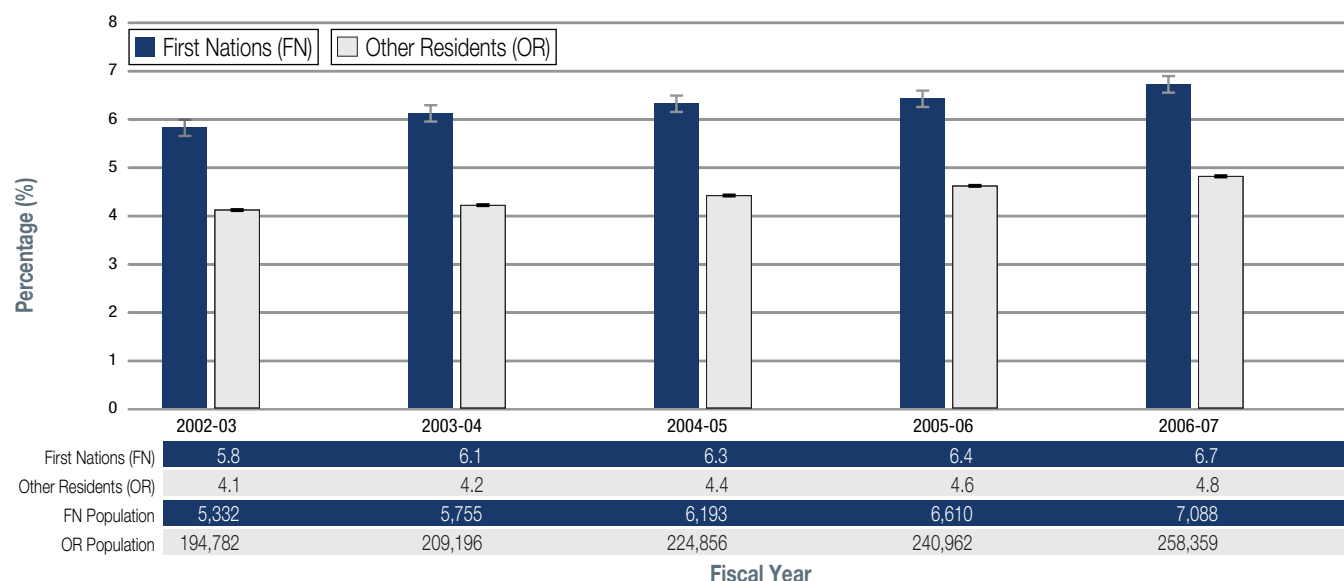
Diabetes among British Columbia First Nations Population

A goal of the NDSS has been to encourage and facilitate the collaboration between the Aboriginal Peoples and the provinces and territories so that, together, we can better understand and track the severity of diabetes in these communities. In British Columbia there has been a successful example of this approach. A partnership was formed between the British Columbia Ministry of Health, Indian and Northern Affairs Canada (INAC), Health Canada, and the First Nations Leadership Council. As a result, data representing about 168,000 First Nations people who lived in British Columbia and were included in either the Status Verification File (SVF) or the British Columbia Medical Services Plan entitlement file were analysed. The results were presented in the "Provincial Health Officer's Annual Report 2007."[10] This group represented about 4% of the total British Columbia population.

Prevalence of Diagnosed Diabetes[5]

- The age-standardized prevalence for diagnosed diabetes was 6.7% for the First Nations population compared to 4.8% for other British Columbia residents **(Figure 14)**. As previously reported,[11] the First Nations population prevalence remains about 40% higher than the rate for other residents.

- Between 2002-03 and 2006-07 age-standardized prevalence of diagnosed diabetes among the First Nations men and women increased by about 15.5% **(Figure 14)**.

Figure 14. Age-Standardized Prevalence Rates[1] of Diagnosed Diabetes[2] Among the First Nations Population[3] Aged 1 Year and Older, Compared to Other Residents, British Columbia, 2002-03 to 2006-07

	2002-03	2003-04	2004-05	2005-06	2006-07
First Nations (FN)	5.8	6.1	6.3	6.4	6.7
Other Residents (OR)	4.1	4.2	4.4	4.6	4.8
FN Population	5,332	5,755	6,193	6,610	7,088
OR Population	194,782	209,196	224,856	240,962	258,359

Fiscal Year

Source: Population Health Surveillance and Epidemiology, Ministry of Healthy Living and Sport, 2008. Pathways to Health and Healing-2nd Report on the Health and Well-being of Aboriginal People in British Columbia URL: http://www.hls.gov.bc.ca/pho/annual.html
Note: Totals Include Unkown Sex
[1] Age-standardized to the 1991 Canadian population. [2] Refer to the NDSS Methods Report for More Information on the Modification for the NDSS Case Criteria in British Columbia for this study.
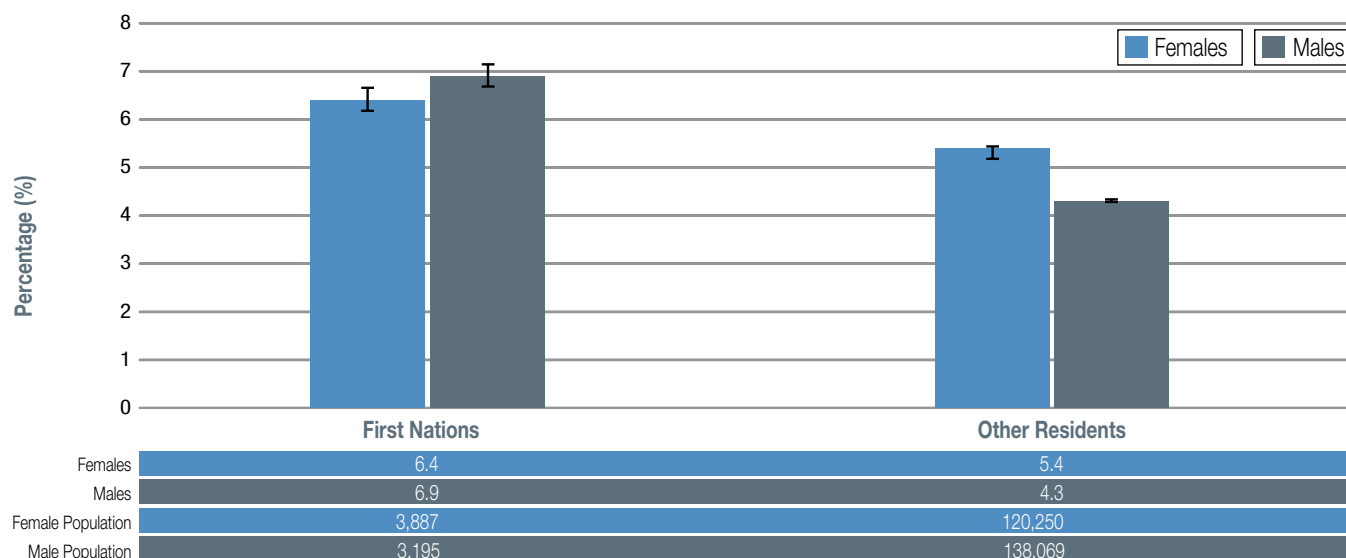[3] 167,782 First Nations men and women who lived in British Columbia and were included on the Status Verification File at the First Nations Inuit Health Branch.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true rate 19 times out of 20.

- The First Nations population is affected by diabetes at a younger age and the rates of diagnosed diabetes were higher than the other British Columbia residents for all age groups above age 30 (Figure 15). The prevalence for the First Nations men and women in the 60 to 69 age group was higher than the rates in the 70 to 79 and 80+ age groups of other residents.

- The prevalence for the First Nations women was higher than for the First Nations men. This finding is opposite to the pattern for the other British Columbia population, where the rate was higher for men than women (Figure 16). Part of the difference may be that men with diabetes are less likely to be diagnosed than women with diabetes. Some evidence to support this is that the prevalence of cardiovascular related health problems, often associated with diabetes (ischemic heart disease and stroke), is higher among men than women.

- The prevalence of diagnosed diabetes was much higher among the First Nations women than other British Columbia women, and this difference was much larger than the difference among the First Nations men than other British Columbia men.

Figure 15. Prevalence Rates of Diagnosed Diabetes[1] Among the First Nations Population,[2] Aged 1 Year and Older, Compared to Other Residents, British Columbia, 2006-07

Age Group	1 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80+
First Nations	0.1	0.4	0.8	2.6	5.4	12.8	24.2	29.7	22.5
Other Residents	0.1	0.4	0.7	1.8	4.0	8.7	16.1	22.0	19.9

Source: Population Health Surveillance and Epidemiology, Ministry of Healthy Living and Sport, 2008. Pathways to Health and Healing-2nd Report on the Health and Well-being of Aboriginal People in British Columbia URL: http://www.hls.gov.bc.ca/pho/annual.html
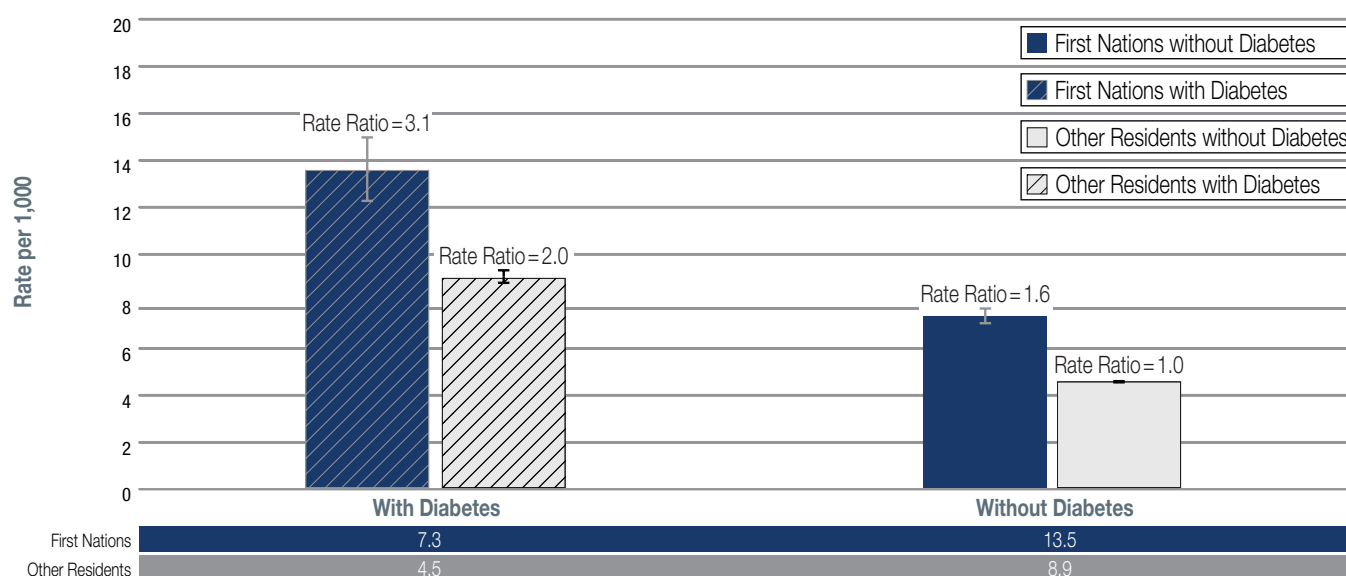Note: Totals Include Unkown Sex
[1] Refer to the NDSS Methods Report for More Information on the Modification for the NDSS Case Criteria in British Columbia for this study.
[2] 167,782 First Nations men and women who lived in British Columbia and were included on the Status Verification File at the First Nations Inuit Health Branch.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true rate 19 times out of 20.

Mortality

- During the same period, the mortality rate for the First Nations population with diagnosed diabetes was nearly twice the mortality rate for the First Nations population without diabetes (Figure 17).

Figure 16. Age-Standardized Prevalence Rates[1] of Diagnosed Diabetes[2] Among the First Nations Population,[3] Aged 1 Year and Older, Compared to Other Residents, British Columbia, 2006-07

	First Nations	Other Residents
Females	6.4	5.4
Males	6.9	4.3
Female Population	3,887	120,250
Male Population	3,195	138,069

Source: Population Health Surveillance and Epidemiology, Ministry of Healthy Living and Sport, 2008. Pathways to Health and Healing-2nd Report on the Health and Well-being of Aboriginal People in British Columbia URL: http://www.hls.gov.bc.ca/pho/annual.html
Note: Totals Include Unkown Sex
[1] Age-standardized to the 1991 Canadian population. [2] Refer to the NDSS Methods Report for More Information on the Modification for the NDSS Case Criteria in British Columbia for this study.
[3] 167,782 First Nations men and women who lived in British Columbia and were included on the Status Verification File at the First Nations Inuit Health Branch.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true rate 19 times out of 20.

Figure 17. All-Cause Mortality Rates of Diagnosed Diabetes[1] Among the First Nations Population,[2] Aged 1 Year and Older, Compared to Other Residents, British Columbia, 2002-03 to 2006-07

	With Diabetes	Without Diabetes
First Nations	7.3	13.5
Other Residents	4.5	8.9

Source: Population Health Surveillance and Epidemiology, Ministry of Healthy Living and Sport, 2008. Pathways to Health and Healing-2nd Report on the Health and Well-being of Aboriginal People in British Columbia URL: http://www.hls.gov.bc.ca/pho/annual.html
Note: Totals Include Unkown Sex
[1] Refer to the NDSS Methods Report for More Information on the Modification for the NDSS Case Criteria in British Columbia for this study.
[2] 167,782 First Nations men and women who lived in British Columbia and were included on the Status Verification File at the First Nations Inuit Health Branch.
‡ The 95% Confidence Interval shows an estimated range of values which is likely to include the true rate 19 times out of 20.

For more information, visit the NDSS website: www.ndss.gc.ca

NDSS Future Plans

The NDSS provides a valuable source of information about diabetes in Canada. Future work will include:

- Continuing work with First Nations, Métis, and Inuit organizations to produce additional NDSS data for analysis, interpretation, and up-to-date reporting, to gain a better understanding of diabetes among these populations;

- Expanding the breadth of data reporting on diabetes and other related conditions among adults, children, and adolescents; a "Hypertension in Canada" report is planned for the Spring of 2010;

- Exploring the use of ICD-10-CA diagnosis coding in hospitals and pharmaceutical data to differentiate between type 1 and 2 diabetes; and

- Continuing to foster a standard approach for high data quality.

Notes

1. Public Health Agency of Canada. Obesity in Canada: Snapshot, 2009. URL: http://www.phac-aspc.gc.ca/publicat/2009/oc/index-eng.php

2. Data from Quebec were unavailable.

3. Data from Quebec were not available for the rate ratio statistic but were estimated for the number of adults with hypertension.

4. Data from Quebec were not available for the rate ratio statistics, but were included in the number of adults with diabetes who also had other health problems.

5. Diabetes refers to a modified NDSS case criteria, used in British Columbia, for this study. Refer to the NDSS methods for more information.

6. Public Health Agency of Canada. Diabetes in Canada: Second Edition. URL: http://www.phac-aspc.gc.ca/publicat/dic-dac2/english/05contents-eng.php

7. Canadian Institute for Heath Information. Canadian Coding Standards for ICD-10:CA and CCI, 2009. URL: http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=RC_382_E

8. These statistics were calculated using estimates for future populations from Statistics Canada and the assumption that both future NDSS incidence and mortality rates remain constant.

9. Panzram G: Epidemiologic data on excess mortality and life expectancy in insulin-dependent diabetes mellitus-critical review. Exp Clin Endocrinol 83:93-100, 1984.

10. British Columbia. Provincial Health Officer. (2009) Pathways to Health and Healing – 2nd Report on the Health and Well-being of Aboriginal People in British Columbia. Provincial Health Officer's Annual Report 2007. Victoria, BC: Ministry of Healthy Living and Sport. URL: http://www.hls.gov.bc.ca/pho/annual.html

11. Public Health Agency of Canada. Diabetes in Canada: Highlights from the National Diabetes Surveillance System, 2004-2005, 2008. URL: http://www.phac-aspc.gc.ca/publicat/2008/dicndss-dacsnsd-04-05/index-eng.php

Glossary

Diagnosed Diabetes: This surveillance system summarized data about residents of Canada who have used the Canadian health care system. If there is sufficient evidence of use due to diabetes, it was assumed that a person had diagnosed diabetes. The minimum requirement was at least 1 hospitalization or 2 physician claims, with a diabetes specific code(s), over a 2-year period.

Diagnosed Hypertension: Diagnosed hypertension was also tracked. The minimum requirement was at least 1 hospitalization or 2 physician claims, with a hypertension specific code(s), over a 2-year period.

Prevalence: The proportion of individuals that are affected by diagnosed diabetes at a given point in time.

Age-Standardized: Rates are adjusted for changes in the age structure of the population over time or for differences in age structure across provinces or territories. Refer to the NDSS methods report for more information.

Incidence: The number of individuals newly diagnosed with diabetes during the year.

Incidence rate: The rate of individuals newly diagnosed with diabetes among those at risk during the year.

Estimated Annual Percent Change: The annual percent change is based on the loglinear regression analysis $(e^{0.07003} -1) \times 100 = 7.2$

False-negatives: Individuals who have not met the NDSS case criteria, but have diabetes. The potential proportion of false negatives was indicated by the NDSS validation studies.

False-positives: Individuals who have met the NDSS case criteria, but do not have diabetes. The potential proportion of false positives was indicated by the NDSS validation studies.

Canadian Coding Standards: Also beginning with the 2006-07 data, the Canadian Coding Standards for ICD-10-CA and CCI, 2009[7] mandated that all provinces and territories include any information about patients with diabetes in their hospitalization data. This new practice could enable the NDSS to identify more people with diabetes, and find them earlier, from the hospitalization data. This situation will be monitored to determine the effect and magnitude on the data collected by the surveillance system.

Status Verification File (SVF): The Indian Register is a list of Registered or Status Indians (as defined by the Indian Act) kept by Indian and Northern Affairs Canada. Information about the demographic characteristics of the Indian population is updated regularly by band officials and is published on a yearly basis. The Status Indian population has certain rights that may include on-reserve housing benefits, education, and exemption from federal, provincial, and territorial taxes in specific situations. The SVF contains information on the entire Status Indian population in Canada and contains a subset of the variables available on the Indian Register. The SVF is managed by the First Nations and Inuit Health Branch, Health Canada.

Refer to the **NDSS Methods Report** for more information.

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The Diabetes Surveillance Advisory Committee, chaired by the Canadian Diabetes Association, advises PHAC on diabetes surveillance in Canada.

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