Diabetes in Manitoba: Trends among Adults

1989-2013

Epidemiology & Surveillance

Active Living, Population and Public Health Branch

Manitoba Health, Seniors and Active Living

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Manitoba

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Acronyms

CCDSS   Canadian Chronic Disease Surveillance System

CPL   Cadham Provincial Laboratory

DPIN   Drug Programs Information Network

E&S   Epidemiology and Surveillance, unit of MHSAL

ICD   The International Statistical Classifications of Diseases and Related
        Health Problems

MHSAL   Manitoba Health, Seniors and Active Living

NDSS   National Diabetes Surveillance System

PHAC   Public Health Agency of Canada

PHIN   Personal Health Identification Number

RHA   Regional Health Authority

WHO   World Health Organization

Executive Summary

Incidence of Diabetes in Manitoba

Overall incidence (new cases)
- Between 1989 and 2013, the number of new cases of diabetes diagnosed among Manitoban adults each year more than doubled.
- In 2013, approximately 9,000 Manitobans 20 years of age and older were newly diagnosed with diabetes (that is, 10 new cases per 1,000 persons).
- Males experienced higher incidence rates than females over the entire reporting period.
- Almost 70% of new diabetes cases in 2013 were diagnosed among adults aged 20 to 64 years and of these cases over half (56.2%) were diagnosed in those 50 to 64 years old.
- In adults aged 20 to 34 years, the incidence of diabetes in females was higher than the incidence in males. However, among those older than 35 years, incidence was higher in males than females.
- In four of the five regional health authorities, there were more newly diagnosed diabetes cases in males than females. The exception was in Northern Health Region which consistently had more incident female cases than male cases from 1989 to 2013.
- Winnipeg Regional Health Authority had the largest *number* of newly diagnosed diabetes cases (5,368) in 2013 but Northern Health Region had the highest *incidence rate* (14.1%).

Trend changes
- The trend of incident diabetes cases in Manitoba adults varied over the reporting period:
  - 1989 – 1996: the number and rate of incident cases were *relatively stable*;
  - 1996 – 2006: the number and rate of incident cases *increased*;
  - 2006 – 2010: the number and rate of incident cases were *relatively stable*; and
  - 2010 – 2013: the number and rate of incident cases *increased*.
- The male incidence rates were consistently higher than the female incidence rates over the reporting period.
- Among adults aged 20 to 60 years, an age gradient in diabetes incidence rates was apparent. That is, as people aged, more cases of diabetes were diagnosed.
- Rising rates of newly diagnosed diabetes were observed in all regional health authorities, but most markedly in Northern Health Region. The difference in incidence rates between Northern Health Region and the other regional health authorities grew larger over the reporting period.
- Northern Health Region experienced the largest increase in diabetes incidence with a crude incidence rate two times greater in 2013 than in 1989.
- Southern Health-Santé Sud had the lowest incidence rates of all the regional health authorities and experienced the smallest increase in rates. In particular, between 2005 and 2013, they experienced stable incidence rates while all other regional health authorities had increasing incidence rates.

Prevalence of Diabetes in Manitoba

Overall prevalence (existing cases)

- Between 1989 and 2013, the number of adults in Manitoba diagnosed with diabetes tripled.
- In 2013, approximately 107,914 persons or one in ten Manitobans 20 years of age and older were living with diagnosed diabetes.
- The difference between the crude prevalence rates of males and females with diagnosed diabetes increased over the reporting period with males having a 1% higher prevalence rate in 1989 and a 9% higher prevalence rate in 2013.
- Over one-half of adults living with diagnosed diabetes in 2013 were among adults aged 20 to 64 years.
- Winnipeg RHA had the largest number of people (60,459) living with diabetes in 2013 but Northern Health Region had the highest *prevalence rate* (16.7%).
- In four of the five regional health authorities, there were more male cases of diabetes than female cases. The exception was in Northern Health Region which consistently had more female cases than male cases from 1989 to 2013.

Trend changes

- An increase in diabetes prevalence was seen in all regional health authorities between 1989 and 2013.
- Northern Health Region experienced the largest increase in prevalence with almost four times the number of diagnosed diabetes cases in 2013 than in 1989.
- From 1989 to 2013, increasing prevalence rates were seen in both males and females, and across all age groups. The largest increase was seen among those 25 to 44 years of age, where the prevalence rates tripled; in all other age groups the rates doubled.

Introduction

Diabetes is the fastest growing chronic disease worldwide[1,2]; it is considered a global epidemic[1,3,4]. Between 1980 and 2008, the number of adults living with diabetes more than doubled[1] and, as of 2013, 382 million people were living with the disease[2]. Diabetes prevalence has increased, or at best remained unchanged, in every country, worldwide, since 1980[7]. Habits of overeating, unhealthy eating and sedentary lifestyles, combined with an ageing population, have led to increased obesity rates and a large rise in the number of newly diagnosed type 2 diabetes cases[1,2,4-8]. Type 2 diabetes accounts for approximately 90% of all cases[9].

Characterized as a defect in insulin secretion, insulin action, or both[4,9], diabetes occurs when the body does not produce enough insulin or cannot use what it does produce effectively. Insulin is a hormone produced by the pancreas that assists with the conversion of glucose (sugar) into stored energy[4]. Damage to organs, blood vessels and nerves can occur as a result of high levels of glucose in the blood[8].

Diabetes is the seventh leading cause of death in Canada[2,10] and the number one leading cause of blindness[6,8]. It can lead to end-stage renal disease[6], non-traumatic amputation[10] and cardiovascular complications, such as heart attacks and strokes (the cause of death for eight in ten Canadians with diabetes[8]). When compared with people of similar age without diabetes, those with diabetes have almost twice the risk of death[11].

In 2015, the Canadian Diabetes Association estimated that almost one-tenth (8.9%) of the Canadian population had been diagnosed with diabetes, with the majority of cases found in First Nations Communities[4]. First Nations Canadians have a disproportionally high prevalence of diabetes[12] and it has been reported that the prevalence of type 2 diabetes in First Nations Canadians is three to five times higher than in the general Canadian population[4,13]. When compared to other provinces, Manitoba has a higher burden of diabetes among the First Nations population[12]. Diabetes prevalence is also higher in people of Hispanic, Asian, South Asian or African descent, which make up almost 80% of the newly immigrated Canadian population[8].

Objective

This report provides descriptive analyses on the prevalence and incidence of diabetes among Manitoba residents who were aged 20 years and older between 1989 and 2013. The overarching goal of this report is to provide information on diabetes epidemiology and trends in Manitoba's adult population.

The objective is to provide a baseline for future comparisons, and an overview of current diabetes epidemiology by describing;

- prevalence and trends of existing diabetes cases at the provincial and regional levels, and
- incidence and trends of new diabetes cases at the provincial and regional levels.

What was not provided in this report?

This report is aimed to provide an overall picture and baseline on diabetes prevalence and incidence in Manitoba and Health regions.

This report acknowledges that social economic disparities play an important role in the development and management of diabetes. Due to the limitations of administrative data, this report does not dissect the data from social economic status perspectives.

Due to the limitations of 3-digits ICD codes in the Physician Claims data, we cannot distinguish the diagnosis of type 1 diabetes from type 2 diabetes based on physician claims data. Diabetes reported here includes both type 1 and type 2 diabetes.

Comorbidities, complications and the economic burden of diabetes are beyond the scope of this provincial chronic disease surveillance update. We are working on the estimation of direct health care cost of diabetes. Stay tuned an upcoming report which will focus on an economic analysis of direct health care cost of selected chronic diseases.

Methods

This report is based on the methodology and infrastructure of the Canadian Chronic Disease Surveillance System (CCDSS). CCDSS is a collaborative network of provincial and territorial surveillance systems, supported by the Public Health Agency of Canada (PHAC)[14]. This system uses administrative health data that is available in all provinces and territories.

The case definition of diabetes, under the CCDSS methodology, is based on the assumption that it is possible to track diabetes prevalence by following the clinical path of diabetes (from detection to treatment and management of complications) through various client interactions (health insurance registry, physician visits, and hospitalizations) within the provincial and territorial health care systems. Using administrative data to track the burden, health outcomes, and health care utilizations of chronic diseases is a well validated methodology[15-20]. The data needed for identifying and tracking diabetes patients are routinely collected in the provision of publicly funded, insured health services and stored in several major provincial administrative databases.

Data sources

The CCDSS uses three administrative data sources that exist in all provinces and territories:
1. Health Insurance registry file,

    In all provinces and territories, each individual is assigned a unique personal health insurance number (PHIN) that must be provided upon receipt of health services. If a person has a PHIN he/she is recorded in his/her province's or territory's health insurance registry file. This publicly funded health insurance, administered by the provinces and territories, covers almost the entire Canadian population. The exceptions are people covered by Federal jurisdiction such as those in the Canadian Armed Forces, the Royal Canadian Mounted Police (RCMP), or Federal correctional facilities.

2. physician claims database, and

    When a person visits a physician, the ICD-9 code(s) associated with the visit and the client's PHIN are sent to the province or territory with which that person's health insurance is registered. The physician is then reimbursed for the visit, and the claim is recorded in the physician claim database

3. hospital discharge abstract database.

    The hospital discharge abstract database includes the PHIN, dates of admission and discharge, and up to 25 discharge diagnoses listed using ICD-10-CA codes. Before 2004, discharge diagnoses were recorded using 5-digit ICD-9 codes.

To protect personal information and personal health information, a secure methodology using encrypted PHINs, was used to link records between these three databases. The data are linked by the government, or designated agent, of each province and territory and maintained according to jurisdictional custodial obligations.

In the physician claim database and the hospital discharge abstract database, the International Classifications of Disease (ICD) codes are used to classify and record diseases and health conditions. Standardized codes provide consistency among physicians with regard to recording patient symptoms and diagnoses for the purposes of claim reimbursements and clinical research.

There have been different versions of the ICD system. The 9th revision of ICD, or ICD-9, was published by the World Health Organization (WHO). *Classification of Diseases, Clinical Modification* (ICD-9-CM) is an adaption created by the National Center for Health Statistics (NCHS) in the United States. ICD-10 is the 10th revision of the ICD and ICD-10-CA is an adaptation of ICD-10 developed by the Canadian Institute for Health Information (CIHI). In Manitoba, ICD-9-CM is used in the physician claim database and used in the hospital discharge abstract database until 2004. In 2004, ICD-10-CA replaced ICD-9-CM in the hospital abstract database.

Diabetes Case Definition

The CCDSS diabetes case criteria for diagnosed diabetes are based on studies of diabetes using administrative databases [21],[22]. To meet the case criteria, an insured individual aged **1 year and older** must have

EITHER

One or more hospitalizations with an ICD-9 or ICD-9-CM code of 250 (diabetes mellitus) or equivalent ICD-10-CA codes: E10 to E14, selected from all available diagnostic codes in the hospital file,

OR

Two or more physician claims with the relevant ICD-9 code of 250, **within two years**, selected from the *first* diagnostic code available on the claim.

Once a person meets one of these criteria they are defined as a CASE for all subsequent years they have a valid PHIN within the same province or territory they met the criterion in. Note that the CCDSS does not track individuals as they move between provinces and territories. Therefore, if a person moves to a different province or territory the criteria must be re-met for the person to be defined as a case in the new jurisdiction.

The Case Date

The diabetes case date was defined either as the date of hospital admission, or the first of the two physician claims that contributed to the individual meeting the CCDSS case criteria, for the first time, in the selected province or territory.

The CCDSS definition for the case date and run-in period selection has changed since the report, "Responding to the Challenge of Diabetes in Canada", was released in 2003[23]. In the National Diabetes Surveillance System (NDSS) reports released since 2003, the NDSS used last date method (the most recent date of the medical claim) instead of first date method (the first date of the medical claim).

Type 1 and Type 2 Diabetes

Over the reporting period the CCDSS did not distinguish between type 1 and type 2 diabetes due to limitations of the physician claim database. In the ICD-9-CM system (used in the physician claim database), the broad category of diabetes was coded as the 3-digit code, 250. The last two digits (to make up a 5-digit code which can distinguish between the two types of diabetes) were only added as of 2015. In the ICD-10-CA system (used in the

hospital discharge abstract database), codes for type 1 and type 2 diabetes, using separate alpha-numeric codes (E10 and E11, respectively), are available.

Type 1 diabetes was formerly called *insulin-dependent* or *juvenile-onset* diabetes and is believed to be caused by a combination of genetic factors and environmental stressors. Type 2 diabetes was formerly called *non-insulin-dependent* or *adult-onset* diabetes and obese individuals over 40 years old are at highest risk. For the complete definitions of type 1 and type 2 diabetes, please see Appendix C.

Inclusion Criteria
Adults ages 20 years and older in Manitoba who had type 1 or type 2 diabetes recorded in the CCDSS database between 1989 and 2013 were included in this report.

Exclusion Criteria
Gestational diabetes occurs during pregnancy in women not known to have had diabetes before pregnancy. Gestational diabetes is usually managed by changes in food intake and physical activity but may require insulin by injection. Blood sugar levels usually return to normal after delivery of the baby, but both the mother and baby are at increased risk of developing type 2 diabetes in the future.

Although gestational diabetes occurs in about 4% of all pregnancies, and there is evidence this condition increases the risk of developing type 2 diabetes later in life, the current focus of the CCDSS is to track type 1 and 2 diabetes only. The CCDSS does not capture women with gestational diabetes because it is a temporary condition.

The ICD systems allow for coding gestational diabetes separately from the other diabetes codes (ICD-9: 648, ICD-10-CA: P70, ICD-9: 250 or ICD-10-CA: E10-14). However, evidence suggests more stringent criteria are necessary for excluding diabetes cases that may be related to pregnancy. Therefore, the CCDSS case criteria excludes females (aged 10 to 54 years) diagnosed with diabetes 120 days before, or 180 days after, any pregnancy-related visit. The diagnostic ICD codes for pregnancy are:
- ICD-9: 641-676, V27
- ICD-10 and ICD-10-CA: O1, O21-95, O98, O99, Z37

Fiscal Year
Unless specified otherwise, each year from 1989 to 2013 in this report refers to the fiscal year which starts on April 1 of the current year and ends on March 31 of the following year. For example, the 1989 fiscal year is April 1, 1989 to March 31, 1990.

Prevalence and Prevalence Rates
The burden of diabetes among adults ages 20 years and older in Manitoba is measured by prevalence and prevalence rates.

Prevalence is the *total number* of people living with diagnosed diabetes, during a specific period, in a specified population. It provides an estimate of the burden of the disease at a given time, and is widely used in public health monitoring and planning. In this report, the yearly prevalence of diabetes is defined as the number of people living with diagnosed diabetes in each fiscal year. A *prevalent case* is an individual, among the insured population, who met the case criteria prior to, or during, a fiscal year.

The prevalence rate in a fiscal year is calculated as:

$$\text{Prevalence Rate (\%)} = \frac{\text{Total Number of Prevalent Cases}}{\text{Total Insured Population}} \times 100$$

The total insured population includes people who lived in Manitoba within a fiscal year, regardless of whether they migrated or died at a certain point during the fiscal year.

Incidence and Incidence Rates

Incidence is defined as the number of *new cases* of diabetes diagnosed, during a specific period, in a specified population. An *incident case* is an individual, among the insured population, who met the case criteria for the first time at any time in the selected fiscal year.

The incidence rate measures the probability of occurrence of diabetes in the population within a specified period of time. The incidence rate in a fiscal year is calculated as:

$$\text{Incidence Rate (per 1,000 persons)} = \frac{\text{Total Number of Incident Cases}}{\text{Total Number of Insured Population} - [\text{Prevalent Cases} + \text{Incident Cases}]} \times 1,000$$

The denominator represents the number of insured individuals *at risk* for diabetes in the entire year rather than the mid-year estimate. This means, it includes all insured people who lived in Manitoba within a fiscal year, regardless of whether they migrated or died at a certain point during the fiscal year MINUS the people already diagnosed with diabetes.

Age Adjusted Rates

Age adjustment allows comparisons to be made between regions that have populations with different age distributions and allows comparisons over time to be made by accounting for an aging population. To adjust for differences in population age distributions across regions, and the resulting effect on rates, the rates are age-adjusted using the 1991 Canadian Census population estimates as a reference population. This standard population is chosen to make our report data comparable to the data in the national report by the Public Health Agency of Canada (PHAC). Adjustment is done via the direct method, using five-year age groups, from ages one to four to ages 85 and over. See Appendix A for the 1991 Canadian Standard Population Weights.

Rate Ratio

The rate ratio (RR) is the ratio of two rates. It is a relative difference measure used to compare the rates of events occurring at any given point in time for the same disease among two different, but comparable, populations. One example is the ratio of the diabetes rate in the female population to the diabetes rate in the male population. When the rate ratio is used in tables throughout the report, the male rate is taken as rate 1, and the female rate is taken as rate 2. In this report, the second decimal place was kept for all rate ratios to illustrate small changes over the years.

$$\text{Rate ratio (RR)} = \frac{\text{Rate 1}}{\text{Rate 2}}$$

Confidence Intervals

Any measurement and estimate of a population has certain variability due to chance. Therefore, we cannot be 100% sure if any difference in the observations represents a statistically significant difference among different populations. To facilitate comparisons, in this report, the 95% confidence intervals of all crude and age adjusted rates were calculated using an inverse gamma distribution when the rate was greater than zero. The 95% confidence intervals provide an estimated range of values that are likely to include the true value at a rate of 19 times out of 20.

Results

Prevalence of Diabetes

Prevalence Trends in Manitoba, 1989–2013

As shown in both Figure 1 and Table 1, the total number of adults in Manitoba living with diagnosed diabetes tripled from 1989 (33,962 people) to 2013 (107,914 people). The number of males and females living with diagnosed diabetes both increased threefold from 1989 to 2013, with the number of males diagnosed with diabetes rising from 16,715 to 55,454, and the number of females diagnosed with diabetes rising from 17,247 to 52,460 (Table 2).

The crude prevalence rate of diabetes among Manitoba's adult population increased from 4.1% in 1989 to 10.8% in 2013 (Table 1); the age adjusted prevalence rate also doubled over the reporting period. The age adjusted rate was approximately equal to the crude prevalence rate until 1995, however from 1996 to 2013 the age adjusted rate was lower than the crude rate.
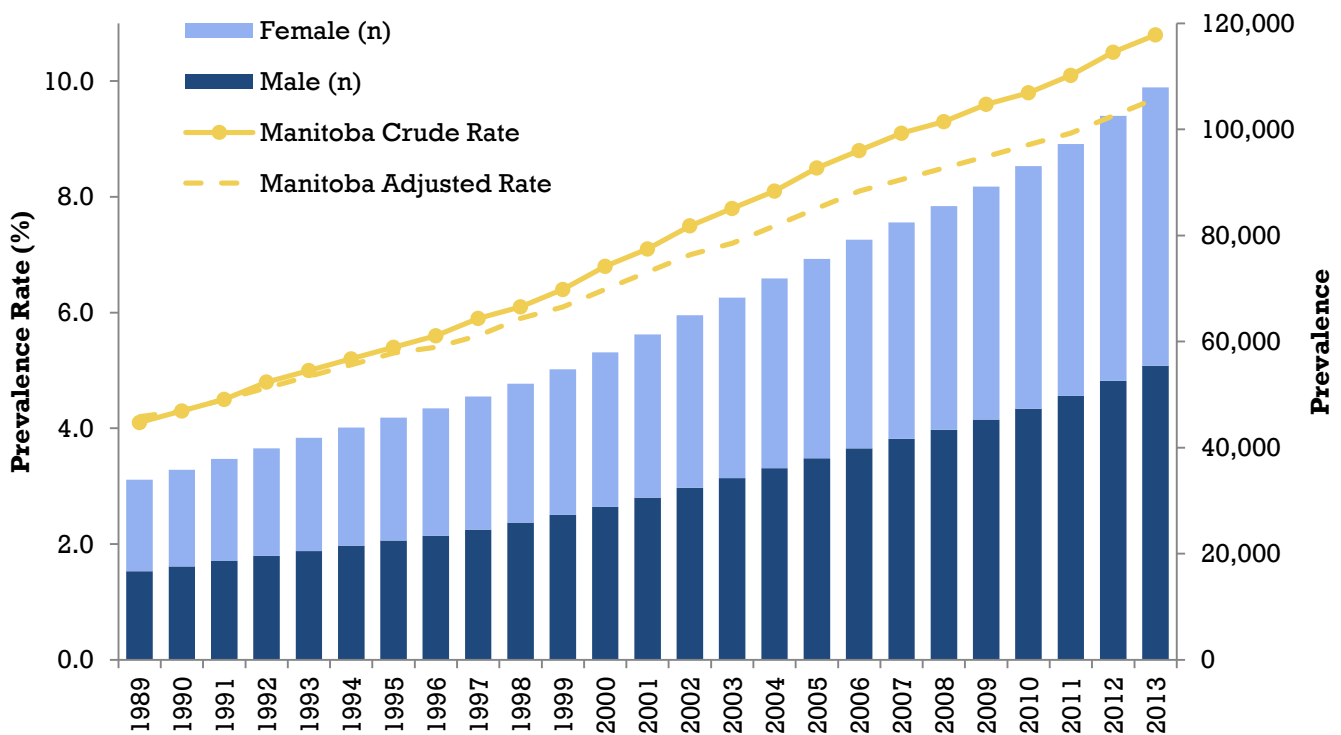
Figure 1: Number of diagnosed diabetes cases and the total prevalence rate (%) of diabetes in Manitoba by sex, ages 20+ years, 1989–2013

Table 1: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of Manitobans living with diagnosed diabetes, ages 20+ years, 1989–2013

		Manitoba			
Year	N	Crude Rate	(95% CIs)	Adjusted Rate	(95%CIs)
1989	33,962	4.1	(4.1 - 4.1)	4.2	(4.1 - 4.2)
1990	35,830	4.3	(4.3 - 4.3)	4.3	(4.3 - 4.4)
1991	37,845	4.5	(4.5 - 4.6)	4.5	(4.5 - 4.6)
1992	39,891	4.8	(4.7 - 4.8)	4.7	(4.7 - 4.8)
1993	41,840	5.0	(5.0 - 5.0)	4.9	(4.9 - 5.0)
1994	43,781	5.2	(5.2 - 5.3)	5.1	(5.1 - 5.2)
1995	45,684	5.4	(5.4 - 5.5)	5.3	(5.2 - 5.3)
1996	47,417	5.6	(5.6 - 5.7)	5.4	(5.4 - 5.5)
1997	49,627	5.9	(5.8 - 5.9)	5.6	(5.6 - 5.7)
1998	52,055	6.1	(6.1 - 6.2)	5.9	(5.8 - 5.9)
1999	54,779	6.4	(6.4 - 6.5)	6.1	(6.1 - 6.2)
2000	57,956	6.8	(6.7 - 6.8)	6.4	(6.3 - 6.4)
2001	61,335	7.1	(7.1 - 7.2)	6.7	(6.6 - 6.7)
2002	64,935	7.5	(7.4 - 7.6)	7.0	(6.9 - 7.0)
2003	68,253	7.8	(7.7 - 7.9)	7.2	(7.2 - 7.3)
2004	71,873	8.1	(8.1 - 8.2)	7.5	(7.5 - 7.6)
2005	75,582	8.5	(8.4 - 8.6)	7.8	(7.8 - 7.9)
2006	79,199	8.8	(8.8 - 8.9)	8.1	(8.0 - 8.2)
2007	82,452	9.1	(9.1 - 9.2)	8.3	(8.2 - 8.4)
2008	85,552	9.3	(9.3 - 9.4)	8.5	(8.4 - 8.5)
2009	89,199	9.6	(9.5 - 9.7)	8.7	(8.6 - 8.7)
2010	93,089	9.8	(9.8 - 9.9)	8.9	(8.8 - 8.9)
2011	97,257	10.1	(10.0 - 10.2)	9.1	(9.0 - 9.2)
2012	102,537	10.5	(10.4 - 10.5)	9.4	(9.4 - 9.5)
2013	107,914	10.8	(10.8 - 10.9)	9.7	(9.7 - 9.8)

Table 2: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of Manitobans living with diagnosed diabetes by sex, ages 20+ years, 1989 – 2013

Year	Female					Male					RR
	n	Crude Rate	(95% CIs)	Adjusted Rate	(95%CIs)	n	Crude Rate	(95% CIs)	Adjusted Rate	(95%CIs)	M/F
1989	17,247	4.1	(4.0 - 4.1)	3.9	(3.9 - 4.0)	16,715	4.1	(4.1 - 4.2)	4.4	(4.3 - 4.5)	1.01
1990	18,226	4.3	(4.2 - 4.3)	4.1	(4.1 - 4.2)	17,604	4.3	(4.3 - 4.4)	4.6	(4.5,- 4.7)	1.01
1991	19,247	4.5	(4.4 - 4.6)	4.3	(4.2 - 4.4)	18,598	4.6	(4.5 - 4.6)	4.8	(4.8 - 4.9)	1.01
1992	20,314	4.7	(4.7 - 4.8)	4.5	(4.4 - 4.6)	19,577	4.8	(4.7 - 4.9)	5.0	(5.0 - 5.1)	1.01
1993	21,331	5.0	(4.9 - 5.0)	4.7	(4.6 - 4.7)	20,509	5.0	(5.0 - 5.1)	5.2	(5.2 - 5.3)	1.01
1994	22,242	5.2	(5.1 - 5.2)	4.8	(4.8 - 4.9)	21,539	5.3	(5.2 - 5.3)	5.4	(5.4 - 5.5)	1.02
1995	23,200	5.4	(5.3 - 5.4)	5.0	(4.9 - 5.1)	22,484	5.5	(5.4 - 5.6)	5.6	(5.5 - 5.7)	1.02
1996	24,048	5.5	(5.5 - 5.6)	5.1	(5.1 - 5.2)	23,369	5.7	(5.6 - 5.8)	5.8	(5.7 - 5.9)	1.03
1997	25,070	5.8	(5.7 - 5.8)	5.3	(5.3 - 5.4)	24,557	6.0	(5.9 - 6.0)	6.0	(5.9 - 6.1)	1.03
1998	26,167	6.0	(5.9 - 6.1)	5.5	(5.5 - 5.6)	25,888	6.3	(6.2 - 6.4)	6.3	(6.2 - 6.3)	1.04
1999	27,494	6.3	(6.2 - 6.4)	5.8	(5.7 - 5.8)	27,285	6.6	(6.5 - 6.7)	6.5	(6.4 - 6.6)	1.05
2000	29,133	6.6	(6.5 - 6.7)	6.0	(6.0 - 6.1)	28,823	6.9	(6.8 - 7.0)	6.8	(6.7 - 6.9)	1.04
2001	30,770	7.0	(6.9 - 7.0)	6.3	(6.2 - 6.4)	30,565	7.3	(7.2 - 7.4)	7.1	(7.0 - 7.2)	1.05
2002	32,513	7.3	(7.2 - 7.4)	6.6	(6.5 - 6.7)	32,422	7.7	(7.6 - 7.8)	7.4	(7.4 - 7.5)	1.05
2003	33,993	7.6	(7.5 - 7.7)	6.8	(6.8 - 6.9)	34,260	8.0	(8.0 - 8.1)	7.7	(7.7 - 7.8)	1.06
2004	35,757	7.9	(7.8 - 8.0)	7.1	(7.0 - 7.2)	36,116	8.4	(8.3 - 8.5)	8.0	(8.0 - 8.1)	1.06
2005	37,568	8.3	(8.2 - 8.3)	7.4	(7.3 - 7.5)	38,014	8.8	(8.7 - 8.9)	8.4	(8.3 - 8.4)	1.06
2006	39,315	8.6	(8.5 - 8.7)	7.7	(7.6 - 7.7)	39,884	9.1	(9.0 - 9.2)	8.6	(8.5 - 8.7)	1.06
2007	40,776	8.8	(8.7 - 8.9)	7.8	(7.8 - 7.9)	41,676	9.4	(9.4 - 9.5)	8.9	(8.8 - 8.9)	1.07
2008	42,218	9.0	(8.9 - 9.1)	8.0	(7.9 - 8.1)	43,334	9.7	(9.6 - 9.8)	9.0	(9.0 - 9.1)	1.08
2009	43,904	9.2	(9.2 - 9.3)	8.2	(8.1 - 8.3)	45,295	10.0	(9.9 - 10.1)	9.3	(9.2 - 9.4)	1.08
2010	45,762	9.5	(9.4 - 9.6)	8.4	(8.3 - 8.4)	47,327	10.2	(10.1 - 10.3)	9.5	(9.4 - 9.6)	1.08
2011	47,520	9.7	(9.6 - 9.8)	8.5	(8.5 - 8.6)	49,737	10.6	(10.5 - 10.6)	9.7	(9.7 - 9.8)	1.09
2012	49,918	10.0	(9.9 - 10.1)	8.8	(8.7 - 8.9)	52,619	10.9	(10.8 - 11.0)	10.1	(10.0 - 10.2)	1.09
2013	52,460	10.0	(10.3 - 10.4)	9.1	(9.0 - 9.2)	55,454	11.3	(11.2 - 11.4)	10.4	(10.3 - 10.5)	1.09

Prevalence by Sex, 1989–2013

The crude and age adjusted prevalence rates in males and females more than doubled over the reporting period (Figure 2). Both male and female crude prevalence rates began at 4.1% in 1989. Rates among the two sexes were similar for eight years until 1996 when the male rate surpassed that of the females and remained higher. Table 2 shows that by 2013, the male crude prevalence rate had increased to 11.3%, and the female rate had increased to 10.0%. The age adjusted rates followed the same trend as the crude rate. However, between 1989 and 1996, there was a noticeable difference between the male and female age adjusted rates that cannot be seen in the crude rates.
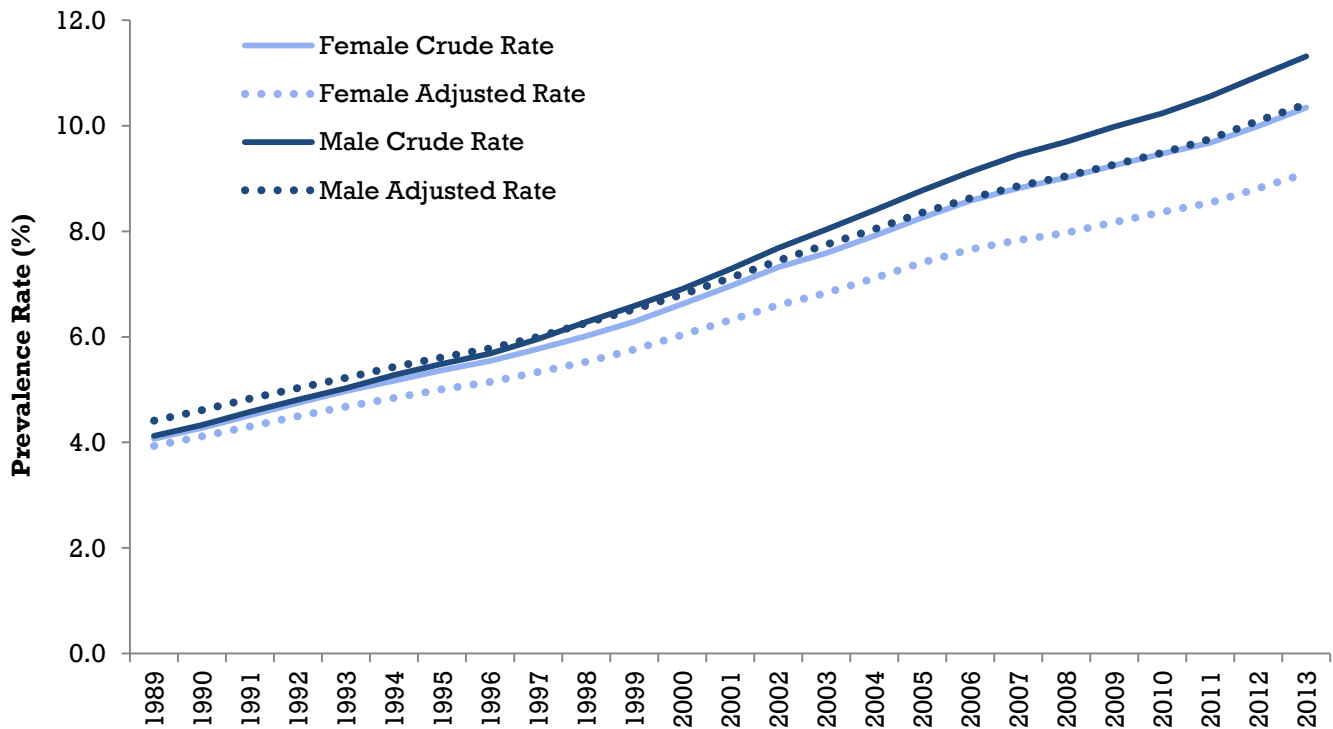
Figure 2: Crude prevalence rate (%) and adjusted prevalence rate (%) of diabetes in Manitoba by sex, ages 20+ years, 1989-2013

Prevalence by Age

Prevalence Rates by Sex and Age Group, 2013

In 2013, the prevalence rate of diabetes increased with age among adults 20-79 years of age (Figure 3 and Table 3). Among every 100 people aged 20-24 years, only one person had diabetes, while, among every 100 people aged 75-79 years, almost 27 people had diabetes. Of the adults living with diagnosed diabetes in 2013, over one-half (55.6%) were among adults aged 20 to 64 years.

The prevalence rates of diabetes in males and females followed the provincial trend across all age groups in 2013. However, there were differences between the sexes within each age group. The female prevalence rate was slightly higher than the male prevalence rate among those 20-39 years of age, while the male prevalence rate was higher among those ages 40 years and older. The difference between male and female prevalence rates became especially apparent after the age of 40 and increased with age to peak at 70-74 years old (RR = 1.27).
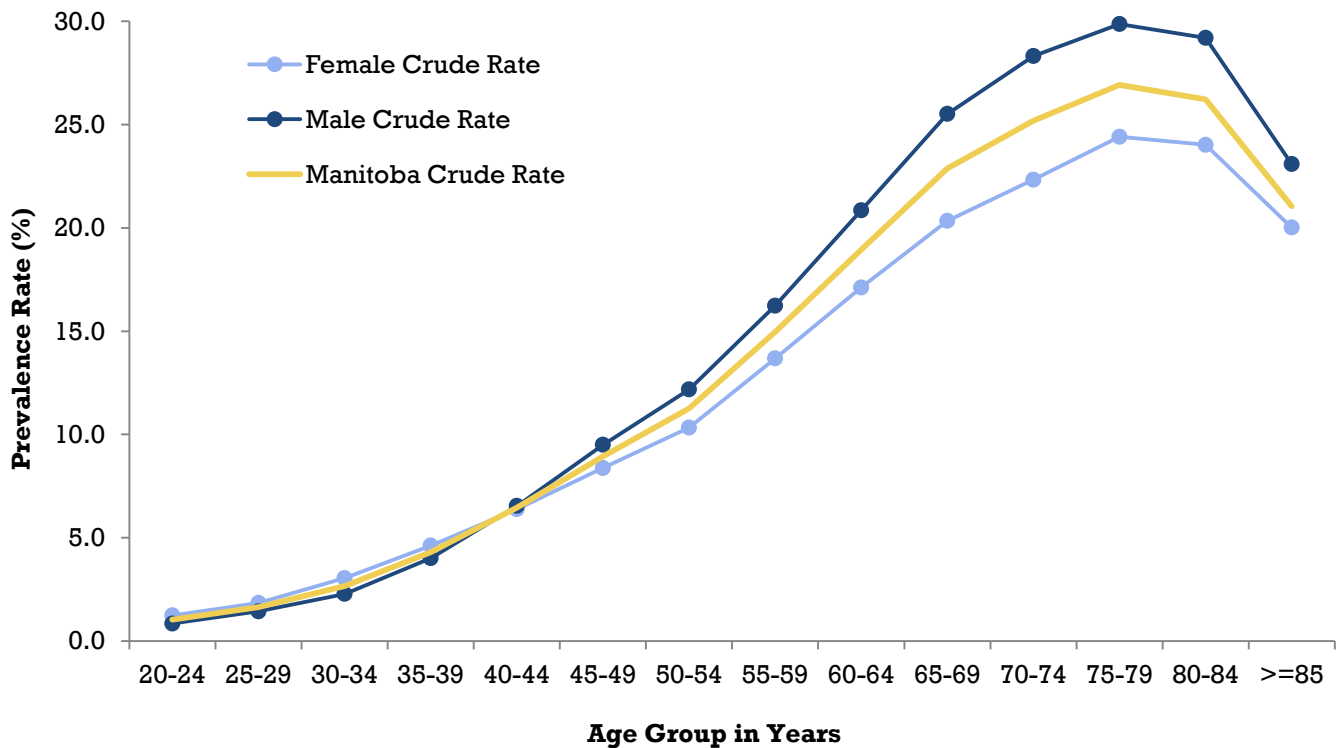
Figure 3: Crude prevalence rates (%) of diabetes in Manitoba by age group and sex, ages 20+ years, 2013

Table 3: Prevalence and prevalence rates (%) of diabetes in Manitoba by age group and sex, ages 20+ years, 2013

Age group in years	Manitoba			Female			Male			RR
	N	Crude Rate	(95%CIs)	n	Crude Rate	(95%CIs)	n	Crude Rate	(95%CIs)	M/F
20-24	1,017	1.0	(1.0 – 1.1)	595	1.2	(1.1 – 1.3)	422	0.8	(0.8 – 0.9)	0.68
25-29	1,544	1.6	(1.6 – 1.7)	861	1.8	(1.7 – 2.0)	683	1.4	(1.3 – 1.5)	0.78
30-34	2,398	2.7	(2.6 – 2.8)	1,371	3.0	(2.9 – 3.2)	1,027	2.3	(2.1 – 2.4)	0.75
35-39	3,679	4.3	(4.2 – 4.4)	1,971	4.6	(4.4 – 4.8)	1,708	4.0	(3.8 – 4.2)	0.87
40-44	5,501	6.5	(6.3 – 6.6)	2,708	6.4	(6.1 – 6.6)	2,793	6.5	(6.3 – 6.8)	1.03
45-49	7,791	8.9	(8.7 – 9.1)	3,624	8.4	(8.1 – 8.7)	4,167	9.5	(9.2 – 9.8)	1.14
50-54	10,859	11.3	(11.1 – 11.5)	4,936	10.3	(10.1 – 10.6)	5,923	12.2	(11.9 – 12.5)	1.18
55-59	13,098	15.0	(14.7 – 15.2)	5,975	13.7	(13.3 – 14.0)	7,123	16.2	(15.9 – 16.6)	1.19
60-64	14,135	19.0	(18.6 – 19.3)	6,491	17.1	(16.7 – 17.5)	7,644	20.9	(20.4 – 21.3)	1.22
65-69	13,956	22.9	(22.5 – 23.3)	6,338	20.3	(19.9 – 20.9)	7,618	25.5	(25.0 – 26.1)	1.25
70-74	10,999	25.2	(24.7 – 25.7)	5,092	22.3	(21.7 – 23.0)	5,907	28.3	(27.6 – 29.1)	1.27
75-79	8,939	26.9	(26.4 – 27.5)	4,390	24.4	(23.7 – 25.2)	4,549	29.9	(29.0 – 30.8)	1.22
80-84	7,050	26.2	(25.6 – 26.8)	3,711	24.0	(23.3 – 24.8)	3,339	29.2	(28.2 – 30.2)	1.22
85+	6,948	21.1	(20.6 – 21.6)	4,397	20.0	(19.4 – 20.6)	2,551	23.1	(22.2 – 24.0)	1.15
TOTAL	107,914	10.8	(10.8 – 10.9)	52,460	10.4	(10.3 – 10.4)	55,454	11.3	(11.2 – 11.4)	1.09

Prevalence Rates by Age Group, 1989–2013

The prevalence rate of diabetes increased from 1989 to 2013 among all age groups. Consistent with the prevalence rates in 2013 (shown in Figure 3), Figures 4 and 5 show that over the entire reporting period, the prevalence of diabetes increased with age among adults 20-79 years of age. These figures also show that prevalence rates in the younger age groups, specifically ages 20-39 years, increased only slightly over the time period compared to the much steeper increase in prevalence rates experienced by the older age groups.

In Figure 4 (ages 60+ years), there was less apparent differences between the prevalence rates of each age group compared to those in Figure 5 (ages 20-59 years old). Among the older age groups (Figure 4) the most noticeable difference in prevalence rates over the time period occurred between those 65-84 years of age and the remaining two age groups. Among those ages 60 years and older (Figure 4) the prevalence rates across the age groups were closer in value and showed greater increase than the prevalence rates in the younger age groups (Figure 5).

Those 30 years of age and younger had the smallest increase in prevalence rate, with an increase of less than one case per 100 people, from 1989 to 2013. Refer to Table 5 in Appendix B for detailed prevalence rate numbers.
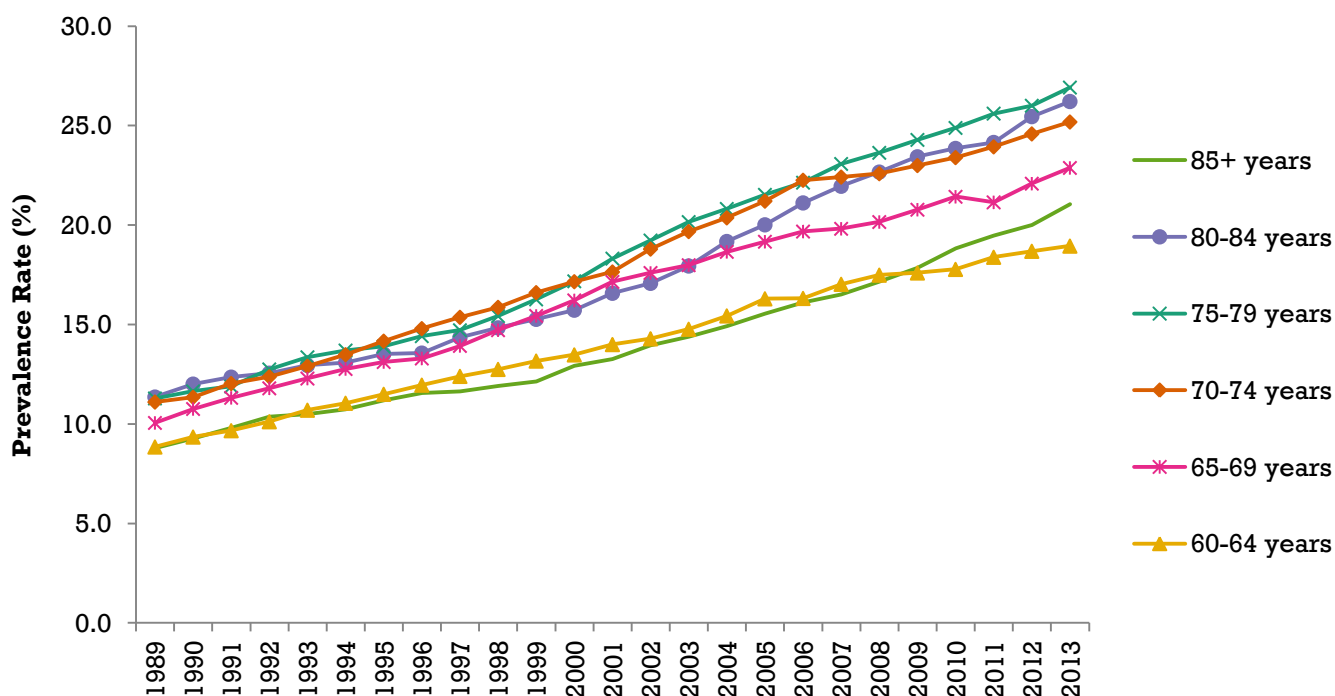
Figure 4: Prevalence rates (%) of diabetes in Manitoba by age group, ages 60-85+ years, 1989–2013
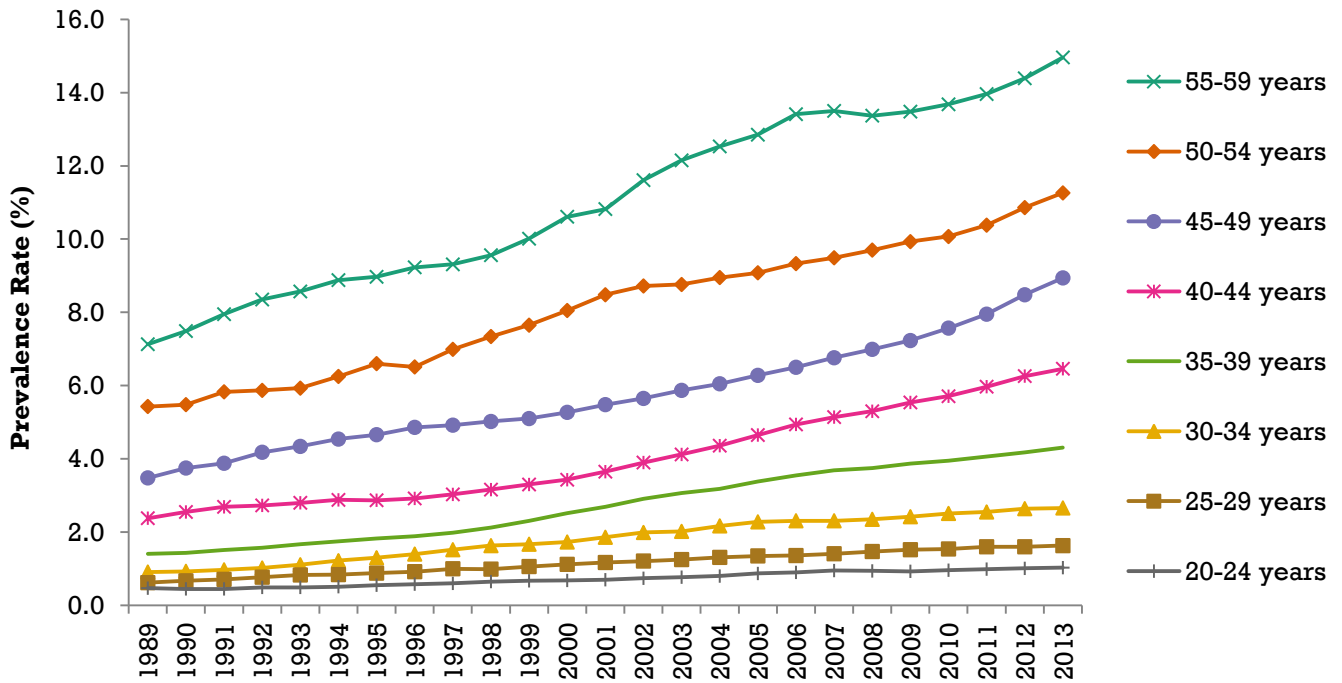
Figure 5: Prevalence rates (%) of diabetes in Manitoba by age group, ages 20–59 years, 1989–2013

Prevalence by RHA

Prevalence and Prevalence Rates by RHA, 2013

Winnipeg Regional Health Authority (RHA) had the most cases of diabetes in 2013 (Figure 6), accounting for almost six in ten of the total number of cases in the province (60,459 of 107,914 cases), while Northern Health Region had the smallest number of cases, accounting for less than one in ten cases (7,974 of 107,914 cases). However, Northern Health Region had the highest both crude and age adjusted (Figure 6) prevalence rates, followed by Interlake-Eastern RHA , Prairie Mountain Health , Winnipeg RHA and Southern Health-Santé Sud .

Northern Health Region was the only RHA where the number and prevalence rate of males with diabetes was lower than the number and prevalence rate of females with diabetes. In Northern Health Region, males were almost 20% *less* likely to have diabetes compared to females; in all other RHAs, males were 10 – 20% *more* likely to have diabetes than females. Refer to Tables 6-11 in Appendix B for detailed prevalence numbers and prevalence rates by RHA.

Age adjusted prevalence rates confirm the differences seen in crude prevalence rates among the RHAs (Figure 6). The age adjusted prevalence rates followed the same trends as the crude rates in 2013. However, the age adjusted rates were lower than the crude rates in every RHA except Northern Health Region. In Northern Health Region, the crude rate was 16.7% and the age adjusted rate was 17.9% (see Table 11 in Appendix B). Similar to what is seen in the crude rates, Northern Health Region was also the only RHA to have a larger female age adjusted rate than the male age adjusted rate.
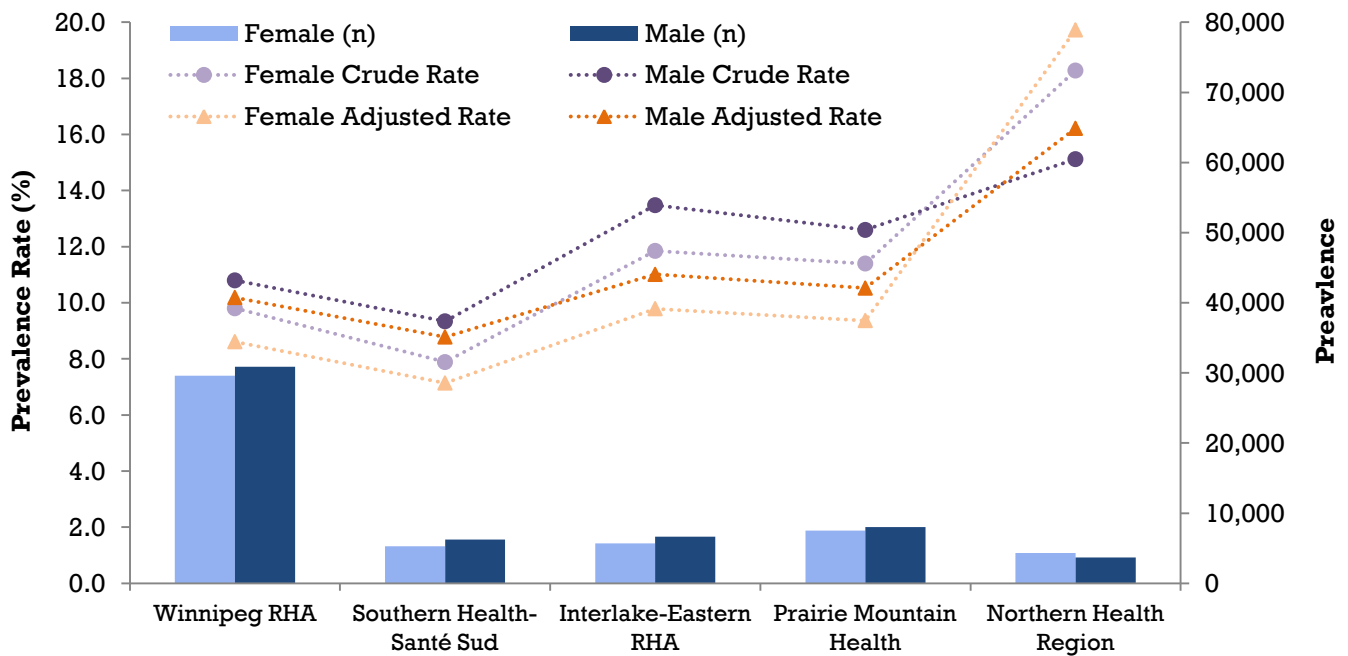
Figure 6: Crude prevalence, crude prevalence rates (%) and age adjusted prevalence rates (%) of diabetes in Manitoba by Regional Health Authority (RHA) and sex, ages 20+ years, 2013

Prevalence and Prevalence Rates in Winnipeg RHA, 1989-2013

Figure 7 shows the number of males and females living with diagnosed diabetes tripled between 1989 (18,604 people) and 2013 (60,459 people) in Winnipeg RHA. In 1989, and for the next sixteen years, there were more females living with diagnosed diabetes than males. However, in 2005, the prevalence of diabetes in males surpassed that of females and remained larger in the following years.

From 1989 to 2013, the male prevalence rate was consistently higher than the female prevalence rate, with the difference between the sexes increasing slightly over the time period. Refer to Table 7 and Table 12 in Appendix B for detailed prevalence numbers and prevalence rates for Winnipeg RHA.
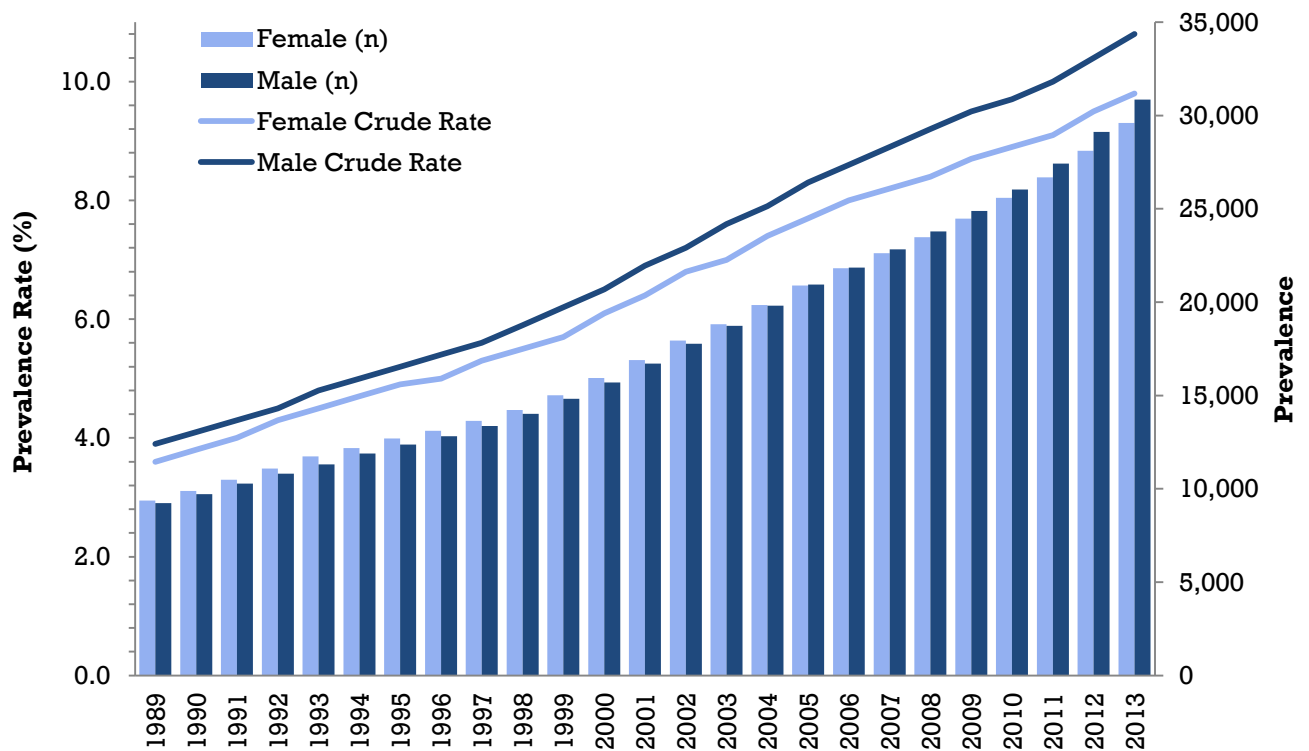
Figure 7: Prevalence and prevalence rates (%) of diabetes in Winnipeg Regional Health Authority by sex, ages 20+ years, 1989-2013

Prevalence and Prevalence Rates in Southern Health–Santé Sud, 1989-2013

The number of females and males living with diagnosed diabetes in Southern Health–Santé Sud tripled between 1989 (3,572 people) and 2013 (11,557 people) (Figure 8). Prior to 1998, prevalence in males and females was similar (a difference of less than 100 diagnosed cases in most years). After 1998, male prevalence began to increase faster than female prevalence. By 2013, male prevalence was almost 1000 diagnosed cases larger than female prevalence.

The prevalence rates show the same trend as prevalence, where the male and female prevalence rates were similar until 1998 and then the male prevalence rate began to increase at a faster pace. The rate ratio increased from 1.02 in 1998 to 1.18 by 2010. Refer to Table 8 and Table 13 in Appendix B for detailed prevalence numbers and prevalence rates for Southern Health–Santé Sud.
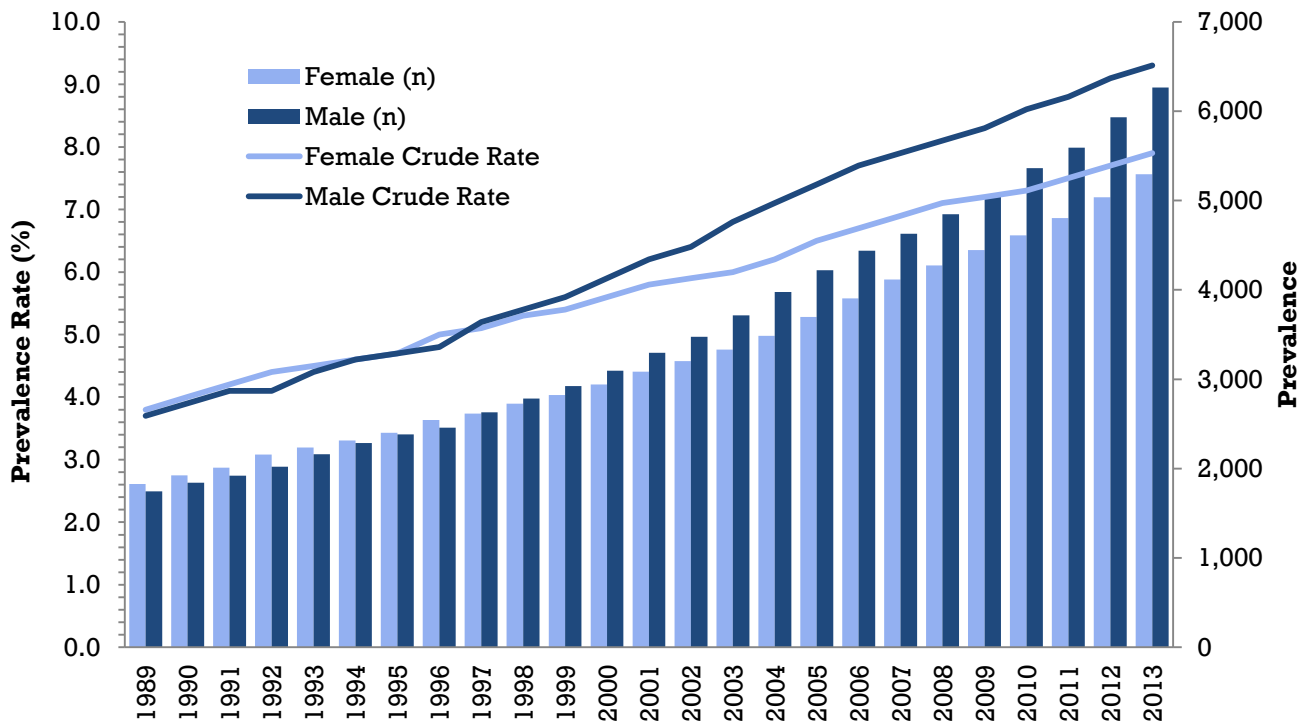
Figure 8: Prevalence and prevalence rates (%) of diabetes in Southern Health–Santé Sud by sex, ages 20+ years, 1989-2013

Prevalence and Prevalence Rates in Interlake–Eastern RHA, 1989-2013

The number of males and females living with diagnosed diabetes in Interlake-Eastern RHA tripled between 1989 (3,633 people) and 2013 (12,370 people) (Figure 9). The number of females with diagnosed diabetes was larger than the number of males with diagnosed diabetes from 1989 until 1992. Prevalence between the sexes then equalized for a few years until male prevalence began to increase faster than female prevalence in 1996. By 2013, male prevalence was almost 1000 diagnosed cases larger than female prevalence.

The female and male prevalence rates increased more than twofold over the time period. The female prevalence rate was equal to, or larger than, the male prevalence rate from 1989 until 1997. In 1998 the male prevalence rate exceeded that of females and continued to increase until 2013. Refer to Table 9 and Table 14 in Appendix B for detailed prevalence numbers and prevalence rates for Interlake-Eastern RHA.
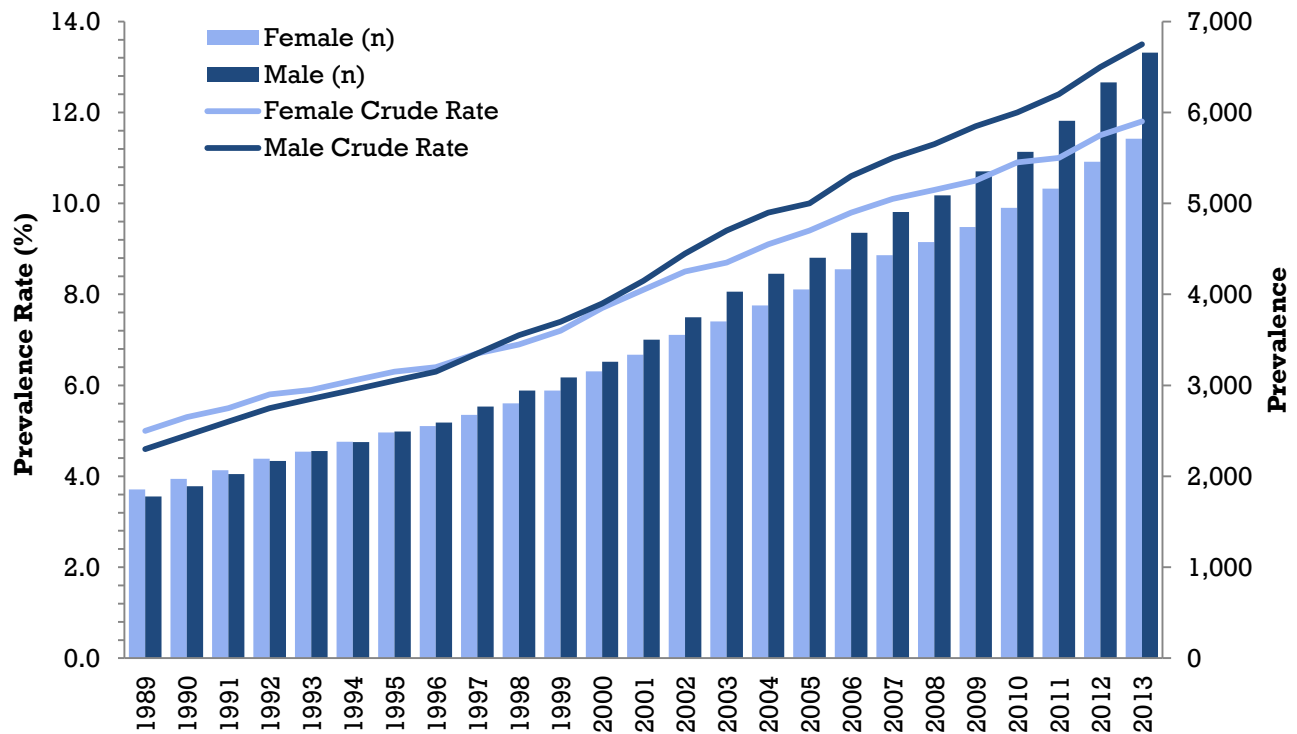
Figure 9: Prevalence and prevalence rates (%) of diabetes in Interlake–Eastern Regional Health Authority by sex, ages 20+ years, 1989-2013

Prevalence and Prevalence Rates in Prairie Mountain Health, 1989-2013

The number of males and females living with diagnosed diabetes and the prevalence rates of diagnosed diabetes in Prairie Mountain Health more than doubled between 1989 (6,100 people) and 2013 (15,549 people) (Figure 10). Prairie Mountain Health was the only RHA in which the number and prevalence rate of males with diagnosed diabetes was consistently higher than the number and prevalence rate of females with diagnosed diabetes over the entire reporting period. This difference between the sexes increased slightly over time. Refer to Table 10 and Table 15 in Appendix B for detailed prevalence numbers and prevalence rates for Prairie Mountain Health.
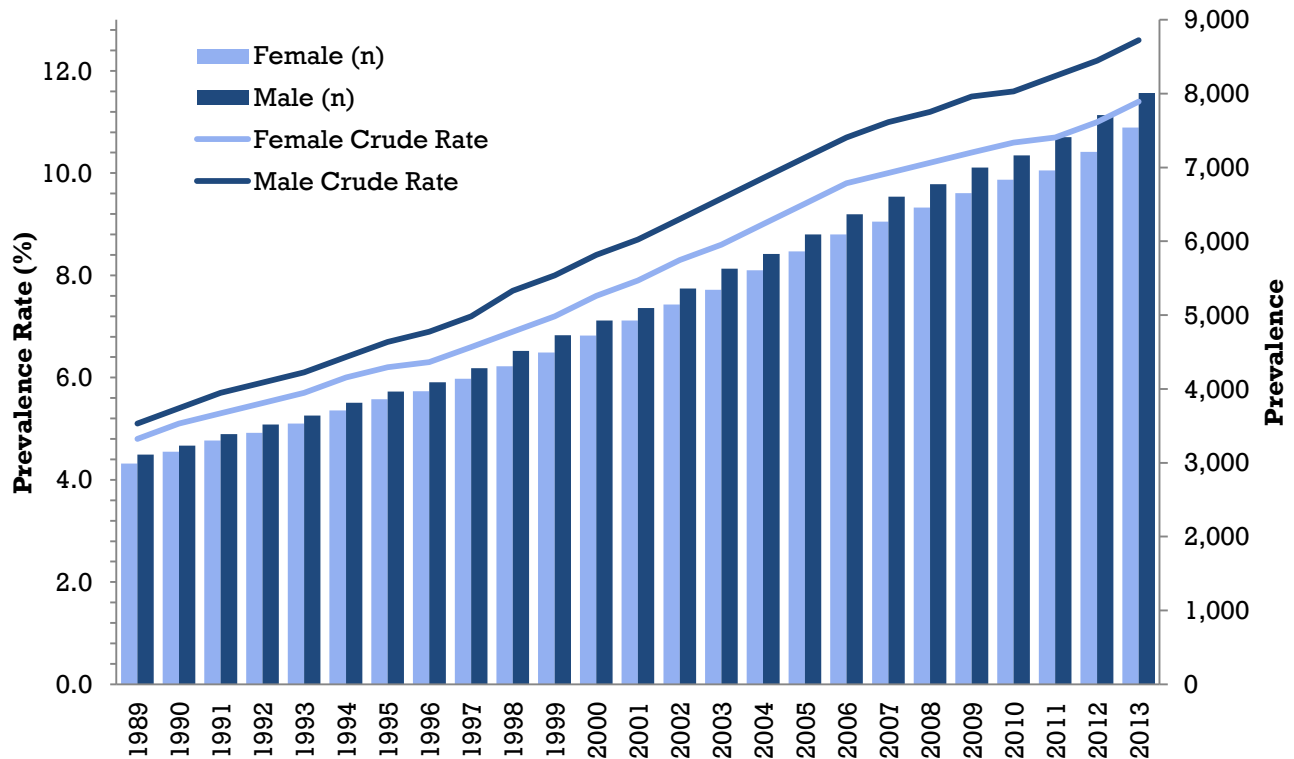
Figure 10: Prevalence and prevalence rates (%) of diabetes in Prairie Mountain Health by sex, ages 20+, 1989-2013

Prevalence and Prevalence Rates in Northern Health Region, 1989-2013

The number and prevalence rates of males and females diagnosed with diabetes in Northern Health Region increased almost fourfold from 1989 (2,053 people) to 2013 (7,979 people) (Figure 11). The number and prevalence rates of females diagnosed with diabetes was consistently higher than the number and prevalence rates of males diagnosed with diabetes over the entire reporting period. However, the gap narrowed slightly over the reporting period (RR = 0.66 in 1989 and RR = 0.83 in 2013). Northern Health Region was the only RHA where female prevalence and prevalence rates were higher than that of males over the entire reporting period. Refer to Table 11 and Table 16 in Appendix B for detailed prevalence numbers and prevalence rates for Northern Health Region.
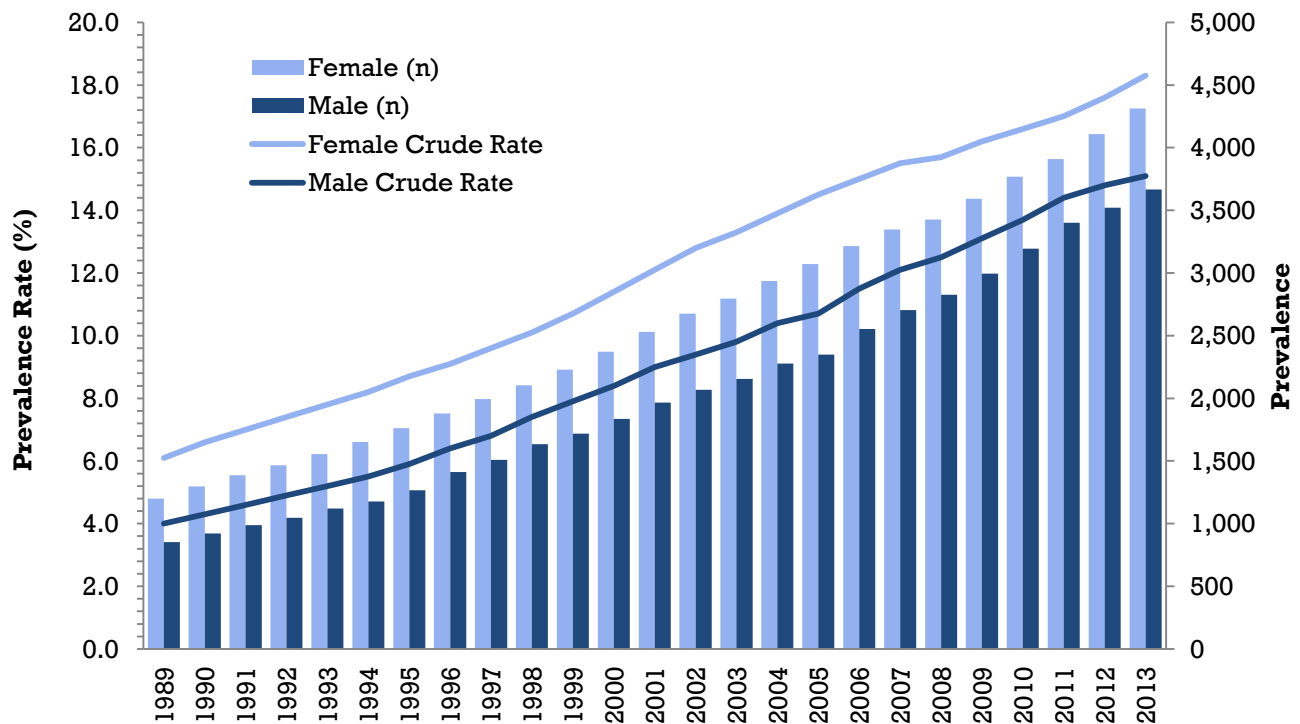
Figure 11: Prevalence and prevalence rates (%) of diabetes in Northern Health Region by sex, ages 20+ years, 1989-2013

Age Adjusted Prevalence Rates by RHA, 1989–2013

When comparing the age adjusted prevalence rates across the RHAs, Figure 12 shows that Northern Health Region consistently had the highest prevalence rates over the reporting period and experienced the largest increase in rates from 1989 (6.8%) to 2013 (17.9%). Southern Health-Santé Sud consistently had the lowest prevalence rates over the reporting period and experienced the smallest increase in rates from 1989 (3.7%) to 2013 (7.9%).

With the exception of Northern Health Region, which had much higher rates, all of the RHA's age adjusted prevalence rates were similar, and thus clustered together. Interlake-Eastern RHA consistently had the highest age adjusted prevalence rates of the cluster, with Prairie Mountain Health second; both were consistently above the Manitoba average. Winnipeg RHA had an age adjusted prevalence rates between the Manitoba average and Southern Health-Santé Sud. Refer to Tables 7-11 in Appendix B for detailed age adjusted prevalence rates by RHA.
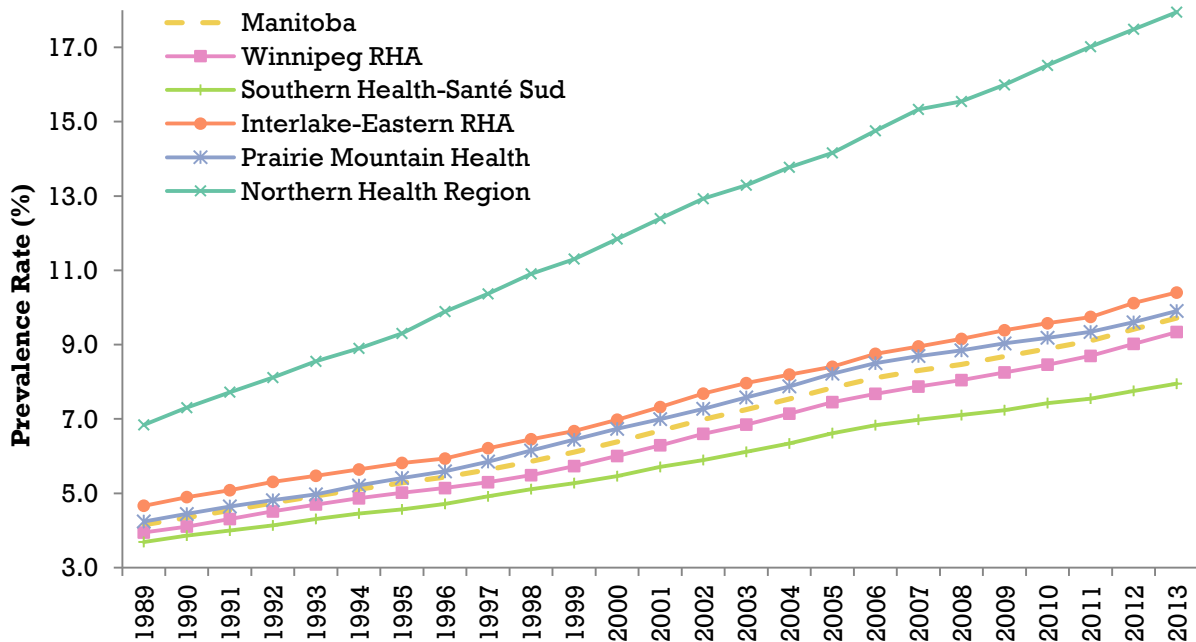
Figure 12: Age adjusted prevalence rates (%) of diabetes in Manitoba by Regional Health Authority (RHA), ages 20+ years, 1989–2013

Age Adjusted Prevalence Rates by Sex and RHA, 1989–2013

Males

Figure 13 compares the male age adjusted prevalence rates in each RHA. The male prevalence rates in Northern Health Region was consistently higher than the male prevalence rates in the other RHAs and increased at a faster pace over the time period. The lowest male prevalence rates consistently occurred in Southern Health-Santé Sud. The male prevalence rates in Interlake-Eastern RHA and Prairie Mountain Health were very similar over the reporting period. Refer to Tables 12-16 in Appendix B for detailed male age adjusted prevalence rates by RHA
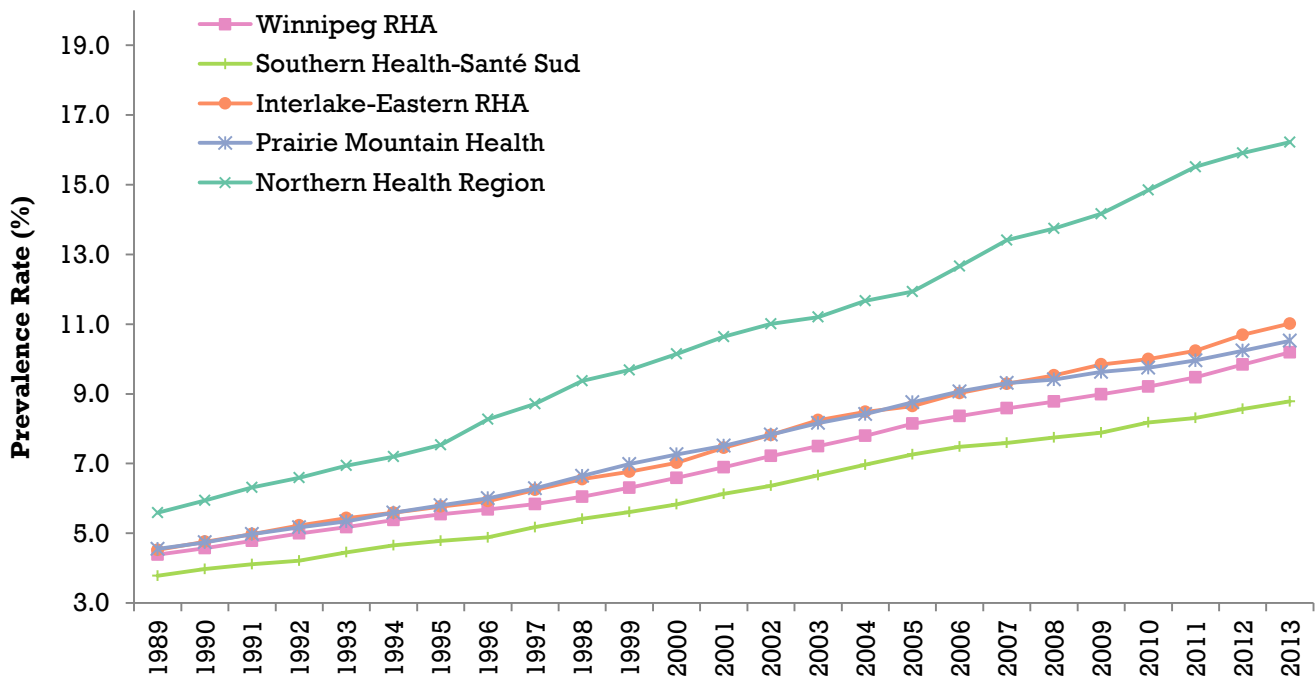
Figure 13: Age adjusted prevalence rates (%) of males with diabetes in Manitoba by Regional Health Authority (RHA), ages 20+ years, 1989–2013

Females

Figure 14 compares the female age adjusted prevalence rates in each RHA. Northern Health Region had the highest female prevalence rates, which increased at a faster pace than the other female rates over the time period. Interlake-Eastern RHA had the second highest female prevalence rates, followed by Prairie Mountain Health, Winnipeg RHA, and Southern Health – Santé Sud. Winnipeg RHA and Southern Health – Santé Sud had similar rates until 1999 when Winnipeg RHA's rates began to increase at a faster pace. Refer to Tables 12-16 in Appendix B for detailed female age adjusted prevalence rates by RHA
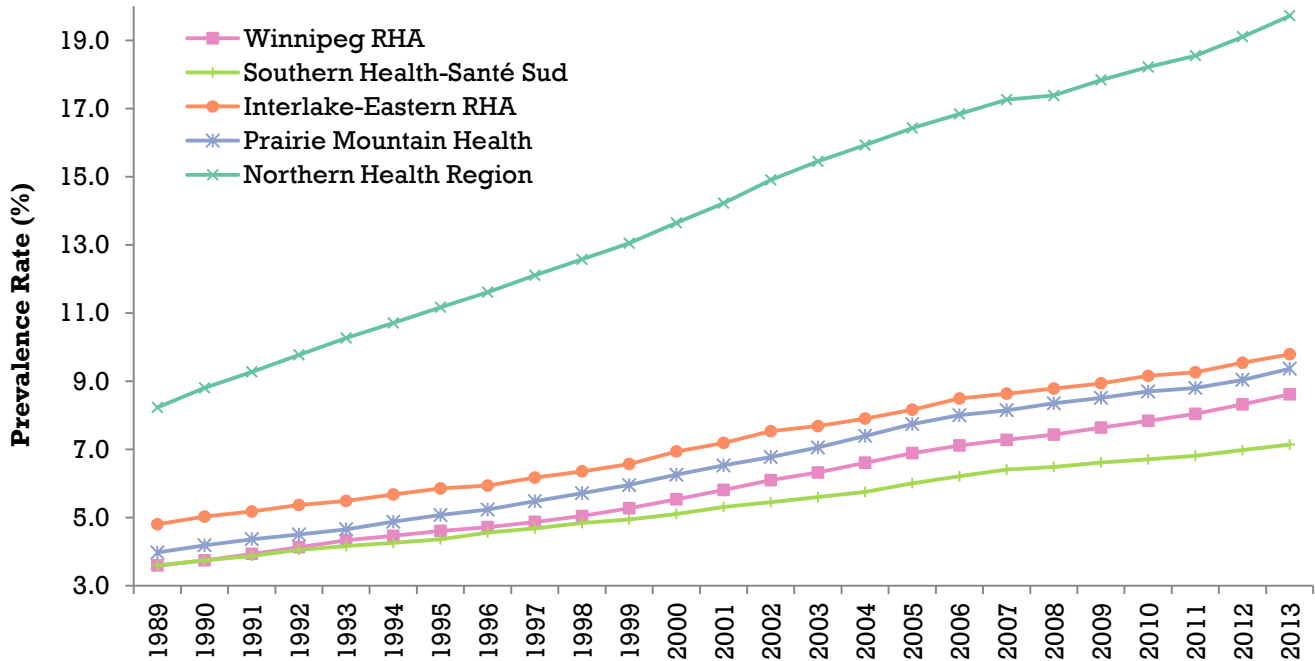
Figure 14: Age adjusted prevalence rates (%) of females with diabetes in Manitoba by Regional Health Authority (RHA), ages 20+ years, 1989–2013

Incidence of Diabetes

Incidence Trends in Manitoba, 1989–2013

The number of newly diagnosed cases of diabetes recorded each year among adult residents of Manitoba increased from 3,763 in 1989 to 9,001 in 2013, and the crude incidence rates doubled during this time period. In 1989, among every 1,000 Manitoba residents, who were not previously diagnosed with diabetes, there were five new cases. In 2013, among every 1,000 people not previously diagnosed with diabetes, there were 10 new cases. Refer to Table 17 and Table 18 in Appendix B for detailed incident counts and incidence rates.

The behaviour of incident diabetes cases in Manitoba varied over the reporting period:

- 1989 – 1996: the number and rate of incident cases were *relatively stable*;
- 1996 – 2006: the number and rate of incident cases *increased*;
- 2006 – 2010: the number and rate of incident cases were *relatively stable*; and
- 2010 – 2013: the number and rate of incident cases *increased*.

As Figure 15 shows, the number of males newly diagnosed with diabetes each year followed the same trend as the number of females newly diagnosed with diabetes each year, with males having a larger number of incident cases than females over most of the reporting period. Prior to 1996, males and females experienced similar, relatively stable, incidence counts. After 1996, male incidence was consistently higher than female incidence and increased more over the reporting period. Between 2005 and 2008, female incidence decreased by almost 300 cases, whereas male incidence decreased by only 100 cases.
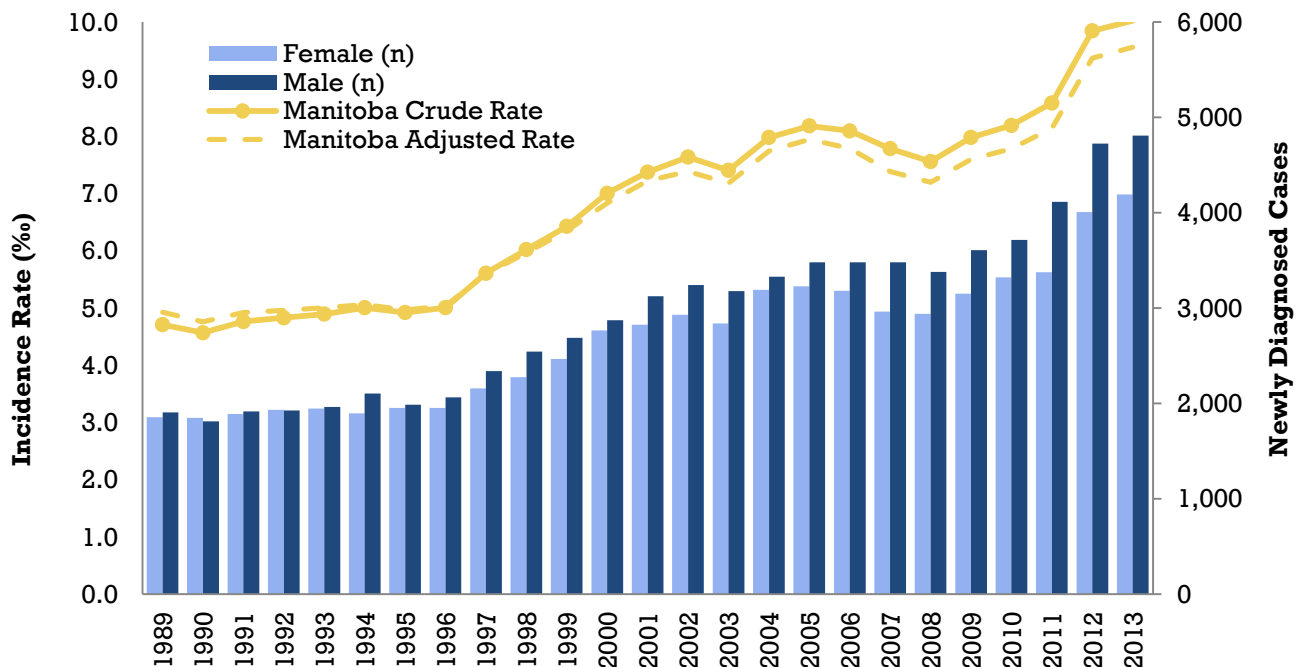
Figure 15: Number of newly diagnosed diabetes cases and total crude incidence rate (per 1,000 persons) of diabetes in Manitoba by sex, ages 20+ years, 1989-2013

Incidence by Sex, 1989–2013

The male and female age adjusted and crude incidence rates increased from 1989 to 2013 following a similar trend as the total incidence in Manitoba (Figure 16). The crude and age adjusted incidence rates of males were consistently higher than the rates of females over the entire reporting period. Male and female rates were relatively stable from 1989 to 1996, increased from 1996 to 2006, stabilized from 2006 to 2010, and increased from 2010 to 2013. The gap between the male and female rates grew throughout the reporting period as the incidence of males increased more than females over the period. Refer to Table 17 and Table 18 in Appendix B for detailed incident counts and incidence rates.
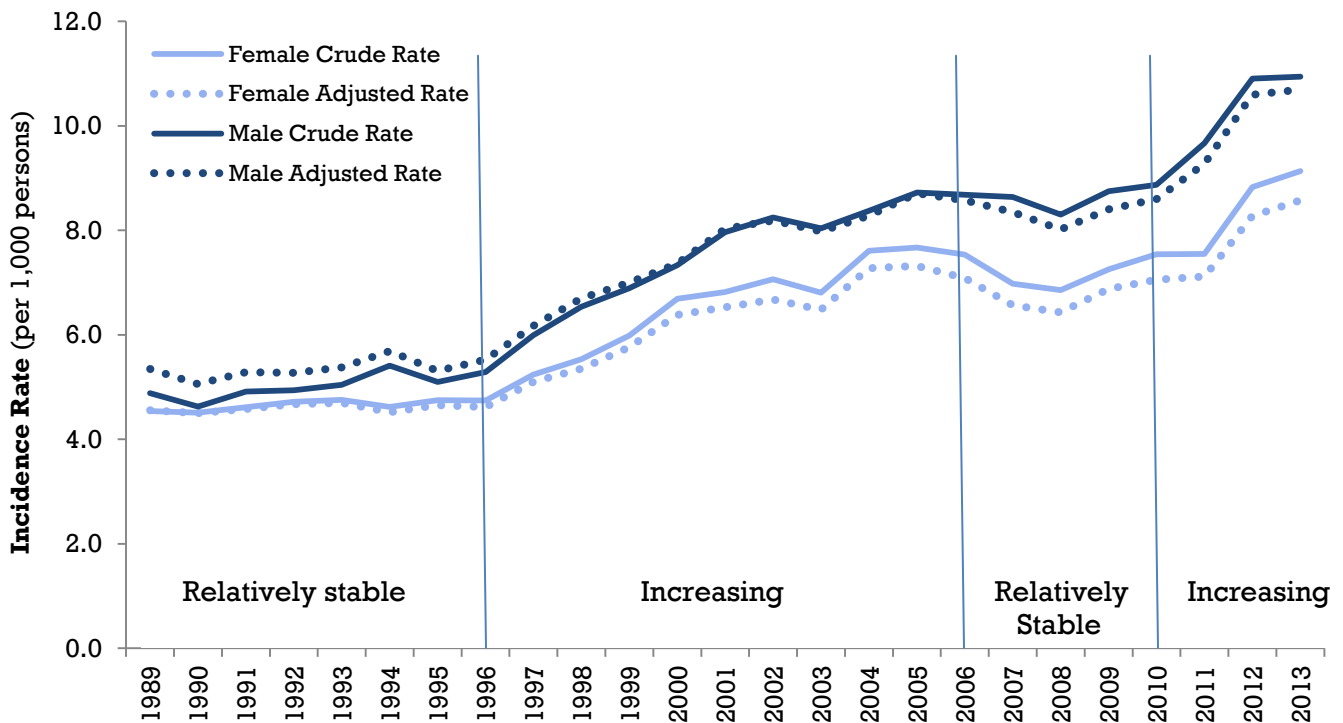
Figure 16: Crude and age adjusted incidence rates (per 1,000 persons) of diabetes in Manitoba by sex, ages 20+ years, 1989-2013

Incidence by Age

Incidence Rates by Sex and Age Group, 2013

Figure 17 shows the rates of newly diagnosed diabetes cases varied across age groups in 2013. Generally, for both females and males, older groups had higher rates of newly diagnosed cases in 2013 with a peak at the 75-79 year old age group. Among those aged 20–24 years, there were less than two new cases per 1,000 persons, compared to about 22 new cases per 1,000 persons in those aged 75–79 years (Table 4).

Incidence rates of diabetes in both males and females followed the provincial trend in 2013, but the sexes experienced different burdens of the disease. The female incidence rates were higher than the male incidence rates among those aged 20-34 years. However, among those aged 35 years and older the male incidence rates were higher than those of females. After age 34, the difference in incidence rates between the sexes increased, peaking in those aged 80–84 years (RR=1.55).

Almost 70% of new diabetes cases in 2013 were diagnosed among adults aged 20 to 64 years and, of these cases, over half (56.2%) were diagnosed in those aged 50-64 years.
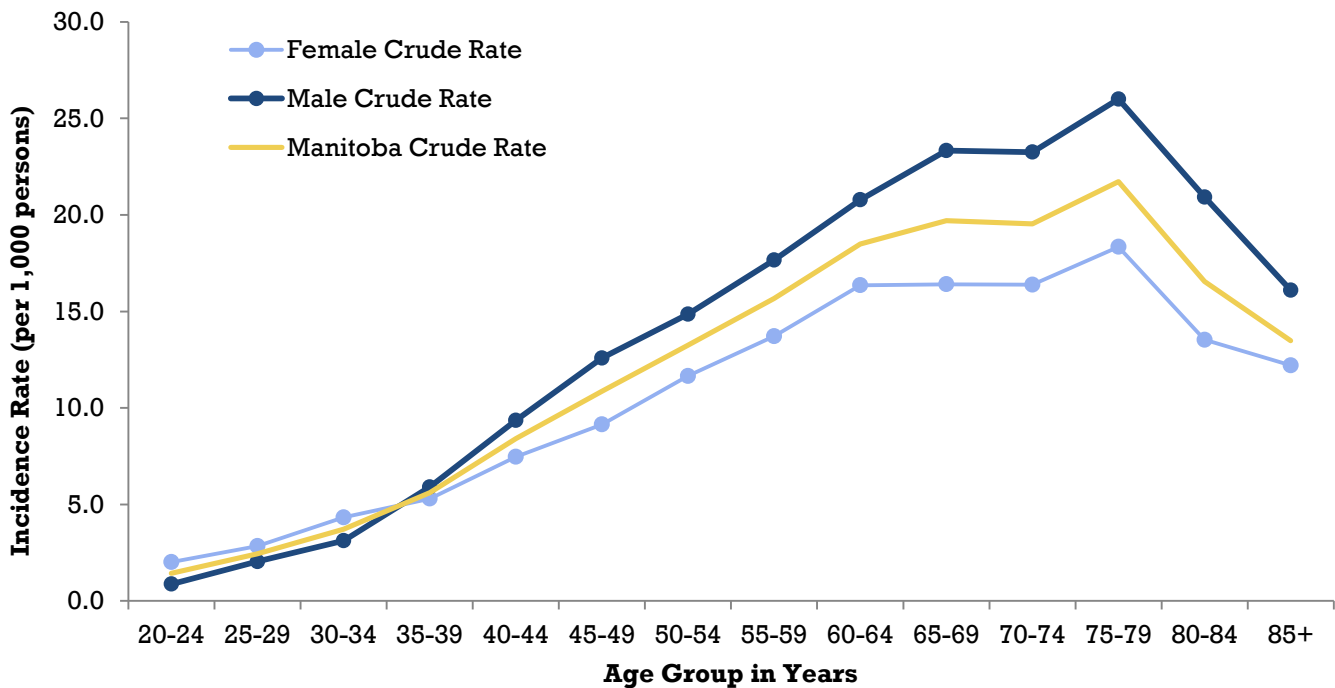
Figure 17: Crude incidence rates (per 1,000 persons) of diabetes in Manitoba by age group and sex, ages 20+ years, 2013

Table 4: Incidence and crude incidence rates (per 1,000 persons) of diabetes in Manitoba by age group and sex, ages 20+ years, 2013

Age group in years	Manitoba			Female				Male				RR
	N	Crude Rate	(95%CIs)	n	(%)	Crude Rate	(95%CIs)	n	(%)	Crude Rate	(95%CIs)	M/F
20–24	140	1.4	(1.2 – 1.7)	96	(68.6)	2	(1.6 – 2.5)	44	(31.4)	0.9	(0.6 – 1.2)	0.45
25–29	227	2.4	(2.1 – 2.8)	131	(57.7)	2.8	(2.4 – 3.4)	96	(42.3)	2	(1.7 – 2.5)	0.71
30–34	328	3.7	(3.3 – 4.1)	190	(57.9)	4.3	(3.7 – 5.0)	138	(42.1)	3.1	(2.6 – 3.7)	0.72
35–39	460	5.6	(5.1 – 6.1)	217	(47.2)	5.3	(4.6 – 6.1)	243	(52.8)	5.9	(5.2 – 6.7)	1.11
40–44	676	8.4	(7.8 – 9.1)	299	(44.2)	7.5	(6.6 – 8.4)	377	(55.8)	9.4	(8.4 – 10.3)	1.25
45–49	872	10.9	(10.2 – 11.6)	366	(42.0)	9.1	(8.2 – 10.1)	506	(58.0)	13	(11.5 – 13.7)	1.38
50–54	1,149	13.3	(12.5 – 14.0)	505	(44.0)	12	(10.7 – 12.7)	644	(56.0)	15	(13.7 – 16.0)	1.27
55–59	1,185	15.7	(14.8 – 16.6)	524	(44.2)	14	(12.6 – 14.9)	661	(55.8)	18	(16.3 – 19.1)	1.29
60–64	1,139	18.5	(17.4 – 19.6)	523	(45.9)	16	(15.0 – 17.8)	616	(54.1)	21	(19.2 – 22.5)	1.27
65–69	945	19.7	(18.5 – 21.0)	414	(43.8)	16	(14.9 – 18.1)	531	(56.2)	23	(21.4 – 25.4)	1.42
70–74	651	19.5	(18.1 – 21.1)	295	(45.3)	16	(14.6 – 18.4)	356	(54.7)	23	(20.9 – 25.8)	1.42
75–79	539	21.7	(19.9 – 23.6)	254	(47.1)	18	(16.2 – 20.7)	285	(52.9)	26	(23.1 – 29.2)	1.42
80–84	334	16.6	(14.8 – 18.4)	161	(48.2)	14	(11.5 – 15.8)	173	(51.8)	21	(17.9 – 24.3)	1.55
85+	356	13.5	(12.1 – 15.0)	217	(61.0)	12	(10.6 – 13.9)	139	(39.0)	16	(13.5 – 19.0)	1.32

Incidence Rates by Age Group, 1989–2013

Figure 18 and Figure 19 show the incidence rates of diabetes were stable from 1989 to 1996 and increased from 1996 to 2013, across all age groups. Over the reporting period, older age groups had consistently higher incidence rates than younger age groups. In people aged 60 years and older, there was a "dip" in incidence rates beginning in 2005 and ending around 2012. This decline, and subsequent increase, can be seen to a lesser extent in those aged 44-59 years, but is not apparent in those aged 20-44 years. There were larger differences in incidence rates between the younger age groups (people aged 20-59 years) over the reporting period than were seen in the older age groups. Refer to Table 19 in Appendix B for detailed incidence rates by age group.
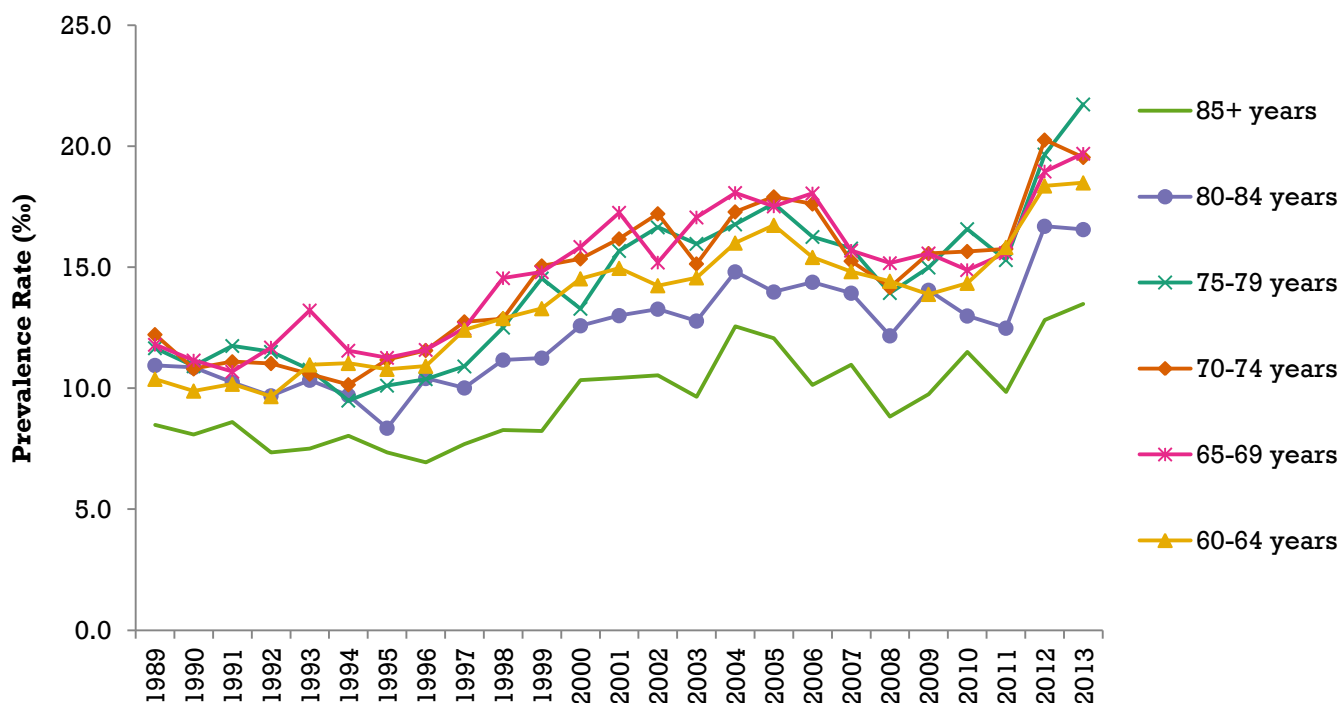
Figure 18: Incidence rates (per 1,000 persons) of diabetes in Manitoba by age group, ages 60-85+ years, 1989-2013
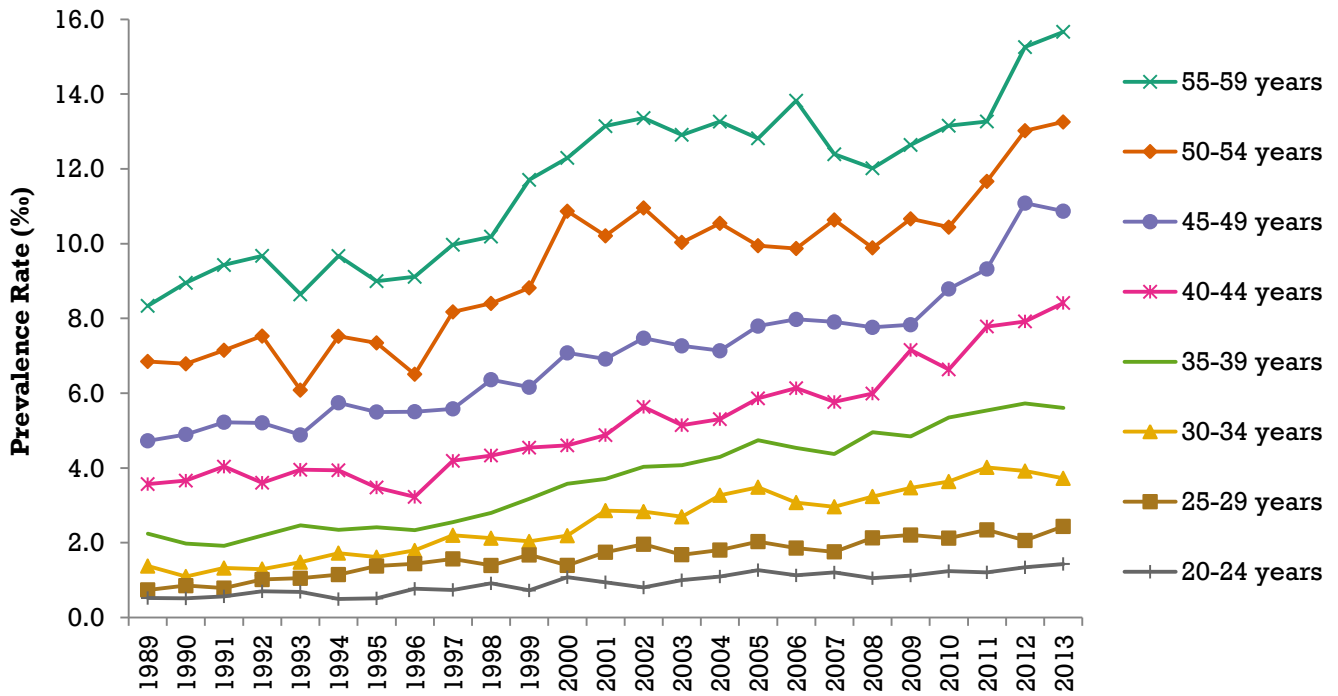
Figure 19: Incidence rates (per 1,000 persons) of diabetes in Manitoba by age group, ages 20-59 years, 1989-2013

Incidence by RHA

Incidence and Incidence Rates by RHA, 2013

In 2013, Winnipeg RHA had the largest number of newly diagnosed diabetes cases (5,368), accounting for six in ten (59.6%) of the total number of cases in Manitoba (9,001). Figure 20 shows Northern Health Region had both the highest crude incidence rates (14.1 per 1,000 persons) and the highest age adjusted incidence rates (15.4 per 1,000 persons). Northern Health Region was followed by Winnipeg RHA, Interlake-Eastern RHA and Prairie Mountain Health, who all experienced approximately the same crude and age adjusted incidence rates. Southern Health-Santé Sud had the lowest crude and age adjusted incidence rates (7.2 and 6.9 cases per 1,000 persons, respectively). The crude and age adjusted incidence rates followed the same trend with the age adjusted rates being lower. In Northern Health Region, the difference between male and female adjusted rates was lower compared to the difference between male and female crude rates. Refer to Table 20 in Appendix B for detailed incidence counts and rates by RHA.
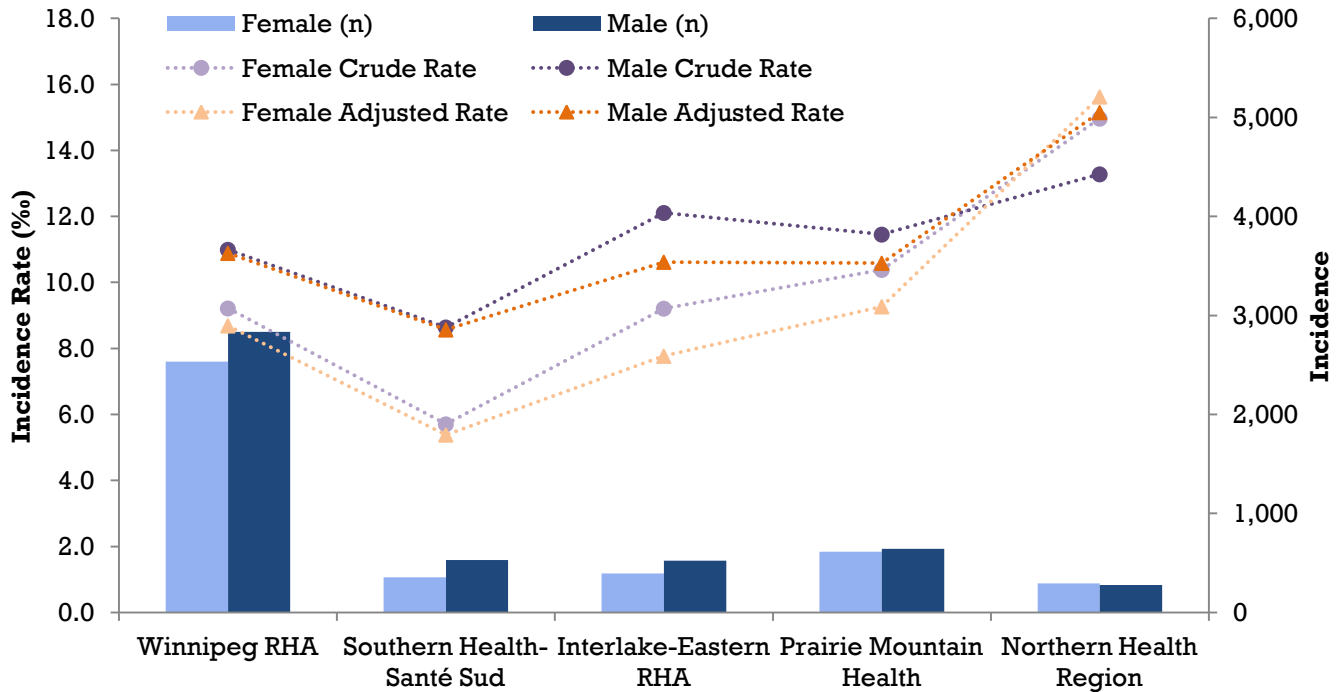
Figure 20: Number of newly diagnosed cases, crude incidence rates (per 1,000 persons) and age adjusted incidence rates (per 1,000 persons) of diabetes in Manitoba by Regional Health Authority (RHA) and sex, ages 20+ years, 2013

Incidence and Incidence Rates in Winnipeg RHA, 1989-2013

Figure 21 shows that the number and rate of incident male and female diabetes cases in Winnipeg RHA followed the same trend as the general population (Figure 15). The incidence rates of diabetes in Winnipeg RHA increased more than twofold over the time period (from 4.2 cases per 1,000 persons in 1989 to 10.1 cases per 1,000 persons in 2013), with stable incidence between 1989 and 1996, increased incidence from 1996 to 2006, stable incidence from 2006 to 2010, and increased incidence from 2011 to 2013.

The difference between male and female incidence rates, where the male incidence rates were consistently larger than the female rates over the period, is also a reflection of the trends seen provincially. Refer to Table 21 and Table 26 in Appendix B for detailed incidence counts and rates for Winnipeg RHA.
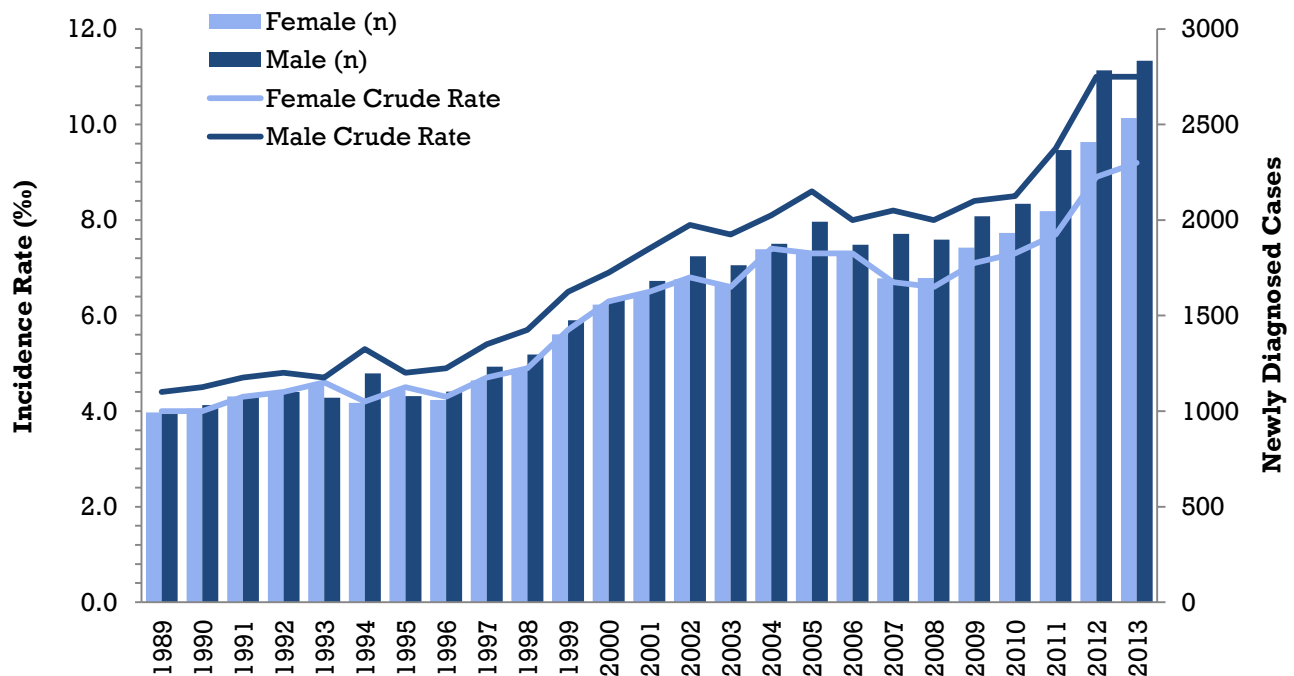
Figure 21: Number of newly diagnosed cases and incidence rates (per 1,000 persons) of diabetes in Winnipeg Regional Health Authority by sex, ages 20+ years, 1989-2013

Incidence and Incidence Rates in Southern Health–Santé Sud, 1989-2013

The number and rates of males and females newly diagnosed with diabetes each year in Southern Health–Santé Sud did not follow a consistent trend over the reporting period, but the incidence rate in 2013 (7.2 cases per 1,000 persons) was about one and one-half times greater than the incidence rate in 1989 (4.5 cases per 1,000 persons) (Figure 22). Despite not showing consistent increases, the trend experienced by Southern Health–Santé Sud is similar to the trend that was experienced provincially, which is shown in Figure 15.

Between 1989 and 1996, the incidence and incidence rates were relatively stable for both males and females. The incidence and incidence rates then increased from 1996 to 2005, remained relatively stable until about 2011, then began to increase again until 2012 for females and 2013 for males. Females experienced a decrease in incidence and incidence rates in 2013.

The male incidence rates were higher than the female incidence rates over the entire reporting period, except for in 1992 and 1996. The difference between the two incidence rates was most pronounced in 2013, accounting for a RR of 1.51. Refer to Table 22 and Table 27 in Appendix B for detailed incidence counts and rates for Southern Health–Santé Sud.
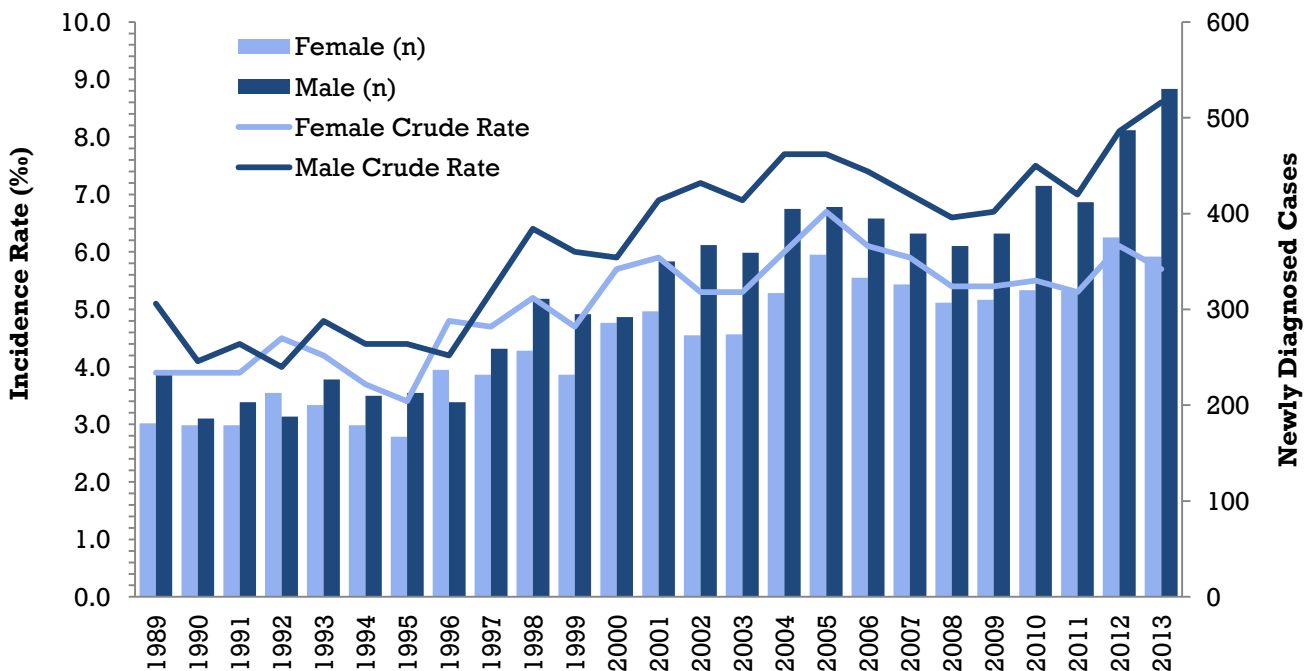
Figure 22: Number of newly diagnosed cases and incidence rates (per 1,000 persons) of diabetes in Southern Health-Santé Sud by sex, ages 20+ years, 1989-2013

Incidence and Incidence Rates in Interlake–Eastern RHA 1989-2013

Figure 23 shows the number and rate of incident male and female diabetes cases in Interlake–Eastern RHA followed a similar trend as the general population (shown in Figure 15). The incidence rates of diabetes in Interlake–Eastern RHA almost doubled over the time period (from 5.9 cases per 1,000 persons in 1989 to 10.7 cases per 1,000 persons in 2013). The male and female incidence and incidence rates were stable from 1989 to 1996, increased from 1996 to 2006, relatively stable between 2006 and 2010, and increased from 2011 to 2012. There was a decrease in both male and female incidence and incidence rates in 2013. This may be a result of the small fluctuations that naturally occur over the time period. It cannot be assumed the decrease will continue.

The female incidence rates were larger than the male incidence rates for the first four years (1989 to 1992), but the male incidence rates were higher than the female incidence rates over the rest of the period (1993 to 2013). Refer to Table 23 and Table 28 in Appendix B for detailed incidence counts and rates for Interlake – Eastern RHA.
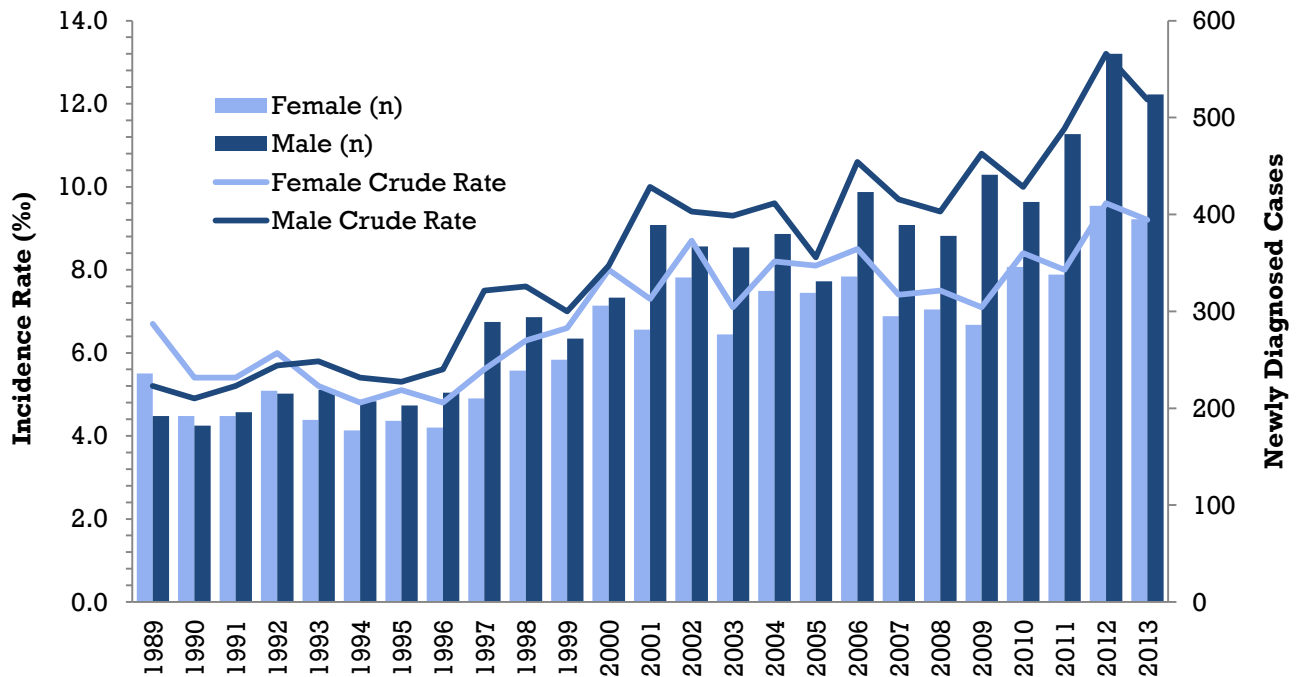
Figure 23: Number and incidence rates (per 1,000 persons) of diabetes in Interlake-Eastern Regional Health Authority by sex, ages 20+ years, 1989-2013

Incidence and Incidence Rates in Prairie Mountain Health, 1989-2013

The number and crude rates of incident male and female diabetes cases in Prairie Mountain Health (Figure 24) did not follow the same trend as the general population (shown in Figure 15). Incidence and incidence rates for both males and females were stable from 1989 to 1996, as is seen in the general population. However, between 1996 and 1998 there was a jump in male incidence and crude incidence rate, from 359 newly diagnosed cases of diabetes (6.5 cases per 1,000 persons) in 1996 to 474 newly diagnosed cases in 1998 (8.7 cases per 1,000 persons). From 1999 to 2010, a time when incidence was increasing in all of the other RHAs, the incidence and incidence rates in Prairie Mountain Health remained stable. After this period, incidence rates increased from 2010 to 2013. The male incidence rates were higher than the female incidence rates over the reporting period. Refer to Table 24 and Table 29 in Appendix B for detailed incidence counts and rates for Prairie Mountain Health.
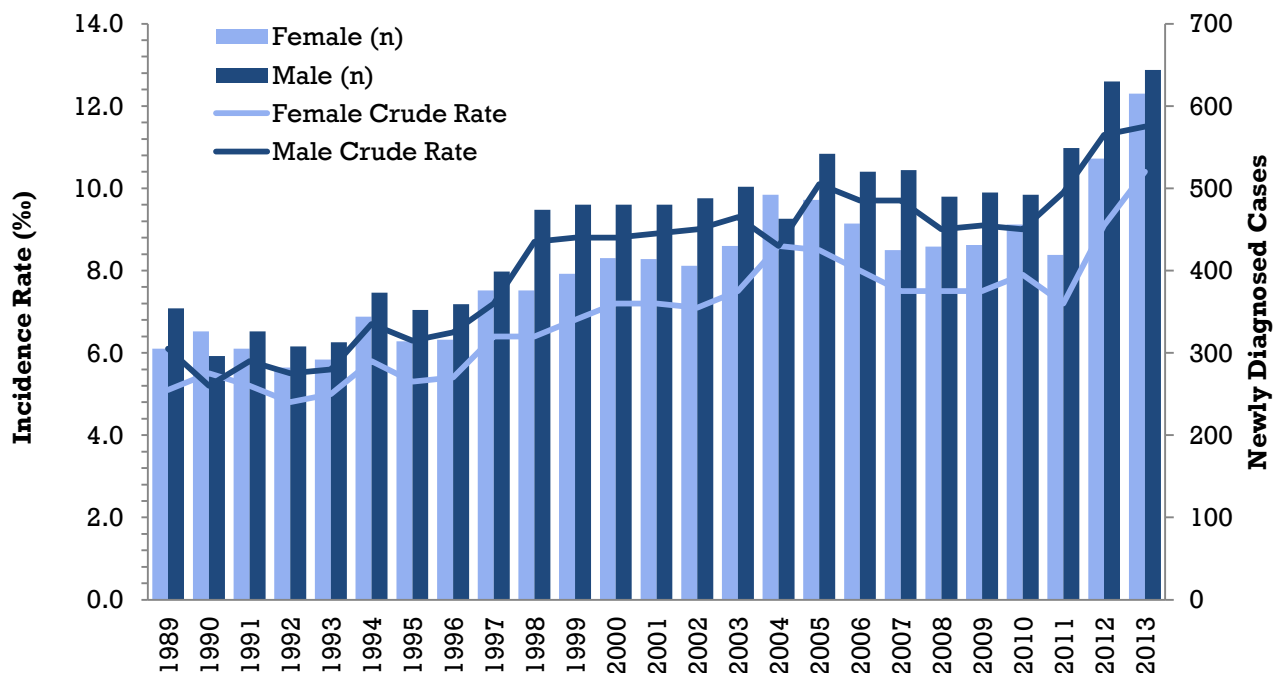
Figure 24: Number and incidence rates (per 1,000 persons) of diabetes in Prairie Mountain Health by sex, ages 20+ years, 1989-2013

Incidence and Incidence Rates in Northern Health Region, 1989-2013

The male and female incidence and incidence rates in Northern Health Region did not follow the same trend as the general population (shown in Figure 15). Figure 25 shows there was some stability in both the male and female incidence and incidence rates from 1989 to 1993, but male and female incidence rates increased over the rest of the period (1993 to 2013), with the exception of a few fluctuations. Northern Health Region is the only RHA in which the female incidence rates were larger than male incidence rates for the majority of the time period. From 2006 to 2013, the difference between male and female incidence rates decreased, and in some years the male incidence surpassed that of females. Refer to Table 25 and Table 30 in Appendix B for detailed incidence counts and rates for Northern Health Region.
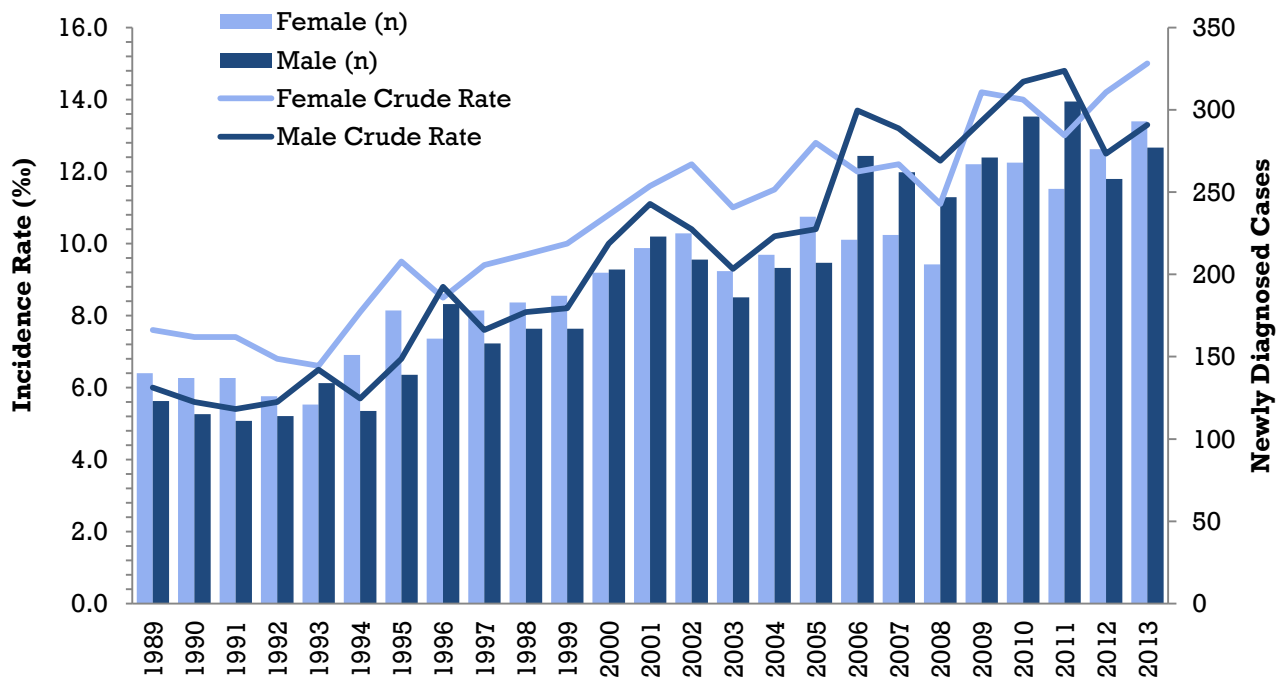
Figure 25: Number and incidence rates (per 1,000 persons) of diabetes in Northern Health Region by sex, ages 20+ years, 1989-2013

Age Adjusted Incidence Rates by RHA, 1989–2013

Each RHA had increasing age adjusted incidence rates of diabetes from 1989 to 2013. When comparing the age adjusted incidence rates of all the RHAs, Figure 26 shows Northern Health Region consistently had the highest age adjusted incidence rates over the reporting period, and experienced the largest increase in rate from 1989 (8.8 cases per 1,000 persons) to 2013 (15.4 cases per 1,000 persons).The remaining four RHAs experienced age adjusted rates that were similar in value to the provincial rates and lower than Northern Health Region's rates. Southern Health–Santé Sud had the lowest incidence rates among all RHAs over the time period, except in 1998 when Winnipeg RHA had the lowest incidence rate. Of all RHAs, Southern Health–Sande Sud had the smallest increase in incidence rates over the period, especially after 2005. Refer to Tables 21-25 in Appendix B for detailed incidence counts and rates by RHA.
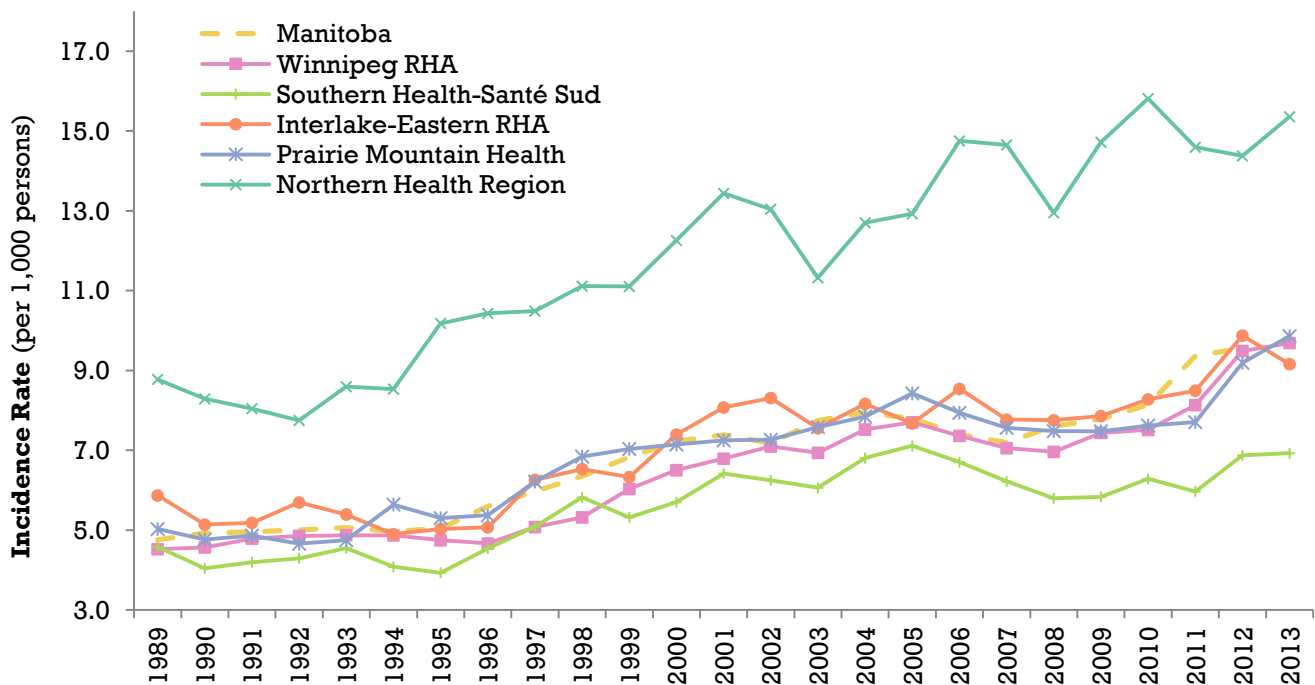
Figure 26: Age adjusted incidence rates (per 1,000 persons) of diabetes in Manitoba by Regional Health Authority (RHA), ages 20+ years, 1989-2013

Age Adjusted Incidence Rates by Sex and RHA, 1989–2013

Figure 27 and Figure 30 compare the male and female age adjusted incidence rates in each RHA respectively. The male and female age adjusted incidence rates increased in all RHAs from 1989 to 2013. Northern Health Region consistently had higher incidence rates for both sexes than were seen in the other regions over the time period. The incidence rates in the other four regions were similar, and overlapping. In general, Southern Health-Santé Sud had the lowest male and female incidence rates among all RHAs over the entire reporting period. Southern Health-Santé Sud's incidence rates increased the least when compared to the other RHAs from 1989 to 2013. Refer to Tables 26-30 in Appendix B for detailed incidence counts and rates by RHA and sex.

Males
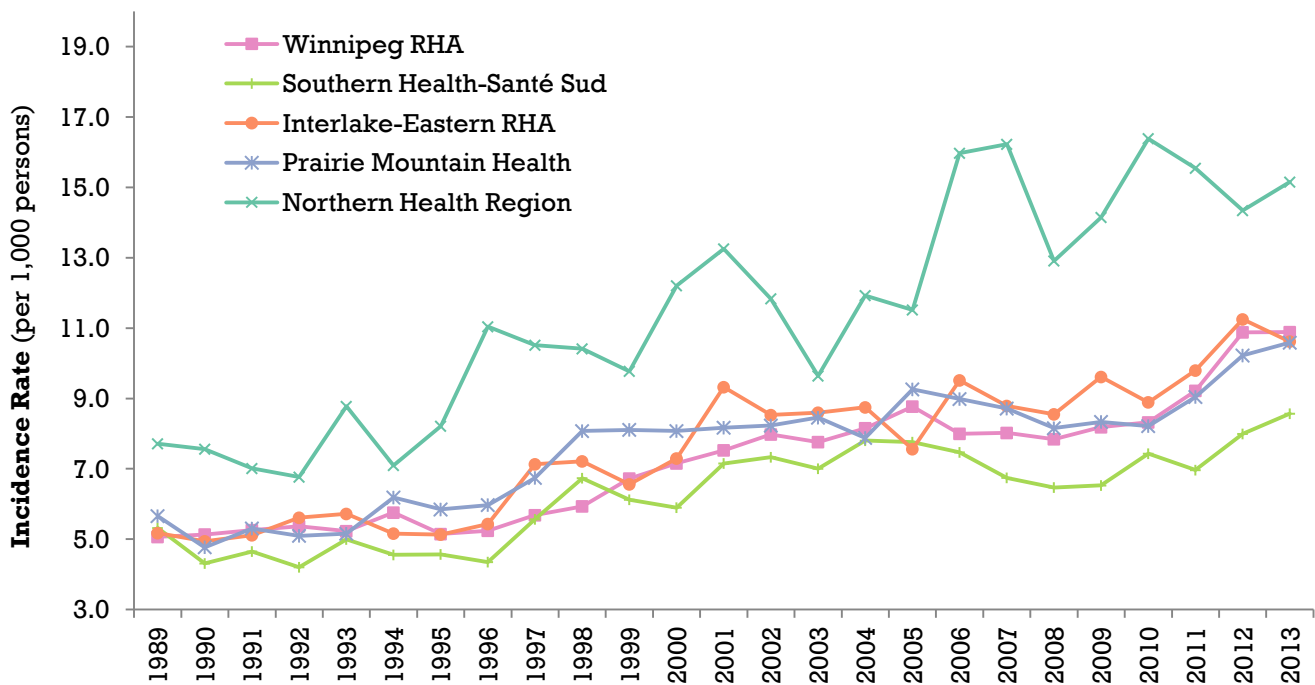
Figure 27: Age adjusted incidence rates (per 1,000 persons) of males with diabetes in Manitoba by Regional Health Authority (RHA), ages 20+ years, 1989-2013
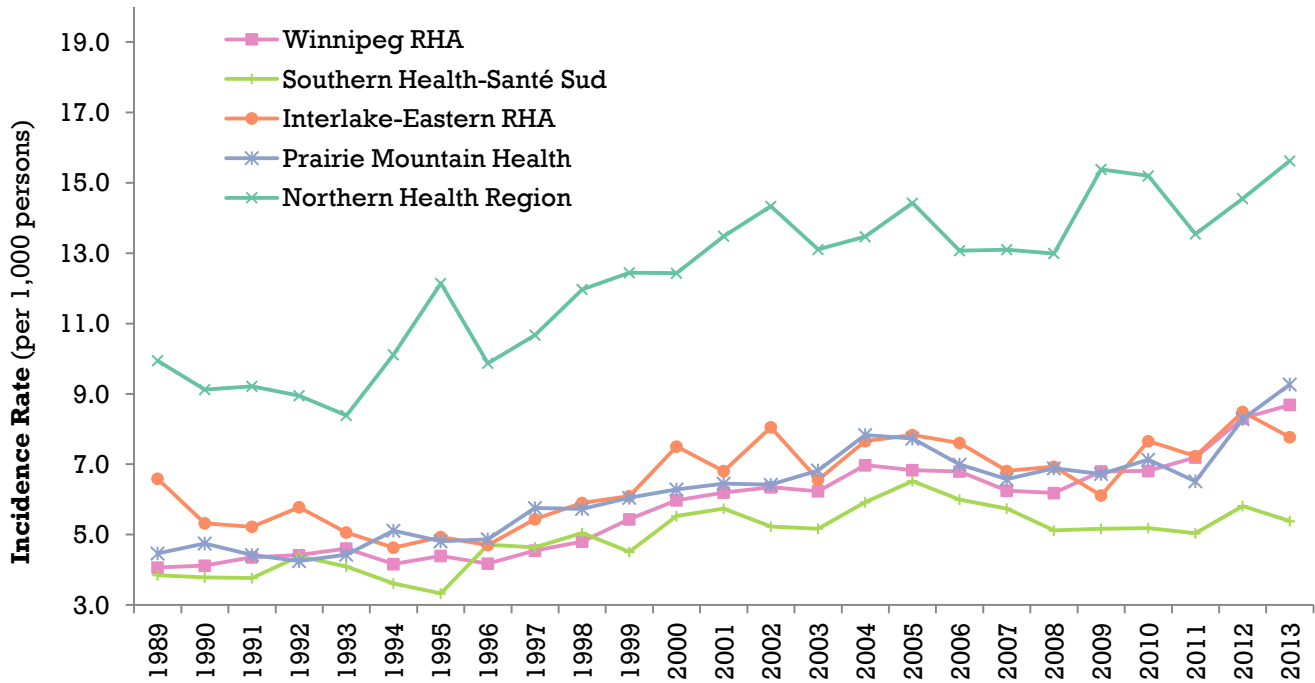
Females

Figure 28: Age adjusted incidence rates (per 1,000 persons) of females with diabetes in Manitoba by Regional Health Authority (RHA), ages 20+ years, 1989-2013

Summary

This report used information collected from the CCDSS to provide analyses on the prevalence and incidence of diabetes among Manitoba residents who were 20 years of age and older between 1989 and 2013.

Prevalence of Diabetes

The number of adults ages 20 years and older in Manitoba living with diagnosed diabetes tripled over the reporting period, from 33,962 cases in 1989 to 107,914 cases in 2013. This increase is much greater than the average increase reported in Canada[4,10], and Finland[3]. In 2013, one in 10 adults (crude prevalence rate was 10.8%) were living with diagnosed diabetes, and the age adjusted prevalence rate (9.7%) was higher than the national average rates in Canada[4] and the United Kingdom[25].

In Manitoba, there were more male than female cases of diabetes from 1989-2013. The difference between the crude rates of males and females diagnosed with diabetes increased over the reporting period, with males having a 1% higher rate in 1989 and a 9% higher rate in 2013. Other reports[6,26] have also found a higher prevalence of diabetes in males compared to females, but the reasons are unknown. However, obesity rates in Canada[27] could be a major factor.

The burden of diabetes was not consistent among the RHAs. Winnipeg RHA had the largest *number* of diabetes cases over the reporting period, but Northern Health Region had the highest *prevalence rates*. However, Winnipeg RHA has the largest population of all the RHAs, accounting for 63% of Manitobans, which explains why the number of diabetes cases is so high in Winnipeg RHA.

Northern Health Region had the largest increase in diabetes prevalence rates, from a crude rate of 5.0% in 1989 to 16.7% in 2013, with a corresponding increase in cases. The number of diagnosed diabetes cases was four times greater in 2013 than in 1989 (7,979 cases compared to 2,053 cases). Southern Health-Santé Sud had the lowest prevalence rates over the entire reporting period and the smallest increase in prevalence rates from a crude rate of 3.8% in 1989 to 8.6% in 2013. Geographical differences among diabetes prevalence rates were reported in Manitoba in 2009[28]. Obesity, smoking, poor nutrition, alcohol consumption and socio-economic status have been shown to contribute to the burden of diabetes[12,29,30].

Over the reporting period, there were more males diagnosed with diabetes than females in all RHAs, except Northern Health Region. Northern Health Region was the only RHA that consistently had higher rates of diabetes among females than males. Further research is required to explore the underlying factors of this finding.

Incidence of Diabetes

The number of newly diagnosed cases of diabetes among Manitoba's adult population more than doubled between 1989 and 2013. In 2013, approximately 9,000 Manitobans 20 years of age and older were newly diagnosed with diabetes. This corresponds to an age adjusted incidence rate of 9.6 cases per 1,000 persons which is comparable to incidence rates found in Ontario [31], but higher than incidence rates found in the United States (8 cases per 1,000 persons)[32], and Canada overall (6 cases per 1,000 persons)[33].

Male incidence rates of newly diagnosed diabetes were higher than that of females from 1989-2013. This is consistent with a meta-analysis of literature conducted on global male and female diabetes rates[34]. In Manitoba, males have a higher prevalence of being overweight or obese than females. Obesity is a potential risk factor for the development of diabetes, and may contribute to higher male incidence [35].

Less than one-half of new diabetes cases in Manitoba were diagnosed among those 45-64 years of age, and one-fifth were diagnosed among those aged 20-44 years. This is consistent with the national data[33]. Typically, type 1 diabetes is diagnosed among children and adolescents [36]. Thus the majority of cases newly diagnosed among individuals aged 20 years and older will be type 2 diabetes. Obesity and diabetes prevention in the younger population is crucial in order to prevent the early onset of type 2 diabetes.

In adults 20-34 years of age, the incidence of diabetes in females was higher than the incidence in males, and gestational diabetes is excluded from this analysis. In adults 35 years of age and older, incidence of diabetes in males was higher than in females. Alberta reported a similar trend in 2009[37]. Further studies are required to explore the potential reasons and risk factors for higher diabetes incidence rates in younger female populations.

The incidence of diabetes was not equal across the RHAs. Winnipeg RHA had the largest *number* of newly diagnosed diabetes cases over the reporting period, but Northern Health Region had the highest *incidence rates*. In 2013, the age adjusted rates in Northern Health Region were 15.4 per 1,000 persons, which is higher than that reported in each single region of Ontario in 2011[31]. On the other hand, Southern Health-Santé Sud had the lowest incident rates over the majority of the reporting period, with an age adjusted incidence rate of 6.9 per 1,000 persons in 2013. Winnipeg RHA, Interlake-Eastern RHA, and Prairie Mountain Health had similar incidence rates from 1989 to 2013 that closely resembled the provincial incident rates.

Risk factors such as lower socio-economic status[10], high obesity rates, and other modifiable physical activity and nutritional factors[38-41] could be contributing to the higher incidence of diabetes in Northern Health Region. Emphasis on diabetes prevention and disease management in Northern Health Region is critical to curb the rising incidence. Southern Health-Santé Sud implemented successful health promotion programs in 2012 [42] that could be explored and shared with the other health regions to help in the fight against diabetes.

Diabetes incidence in Manitoba between 1989 and 2013 experienced four distinct stages: incidence was relatively stable from 1989 to1996, increased from 1996 to 2006, stabilized from 2006 to 2010, and then increased from 2010 to 2013. PHAC reported "declining or no significant trends" in diabetes incidence from 1998 to 2009 in Manitoba, Alberta, Quebec and the Maritime provinces [33], but diabetes incidence rates in Manitoba display an overall increasing trend across all age groups over the time period. In Manitoba, the diabetes incidence rates doubled from 4.7 cases per 1,000 persons in 1989 to 10 cases per 1,000 persons in 2013.

Rising rates of newly diagnosed diabetes were observed in all RHAs, especially in Northern Health Region. The difference between Northern Health Region's incidence rates and the incident rates of the other four RHAs grew over the reporting period. Northern Health Region consistently had the highest incidence rates and experienced the largest increase in rates from 1989 (crude rate of 6.7 per 1,000 persons) to 2013 (crude rate of 14.1 per 1,000

persons). Southern Health-Santé Sud consistently had the lowest incidence rates, which were stable between 2005 and 2013, while the other four RHA's incidence rates were increasing.

Many factors could influence diabetes incidence rates, one of which is the newly implemented chronic disease management tariff codes[43] in 2012, which could result in more undiagnosed or recorded existing diabetes cases being counted in the physician claims database since 2012.

Strengths and Limitations

There are many important strengths of this report. First, the report is longitudinal and covers a quarter of a century worth of data. This allows trends to be analyzed and a focus to be placed on change. Second, this report breaks down Manitoba into demographics such as age and sex, and it also shows regional perspectives. Third, this report starts in 1989, after a four-year-run-in period, to ensure the true incident diabetes cases were captured in the incidence estimation.

There are important limitations in this report due to the use of administrative databases. First, the CCDSS data cannot differentiate between type 1 and type 2 diabetes. The physician claim database, which supplies data to the CCDSS, uses the ICD-9 coding system which does not distinguish between the two types. This might have implications in terms of diabetes care planning, where there is a need to differentiate between type 1 and type 2 diabetes.

Second, some cases of diabetes may not be included in the CCDSS if they did not have contact with the health system, or if a claim for their visit was not submitted to the physician claim database. A claim may not be submitted if they received care from a salaried physician whose payment is not directly linked to reporting the services they provided. Cases with diabetes are also excluded from the CCDSS if they are covered by Federal jurisdiction, such as those in the Canadian Armed Forces, Royal Canadian Mounted Police (RCMP) and Federal correctional facilities.

Third, this report starts in 1989 after a four-year run-in period. Claim data started to be collected in 1984, but the reporting period did not start until 1989. The reason for this was to leave a catch up period to insure that the newly diagnosed cases of diabetes were captured correctly. However, it is possible that newly defined cases are actually prevalent, or old, cases that were not identified previously due to lack of data.

Fourth, the CCDSS sometimes captures false positive diabetes cases. False positives occur when people who meet the case definition criteria do not actually have diabetes. Any system that tracks a life-long disease, such as diabetes, over a long period of time, on an individual basis, tends to accumulate false positives. The literature suggests that false positives for this case definition of diabetes might be caused by, "coding errors or cases where diabetes was clinically suspected and subsequent laboratory tests did not confirm the diagnosis"[21,22] or simply due to the physician's billing practice [24]. Once cases are identified, they become permanent, prevalent cases and are carried forward from year to year. As a result, false positives will inevitably comprise an increasing proportion of the reported cases over time.

Finally, social economic status, immigrant and ethnicity data are not available through administrative databases. Although Manitoba population health insurance registry "flags" those individuals who self-declare their First Nations (FN) status to MHSAL when registering for coverage (or updating their registration) or receiving health care services, or according to their residential postal code at FN reserves, not all individuals who are FN choose to provide this information to MHSAL. As a result, MHSAL's FN population counts are known to be smaller than the actual number of FN residents in Manitoba. Therefore, this report cannot provide accurate estimates on the diabetes in Manitoba FN populations. Manitoba Centre for Health Policy is working on two deliverables relevant to the diabetes in FN populations, "First Nations Atlas Update" on Diabetes and "Diabetes in Manitoba".

Conclusion

Between 1989 and 2013, the number of diagnosed diabetes cases among Manitoban adults each year more than doubled. In 2013, approximately 9,000 Manitobans aged 20 years of age and older were newly diagnosed with diabetes. Over the whole period, males consistently experienced higher incidence rates than females did. Among adults aged 20 to 60 years, it was found that as people aged, more cases of diabetes were diagnosed. Over the entire reporting period, all regional health authorities observed rising rates of newly diagnosed diabetes, with Northern Health Region experiencing the largest increase in rates.

The burden of diabetes in Manitoba, in terms of the number of adults in Manitoba living with diabetes, has been tripled. In 2013, approximately 107,914 persons or one in ten Manitobans 20 years of age and older were living with diagnosed diabetes. All health regions experienced an increase in diabetes prevalence. However, Northern Health Region experienced the largest increased, almost four times the number of diagnosed diabetes cases in 2013 than in 1989.

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Appendices

Appendix A - 1991 Canadian Standard Population Weights

Age group in years	1991 Canadian Standard Population Weights/100,000 Population
0-1	1428.7
1-4	5517.7
5-9	6945.4
10-14	6803.4
15-19	6849.5
20-24	7501.6
25-30	8994.4
31-34	9240.0
35-40	8338.8
41-44	7606.3
45-49	5953.6
50-54	4764.9
55-59	4404.1
60-64	4232.6
65-69	3857.0
70-74	2965.9
75-79	2212.7
80-84	1359.5
85+	1023.7

Appendix B – Detailed Result Tables

Table 5: Crude prevalence rates (%) of diabetes in Manitoba by age group, ages 20+ years, 1989–2013

Age group In years	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
20-24	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.7
25-29	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.1	1.2
30-34	0.9	0.9	1.0	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.7	1.9
35-39	1.4	1.4	1.5	1.6	1.7	1.8	1.8	1.9	2.0	2.1	2.3	2.5	2.7
40-44	2.4	2.6	2.7	2.7	2.8	2.9	2.9	2.9	3.0	3.2	3.3	3.4	3.7
45-49	3.5	3.8	3.9	4.2	4.3	4.5	4.7	4.9	4.9	5.0	5.1	5.3	5.5
50-54	5.4	5.5	5.8	5.9	5.9	6.3	6.6	6.5	7.0	7.3	7.7	8.1	8.5
55-59	7.1	7.5	8.0	8.4	8.6	8.9	9.0	9.2	9.3	9.6	10.0	10.6	10.8
60-64	8.9	9.4	9.7	10.1	10.7	11.1	11.5	12.0	12.4	12.8	13.2	13.5	14.0
65-69	10.1	10.8	11.3	11.8	12.3	12.8	13.1	13.3	13.9	14.7	15.4	16.2	17.2
70-74	11.1	11.4	12.0	12.4	12.9	13.5	14.2	14.8	15.4	15.9	16.6	17.2	17.7
75-79	11.3	11.7	11.9	12.8	13.4	13.7	13.9	14.4	14.7	15.4	16.3	17.2	18.3
80-84	11.4	12.0	12.4	12.6	13.0	13.1	13.5	13.6	14.4	14.8	15.3	15.7	16.6
85+	8.8	9.3	9.8	10.4	10.5	10.7	11.2	11.6	11.6	11.9	12.1	12.9	13.3

Age group in years	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
20-24	0.7	0.8	0.8	0.9	0.9	1.0	0.9	0.9	1.0	1.0	1.0	1.0
25-29	1.2	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6
30-34	2.0	2.0	2.2	2.3	2.3	2.3	2.4	2.4	2.5	2.6	2.6	2.7
35-39	2.9	3.1	3.2	3.4	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3
40-44	3.9	4.1	4.4	4.7	4.9	5.1	5.3	5.5	5.7	6.0	6.3	6.5
45-49	5.7	5.9	6.1	6.3	6.5	6.8	7.0	7.2	7.6	8.0	8.5	8.9
50-54	8.7	8.8	9.0	9.1	9.3	9.5	9.7	9.9	10.1	10.4	10.9	11.3
55-59	11.6	12.2	12.5	12.9	13.4	13.5	13.4	13.5	13.7	14.0	14.4	15.0
60-64	14.3	14.8	15.4	16.3	16.3	17.0	17.5	17.6	17.8	18.4	18.7	19.0
65-69	17.6	18.0	18.7	19.2	19.7	19.8	20.2	20.8	21.4	21.2	22.1	22.9
70-74	18.8	19.7	20.4	21.2	22.3	22.4	22.6	23.0	23.4	23.9	24.6	25.2
75-79	19.2	20.2	20.8	21.5	22.1	23.1	23.6	24.3	24.9	25.6	26.0	26.9
80-84	17.1	18.0	19.2	20.0	21.1	22.0	22.7	23.4	23.9	24.2	25.5	26.2
85+	14.0	14.4	14.9	15.6	16.1	16.5	17.2	17.9	18.8	19.5	20.0	21.1

Table 6: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of diabetes by Regional Health Authority (RHA) and sex, ages 20+ years, 2013

All						RR
RHA	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**	**M/F**
Winnipeg RHA	60,459	10.3	(10.2 - 10.4)	9.3	(9.3 - 9.4)	1.10
Southern Health-Santé Sud	11,557	8.6	(8.5 - 8.8)	7.9	(7.8 - 8.1)	1.18
Interlake–Eastern RHA	12,370	12.7	(12.5 - 12.9)	10.4	(10.2 - 10.6)	1.14
Prairie Mountain Health	15,549	12.0	(11.8 - 12.2)	9.9	(9.7 - 10.1)	1.11
Northern Health Region	7,979	16.7	(16.3 - 17.0)	17.9	(17.5 - 18.4)	0.83

Female						
RHA	**N**	**(%)**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**
Winnipeg RHA	29,603	49.0	9.8	(9.7 - 9.9)	8.6	(8.5 - 8.7)
Southern Health-Santé Sud	5,294	45.8	7.9	(7.7 - 8.1)	7.1	(6.9 - 7.3)
Interlake–Eastern RHA	5,711	46.2	11.8	(11.5 - 12.2)	9.8	(9.5 - 10.1)
Prairie Mountain Health	7,539	48.5	11.4	(11.1 - 11.7)	9.4	(9.1 - 9.6)
Northern Health Region	4,313	54.1	18.3	(17.7 - 18.8)	19.7	(19.1 - 20.4)

Male						
RHA	**N**	**(%)**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**
Winnipeg RHA	30,856	51.0	10.8	(10.7 - 10.9)	10.2	(10.1 - 10.3)
Southern Health-Santé Sud	6,263	54.2	9.3	(9.1 - 9.6)	8.8	(8.6 - 9.0)
Interlake–Eastern RHA	6,659	53.8	13.5	(13.2 - 13.8)	11.0	(10.7 - 11.3)
Prairie Mountain Health	8,010	51.5	12.6	(12.3 - 12.9)	10.5	(10.3 - 10.8)
Northern Health Region	3,666	45.9	15.1	(14.6 - 15.6)	16.2	(15.6 - 16.8)

Table 7: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of diabetes in Winnipeg RHA, ages 20+ years, 1989-2013

Year	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)
1989	18,604	3.8	(3.7 - 3.8)	3.9	(3.9 - 4.0)
1990	19,601	3.9	(3.9 - 4.0)	4.1	(4.0 - 4.2)
1991	20,754	4.2	(4.1 - 4.2)	4.3	(4.2 - 4.4)
1992	21,913	4.4	(4.4 - 4.5)	4.5	(4.5 - 4.6)
1993	23,052	4.6	(4.6 - 4.7)	4.7	(4.6 - 4.8)
1994	24,076	4.8	(4.8 - 4.9)	4.9	(4.8 - 4.9)
1995	25,078	5.0	(5.0 - 5.1)	5.0	(5.0 - 5.1)
1996	25,922	5.2	(5.1 - 5.3)	5.1	(5.1 - 5.2)
1997	27,020	5.4	(5.4 - 5.5)	5.3	(5.2 - 5.4)
1998	28,240	5.7	(5.6 - 5.7)	5.5	(5.4 - 5.6)
1999	29,836	6.0	(5.9 - 6.0)	5.7	(5.7 - 5.8)
2000	31,649	6.3	(6.2 - 6.3)	6.0	(5.9 - 6.1)
2001	33,598	6.6	(6.5 - 6.7)	6.3	(6.2 - 6.4)
2002	35,709	7.0	(6.9 - 7.1)	6.6	(6.5 - 6.7)
2003	37,551	7.3	(7.2 - 7.4)	6.8	(6.8 - 6.9)
2004	39,661	7.6	(7.6 - 7.7)	7.1	(7.1 - 7.2)
2005	41,835	8.0	(7.9 - 8.1)	7.5	(7.4 - 7.5)
2006	43,675	8.3	(8.2 - 8.4)	7.7	(7.6 - 7.8)
2007	45,450	8.6	(8.5 - 8.6)	7.9	(7.8 - 7.9)
2008	47,283	8.8	(8.7 - 8.9)	8.0	(8.0 - 8.1)
2009	49,369	9.1	(9.0 - 9.1)	8.3	(8.2 - 8.3)
2010	51,636	9.3	(9.2 - 9.4)	8.5	(8.4 - 8.5)
2011	54,109	9.6	(9.5 - 9.6)	8.7	(8.6 - 8.8)
2012	57,235	9.9	(9.8 - 10.0)	9.0	(8.9 - 9.1)
2013	60,459	10.3	(10.2 - 10.4)	9.3	(9.3 - 9.4)

Table 8: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of diabetes in Southern Health-Santé-Sud, ages 20+ years, 1989-2013

			Southern Health-Santé Sud		
Year	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)
1989	3,572	3.8	(3.6 - 3.9)	3.7	(3.6 - 3.8)
1990	3,764	4.0	(3.8 - 4.1)	3.9	(3.7 - 4.0)
1991	3,933	4.1	(4.0 - 4.3)	4.0	(3.9 - 4.1)
1992	4,178	4.3	(4.1 - 4.4)	4.1	(4.0 - 4.3)
1993	4,398	4.5	(4.3 - 4.6)	4.3	(4.2 - 4.4)
1994	4,599	4.6	(4.5 - 4.7)	4.5	(4.3 - 4.6)
1995	4,782	4.7	(4.6 - 4.9)	4.6	(4.4 - 4.7)
1996	5,001	4.9	(4.8 - 5.0)	4.7	(4.6 - 4.8)
1997	5,243	5.1	(5.0 - 5.3)	4.9	(4.8 - 5.1)
1998	5,509	5.3	(5.2 - 5.5)	5.1	(5.0 - 5.2)
1999	5,747	5.5	(5.4 - 5.7)	5.3	(5.1 - 5.4)
2000	6,036	5.7	(5.6 - 5.9)	5.5	(5.3 - 5.6)
2001	6,382	6.0	(5.8 - 6.1)	5.7	(5.6 - 5.9)
2002	6,679	6.2	(6.0 - 6.3)	5.9	(5.8 - 6.0)
2003	7,048	6.4	(6.2 - 6.5)	6.1	(6.0 - 6.3)
2004	7,462	6.7	(6.5 - 6.8)	6.3	(6.2 - 6.5)
2005	7,916	7.0	(6.8 - 7.1)	6.6	(6.5 - 6.8)
2006	8,345	7.2	(7.1 - 7.4)	6.8	(6.7 - 7.0)
2007	8,744	7.4	(7.2 - 7.6)	7.0	(6.8 - 7.1)
2008	9,123	7.6	(7.4 - 7.7)	7.1	(7.0 - 7.3)
2009	9,497	7.7	(7.6 - 7.9)	7.2	(7.1 - 7.4)
2010	9,973	8.0	(7.8 - 8.1)	7.4	(7.3 - 7.6)
2011	10,396	8.1	(8.0 - 8.3)	7.5	(7.4 - 7.7)
2012	10,967	8.4	(8.2 - 8.5)	7.8	(7.6 - 7.9)
2013	11,557	8.6	(8.5 - 8.8)	7.9	(7.8 - 8.1)

Table 9: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of diabetes in Interlake-Eastern, ages 20+ years, 1989-2013

Year	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)
Interlake-Eastern RHA					
1989	3,633	4.8	(4.7 - 5.0)	4.7	(4.5 - 4.8)
1990	3,860	5.1	(4.9 - 5.2)	4.9	(4.7 - 5.1)
1991	4,091	5.3	(5.2 - 5.5)	5.1	(4.9 - 5.2)
1992	4,362	5.6	(5.4 - 5.8)	5.3	(5.1 - 5.5)
1993	4,545	5.8	(5.6 - 6.0)	5.5	(5.3 - 5.6)
1994	4,757	6.0	(5.8 - 6.2)	5.6	(5.5 - 5.8)
1995	4,972	6.2	(6.0 - 6.4)	5.8	(5.7 - 6.0)
1996	5,145	6.3	(6.2 - 6.5)	5.9	(5.8 - 6.1)
1997	5,442	6.7	(6.5 - 6.9)	6.2	(6.0 - 6.4)
1998	5,744	7.0	(6.8 - 7.2)	6.5	(6.3 - 6.6)
1999	6,027	7.3	(7.1 - 7.5)	6.7	(6.5 - 6.8)
2000	6,412	7.7	(7.5 - 7.9)	7.0	(6.8 - 7.2)
2001	6,837	8.2	(8.0 - 8.4)	7.3	(7.1 - 7.5)
2002	7,301	8.7	(8.5 - 8.9)	7.7	(7.5 - 7.9)
2003	7,730	9.1	(8.9 - 9.3)	8.0	(7.8 - 8.1)
2004	8,104	9.4	(9.2 - 9.6)	8.2	(8.0 - 8.4)
2005	8,456	9.7	(9.5 - 9.9)	8.4	(8.2 - 8.6)
2006	8,953	10.2	(10.0 - 10.4)	8.8	(8.6 - 8.9)
2007	9,338	10.5	(10.3 - 10.7)	9.0	(8.8 - 9.1)
2008	9,664	10.8	(10.6 - 11.0)	9.2	(9.0 - 9.3)
2009	10,095	11.1	(10.9 - 11.3)	9.4	(9.2 - 9.6)
2010	10,519	11.4	(11.2 - 11.6)	9.6	(9.4 - 9.8)
2011	11,071	11.7	(11.5 - 11.9)	9.7	(9.6 - 9.9)
2012	11,788	12.2	(12.0 - 12.5)	10.1	(9.9 - 10.3)
2013	12,370	12.7	(12.5 - 12.9)	10.4	(10.2 - 10.6)

Table 10: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of diabetes in Prairie Mountain Health, ages 20+ years, 1989-2013

			Prairie Mountain Health		
Year	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**
1989	6,100	5.0	(4.8 - 5.1)	4.2	(4.1 - 4.4)
1990	6,385	5.2	(5.1 - 5.4)	4.4	(4.3 - 4.6)
1991	6,692	5.5	(5.4 - 5.6)	4.6	(4.5 - 4.8)
1992	6,924	5.7	(5.6 - 5.9)	4.8	(4.7 - 4.9)
1993	7,169	5.9	(5.8 - 6.0)	5.0	(4.9 - 5.1)
1994	7,521	6.2	(6.0 - 6.3)	5.2	(5.1 - 5.3)
1995	7,825	6.4	(6.3 - 6.6)	5.4	(5.3 - 5.5)
1996	8,059	6.6	(6.5 - 6.8)	5.6	(5.5 - 5.7)
1997	8,419	6.9	(6.8 - 7.1)	5.9	(5.7 - 6.0)
1998	8,822	7.3	(7.1 - 7.4)	6.1	(6.0 - 6.3)
1999	9,221	7.6	(7.5 - 7.8)	6.4	(6.3 - 6.6)
2000	9,652	8.0	(7.8 - 8.1)	6.7	(6.6 - 6.9)
2001	10,023	8.3	(8.1 - 8.5)	7.0	(6.9 - 7.1)
2002	10,503	8.7	(8.5 - 8.9)	7.3	(7.1 - 7.4)
2003	10,972	9.1	(8.9 - 9.2)	7.6	(7.4 - 7.7)
2004	11,434	9.4	(9.2 - 9.6)	7.9	(7.7 - 8.0)
2005	11,956	9.8	(9.6 - 10.0)	8.2	(8.1 - 8.4)
2006	12,460	10.2	(10.0 - 10.4)	8.5	(8.3 - 8.7)
2007	12,870	10.5	(10.3 - 10.7)	8.7	(8.5 - 8.9)
2008	13,229	10.7	(10.5 - 10.9)	8.8	(8.7 - 9.0)
2009	13,650	10.9	(10.7 - 11.1)	9.0	(8.9 - 9.2)
2010	13,998	11.1	(10.9 - 11.3)	9.2	(9.0 - 9.3)
2011	14,371	11.3	(11.1 - 11.5)	9.3	(9.2 - 9.5)
2012	14,918	11.6	(11.4 - 11.8)	9.6	(9.4 - 9.8)
2013	15,549	12.0	(11.8 - 12.2)	9.9	(9.7 - 10.1)

Table 11: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of diabetes in Northern Health Region, ages 20+ years, 1989-2013

			Northern Health Region		
Year	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)
1989	2,053	5.0	(4.8 - 5.2)	6.8	(6.5 - 7.2)
1990	2,220	5.4	(5.2 - 5.6)	7.3	(7.0 - 7.6)
1991	2,375	5.8	(5.5 - 6.0)	7.7	(7.4 - 8.1)
1992	2,514	6.1	(5.8 - 6.3)	8.1	(7.8 - 8.5)
1993	2,676	6.5	(6.2 - 6.7)	8.5	(8.2 - 8.9)
1994	2,828	6.8	(6.6 - 7.1)	8.9	(8.5 - 9.3)
1995	3,027	7.2	(7.0 - 7.5)	9.3	(8.9 - 9.7)
1996	3,290	7.7	(7.5 - 8.0)	9.9	(9.5 - 10.3)
1997	3,503	8.2	(7.9 - 8.5)	10.4	(10.0 - 10.8)
1998	3,740	8.7	(8.5 - 9.0)	10.9	(10.5 - 11.3)
1999	3,948	9.3	(9.0 - 9.6)	11.3	(10.9 - 11.7)
2000	4,207	9.9	(9.6 - 10.2)	11.8	(11.4 - 12.2)
2001	4,495	10.5	(10.2 - 10.8)	12.4	(12.0 - 12.8)
2002	4,743	11.1	(10.8 - 11.4)	12.9	(12.5 - 13.3)
2003	4,952	11.5	(11.2 - 11.8)	13.3	(12.9 - 13.7)
2004	5,212	12.1	(11.8 - 12.4)	13.8	(13.4 - 14.2)
2005	5,419	12.6	(12.2 - 12.9)	14.2	(13.7 - 14.6)
2006	5,766	13.2	(12.9 - 13.6)	14.8	(14.3 - 15.2)
2007	6,050	13.8	(13.4 - 14.1)	15.3	(14.9 - 15.8)
2008	6,253	14.1	(13.7 - 14.4)	15.5	(15.1 - 16.0)
2009	6,588	14.6	(14.3 - 15.0)	16.0	(15.6 - 16.4)
2010	6,963	15.1	(14.8 - 15.5)	16.5	(16.1 - 16.9)
2011	7,310	15.7	(15.3 - 16.0)	17.0	(16.6 - 17.5)
2012	7,629	16.2	(15.8 - 16.6)	17.5	(17.1 - 17.9)
2013	7,979	16.7	(16.3 - 17.0)	17.9	(17.5 - 18.4)

Table 12: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of diabetes in Winnipeg RHA by sex, ages 20+ years, 1989-2013

Year		Female					Male				RR
	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)	M/F
1989	9,376	3.6	(3.6 - 3.7)	3.6	(3.5 - 3.7)	9,228	3.9	(3.8 – 4.0)	4.4	(4.3 - 4.5)	1.08
1990	9,884	3.8	(3.7 - 3.9)	3.7	(3.7 - 3.8)	9,717	4.1	(4.0 - 4.1)	4.6	(4.5 - 4.7)	1.08
1991	10,480	4.0	(4.0 - 4.1)	3.9	(3.9 – 4.0)	10,274	4.3	(4.2 - 4.4)	4.8	(4.7 - 4.9)	1.08
1992	11,092	4.3	(4.2 - 4.4)	4.1	(4.0 - 4.2)	10,821	4.5	(4.5 - 4.6)	5.0	(4.9 - 5.1)	1.05
1993	11,740	4.5	(4.5 - 4.6)	4.3	(4.2 - 4.4)	11,312	4.8	(4.7 - 4.8)	5.2	(5.1 - 5.3)	1.07
1994	12,191	4.7	(4.6 - 4.8)	4.5	(4.4 - 4.5)	11,885	5.0	(4.9 - 5.1)	5.4	(5.3 - 5.5)	1.06
1995	12,698	4.9	(4.8 – 5.0)	4.6	(4.5 - 4.7)	12,380	5.2	(5.1 - 5.3)	5.5	(5.4 - 5.6)	1.06
1996	13,105	5.0	(5.0 - 5.1)	4.7	(4.6 - 4.8)	12,817	5.4	(5.3 - 5.5)	5.7	(5.6 - 5.8)	1.08
1997	13,647	5.3	(5.2 - 5.3)	4.9	(4.8 – 5.0)	13,373	5.6	(5.5 - 5.7)	5.8	(5.7 - 5.9)	1.06
1998	14,225	5.5	(5.4 - 5.6)	5.0	(5.0 - 5.1)	14,015	5.9	(5.8 – 6.0)	6.0	(5.9 - 6.1)	1.07
1999	15,006	5.7	(5.7 - 5.8)	5.3	(5.2 - 5.4)	14,830	6.2	(6.1 - 6.3)	6.3	(6.2 - 6.4)	1.09
2000	15,944	6.1	(6.0 - 6.2)	5.5	(5.4 - 5.6)	15,705	6.5	(6.4 - 6.6)	6.6	(6.5 - 6.7)	1.07
2001	16,894	6.4	(6.3 - 6.5)	5.8	(5.7 - 5.9)	16,704	6.9	(6.8 – 7.0)	6.9	(6.8 – 7.0)	1.08
2002	17,937	6.8	(6.7 - 6.9)	6.1	(6.0 - 6.2)	17,772	7.2	(7.1 - 7.4)	7.2	(7.1 - 7.3)	1.06
2003	18,819	7.0	(6.9 - 7.1)	6.3	(6.2 - 6.4)	18,732	7.6	(7.5 - 7.7)	7.5	(7.4 - 7.6)	1.09
2004	19,853	7.4	(7.3 - 7.5)	6.6	(6.5 - 6.7)	19,808	7.9	(7.8 – 8.0)	7.8	(7.7 - 7.9)	1.07
2005	20,885	7.7	(7.6 - 7.8)	6.9	(6.8 – 7.0)	20,950	8.3	(8.2 - 8.4)	8.1	(8.0 - 8.3)	1.08
2006	21,825	8.0	(7.9 - 8.1)	7.1	(7.0 - 7.2)	21,850	8.6	(8.5 - 8.7)	8.4	(8.2 - 8.5)	1.08
2007	22,618	8.2	(8.1 - 8.3)	7.3	(7.2 - 7.4)	22,832	8.9	(8.8 - 9.1)	8.6	(8.5 - 8.7)	1.09
2008	23,485	8.4	(8.3 - 8.5)	7.4	(7.3 - 7.5)	23,798	9.2	(9.1 - 9.3)	8.8	(8.7 - 8.9)	1.10
2009	24,473	8.7	(8.6 - 8.8)	7.6	(7.5 - 7.7)	24,896	9.5	(9.3 - 9.6)	9.0	(8.9 - 9.1)	1.09
2010	25,598	8.9	(8.8 – 9.0)	7.8	(7.7 - 7.9)	26,038	9.7	(9.6 - 9.8)	9.2	(9.1 - 9.3)	1.09
2011	26,686	9.1	(9.0 - 9.2)	8.0	(7.9 - 8.1)	27,423	10.0	(9.9 - 10.1)	9.5	(9.4 - 9.6)	1.10
2012	28,108	9.5	(9.3 - 9.6)	8.3	(8.2 - 8.4)	29,127	10.4	(10.3 - 10.5)	9.8	(9.7 - 10)	1.09
2013	29,603	9.8	(9.7 - 9.9)	8.6	(8.5 - 8.7)	30,856	10.8	(10.7 - 10.9)	10.2	(10.1 - 10.3)	1.10

Table 13: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of diabetes in Southern Health – Santé Sud by sex, ages 20+ years, 1989-2013

	Southern Health-Santé Sud										
	Female					**Male**					**RR**
Year	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**	**M/F**
1989	1,828	3.8	(3.7 – 4.0)	3.6	(3.4 - 3.8)	1,744	3.7	(3.5 - 3.9)	3.8	(3.6 – 4.0)	0.97
1990	1,923	4.0	(3.8 - 4.2)	3.7	(3.6 - 3.9)	1,841	3.9	(3.7 - 4.1)	4.0	(3.8 - 4.2)	0.98
1991	2,012	4.2	(4.0 - 4.4)	3.9	(3.7 – 4.0)	1,921	4.1	(3.9 - 4.2)	4.1	(3.9 - 4.3)	0.98
1992	2,156	4.4	(4.2 - 4.6)	4.0	(3.9 - 4.2)	2,022	4.1	(4.0 - 4.3)	4.2	(4.0 - 4.4)	0.93
1993	2,237	4.5	(4.3 - 4.7)	4.2	(4.0 - 4.3)	2,161	4.4	(4.2 - 4.6)	4.5	(4.3 - 4.6)	0.98
1994	2,313	4.6	(4.4 - 4.8)	4.3	(4.1 - 4.4)	2,286	4.6	(4.4 - 4.8)	4.7	(4.5 - 4.9)	1.00
1995	2,400	4.7	(4.5 - 4.9)	4.4	(4.2 - 4.5)	2,382	4.7	(4.5 - 4.9)	4.8	(4.6 - 5.0)	1.00
1996	2,544	5.0	(4.8 - 5.2)	4.6	(4.4 - 4.7)	2,457	4.8	(4.6 – 5.0)	4.9	(4.7 - 5.1)	0.96
1997	2,614	5.1	(4.9 - 5.3)	4.7	(4.5 - 4.9)	2,629	5.2	(5.0 - 5.4)	5.2	(5.0 - 5.4)	1.02
1998	2,727	5.3	(5.1 - 5.5)	4.8	(4.7 – 5.0)	2,782	5.4	(5.2 - 5.6)	5.4	(5.2 - 5.6)	1.02
1999	2,824	5.4	(5.2 - 5.6)	4.9	(4.8 - 5.1)	2,923	5.6	(5.4 - 5.8)	5.6	(5.4 - 5.8)	1.04
2000	2,941	5.6	(5.4 - 5.8)	5.1	(4.9 - 5.3)	3,095	5.9	(5.7 - 6.1)	5.8	(5.6 - 6.0)	1.05
2001	3,086	5.8	(5.6 – 6.0)	5.3	(5.1 - 5.5)	3,296	6.2	(6.0 - 6.4)	6.1	(5.9 - 6.3)	1.07
2002	3,204	5.9	(5.7 - 6.1)	5.5	(5.3 - 5.6)	3,475	6.4	(6.2 - 6.7)	6.4	(6.2 - 6.6)	1.08
2003	3,333	6.0	(5.8 - 6.3)	5.6	(5.4 - 5.8)	3,715	6.8	(6.5 – 7.0)	6.7	(6.4 - 6.9)	1.13
2004	3,486	6.2	(6.0 - 6.4)	5.7	(5.6 - 5.9)	3,976	7.1	(6.9 - 7.3)	7.0	(6.7 - 7.2)	1.15
2005	3,697	6.5	(6.3 - 6.7)	6.0	(5.8 - 6.2)	4,219	7.4	(7.2 - 7.7)	7.3	(7.0 - 7.5)	1.14
2006	3,906	6.7	(6.5 - 6.9)	6.2	(6.0 - 6.4)	4,439	7.7	(7.5 - 7.9)	7.5	(7.3 - 7.7)	1.15
2007	4,116	6.9	(6.7 - 7.1)	6.4	(6.2 - 6.6)	4,628	7.9	(7.7 - 8.1)	7.6	(7.4 - 7.8)	1.14
2008	4,275	7.1	(6.9 - 7.3)	6.5	(6.3 - 6.7)	4,848	8.1	(7.9 - 8.3)	7.7	(7.5 – 8.0)	1.14
2009	4,445	7.2	(7.0 - 7.4)	6.6	(6.4 - 6.8)	5,052	8.3	(8.0 - 8.5)	7.9	(7.7 - 8.1)	1.15
2010	4,610	7.3	(7.1 - 7.6)	6.7	(6.5 - 6.9)	5,363	8.6	(8.4 - 8.8)	8.2	(8.0 - 8.4)	1.18
2011	4,804	7.5	(7.3 - 7.7)	6.8	(6.6 – 7.0)	5,592	8.8	(8.5 - 9.0)	8.3	(8.1 - 8.5)	1.17
2012	5,036	7.7	(7.5 - 7.9)	7.0	(6.8 - 7.2)	5,931	9.1	(8.9 - 9.3)	8.6	(8.3 - 8.8)	1.18
2013	5,294	7.9	(7.7 - 8.1)	7.1	(6.9 - 7.3)	6,263	9.3	(9.1 - 9.6)	8.8	(8.6 – 9.0)	1.18

Table 14: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of diabetes in Interlake-Eastern RHA by sex, ages 20+ years, 1989-2013

	Interlake-Eastern RHA										
	Female					**Male**					**RR**
Year	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**	**M/F**
1989	1,854	5.0	(4.8 - 5.3)	4.8	(4.6 – 5.0)	1,779	4.6	(4.4 - 4.8)	4.5	(4.3 - 4.7)	0.92
1990	1,970	5.3	(5.1 - 5.5)	5.0	(4.8 - 5.3)	1,890	4.9	(4.7 - 5.1)	4.8	(4.5 – 5.0)	0.92
1991	2,067	5.5	(5.3 - 5.7)	5.2	(5.0 - 5.4)	2,024	5.2	(4.9 - 5.4)	5.0	(4.8 - 5.2)	0.95
1992	2,195	5.8	(5.5 – 6.0)	5.4	(5.1 - 5.6)	2,167	5.5	(5.2 - 5.7)	5.2	(5.0 - 5.5)	0.95
1993	2,269	5.9	(5.7 - 6.1)	5.5	(5.3 - 5.7)	2,276	5.7	(5.5 - 5.9)	5.4	(5.2 - 5.7)	0.97
1994	2,380	6.1	(5.9 - 6.4)	5.7	(5.4 - 5.9)	2,377	5.9	(5.7 - 6.1)	5.6	(5.4 - 5.8)	0.97
1995	2,481	6.3	(6.1 - 6.6)	5.8	(5.6 - 6.1)	2,491	6.1	(5.9 - 6.4)	5.8	(5.5 – 6.0)	0.97
1996	2,553	6.4	(6.1 - 6.6)	5.9	(5.7 - 6.2)	2,592	6.3	(6.1 - 6.5)	5.9	(5.7 - 6.2)	0.98
1997	2,675	6.7	(6.4 - 6.9)	6.2	(5.9 - 6.4)	2,767	6.7	(6.5 – 7.0)	6.2	(6.0 - 6.5)	1.00
1998	2,801	6.9	(6.7 - 7.2)	6.4	(6.1 - 6.6)	2,943	7.1	(6.9 - 7.4)	6.5	(6.3 - 6.8)	1.03
1999	2,941	7.2	(6.9 - 7.5)	6.6	(6.3 - 6.8)	3,086	7.4	(7.2 - 7.7)	6.8	(6.5 – 7.0)	1.03
2000	3,152	7.7	(7.4 - 7.9)	6.9	(6.7 - 7.2)	3,260	7.8	(7.5 - 8.1)	7.0	(6.8 - 7.3)	1.01
2001	3,336	8.1	(7.8 - 8.3)	7.2	(6.9 - 7.4)	3,501	8.3	(8.1 - 8.6)	7.5	(7.2 - 7.7)	1.02
2002	3,553	8.5	(8.2 - 8.8)	7.5	(7.3 - 7.8)	3,748	8.9	(8.6 - 9.2)	7.8	(7.6 - 8.1)	1.05
2003	3,701	8.7	(8.5 – 9.0)	7.7	(7.4 - 7.9)	4,029	9.4	(9.1 - 9.7)	8.2	(8.0 - 8.5)	1.08
2004	3,877	9.1	(8.8 - 9.3)	7.9	(7.6 - 8.2)	4,227	9.8	(9.5 - 10.1)	8.5	(8.2 - 8.8)	1.08
2005	4,053	9.4	(9.1 - 9.7)	8.2	(7.9 - 8.4)	4,403	10.0	(9.8 - 10.3)	8.6	(8.4 - 8.9)	1.06
2006	4,277	9.8	(9.6 - 10.1)	8.5	(8.2 - 8.8)	4,676	10.6	(10.3 - 10.9)	9.0	(8.8 - 9.3)	1.08
2007	4,431	10.1	(9.8 - 10.4)	8.6	(8.4 - 8.9)	4,907	11.0	(10.7 - 11.3)	9.3	(9.0 - 9.6)	1.09
2008	4,576	10.3	(10.0 - 10.6)	8.8	(8.5 - 9.1)	5,088	11.3	(11.0 - 11.6)	9.5	(9.3 - 9.8)	1.10
2009	4,741	10.5	(10.2 - 10.8)	8.9	(8.7 - 9.2)	5,354	11.7	(11.4 - 12)	9.8	(9.6 - 10.1)	1.11
2010	4,952	10.9	(10.6 - 11.2)	9.2	(8.9 - 9.4)	5,567	12.0	(11.7 - 12.3)	10.0	(9.7 - 10.3)	1.10
2011	5,161	11.0	(10.7 - 11.3)	9.3	(9.0 - 9.5)	5,910	12.4	(12.0 - 12.7)	10.2	(10.0 - 10.5)	1.13
2012	5,457	11.5	(11.2 - 11.8)	9.5	(9.3 - 9.8)	6,331	13.0	(12.7 - 13.3)	10.7	(10.4 – 11.0)	1.13
2013	5,711	11.8	(11.5 - 12.2)	9.8	(9.5 - 10.1)	6,659	13.5	(13.2 - 13.8)	11.0	(10.7 - 11.3)	1.14

Table 15: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of diabetes in Prairie Mountain Health by sex, ages 20+ years, 1989-2013

	Prairie Mountain Health										RR
	Female					Male					
Year	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)	M/F
1989	2,988	4.8	(4.6 – 5.0)	4.0	(3.8 - 4.1)	3,112	5.1	(5.0 - 5.3)	4.6	(4.4 - 4.7)	1.06
1990	3,151	5.1	(4.9 - 5.3)	4.2	(4.0 - 4.3)	3,234	5.4	(5.2 - 5.6)	4.7	(4.6 - 4.9)	1.06
1991	3,302	5.3	(5.2 - 5.5)	4.4	(4.2 - 4.5)	3,390	5.7	(5.5 - 5.9)	5.0	(4.8 - 5.1)	1.08
1992	3,405	5.5	(5.3 - 5.7)	4.5	(4.3 - 4.7)	3,519	5.9	(5.7 - 6.1)	5.2	(5.0 - 5.3)	1.07
1993	3,530	5.7	(5.5 - 5.9)	4.7	(4.5 - 4.8)	3,639	6.1	(5.9 - 6.3)	5.3	(5.2 - 5.5)	1.07
1994	3,707	6.0	(5.8 - 6.2)	4.9	(4.7 – 5.0)	3,814	6.4	(6.2 - 6.6)	5.6	(5.4 - 5.8)	1.07
1995	3,860	6.2	(6.0 - 6.4)	5.1	(4.9 - 5.2)	3,965	6.7	(6.5 - 6.9)	5.8	(5.6 – 6.0)	1.08
1996	3,968	6.3	(6.1 - 6.5)	5.2	(5.1 - 5.4)	4,091	6.9	(6.7 - 7.1)	6.0	(5.8 - 6.2)	1.10
1997	4,140	6.6	(6.4 - 6.8)	5.5	(5.3 - 5.7)	4,279	7.2	(7.0 - 7.5)	6.3	(6.1 - 6.5)	1.09
1998	4,309	6.9	(6.7 - 7.1)	5.7	(5.5 - 5.9)	4,513	7.7	(7.5 - 7.9)	6.6	(6.4 - 6.8)	1.12
1999	4,494	7.2	(7.0 - 7.4)	6.0	(5.8 - 6.1)	4,727	8.0	(7.8 - 8.3)	7.0	(6.8 - 7.2)	1.11
2000	4,725	7.6	(7.4 - 7.8)	6.3	(6.1 - 6.4)	4,927	8.4	(8.2 - 8.6)	7.3	(7.1 - 7.5)	1.11
2001	4,925	7.9	(7.7 - 8.2)	6.5	(6.3 - 6.7)	5,098	8.7	(8.4 - 8.9)	7.5	(7.3 - 7.7)	1.10
2002	5,144	8.3	(8.1 - 8.5)	6.8	(6.6 – 7.0)	5,359	9.1	(8.9 - 9.4)	7.8	(7.6 – 8.0)	1.10
2003	5,344	8.6	(8.4 - 8.8)	7.1	(6.9 - 7.3)	5,628	9.5	(9.3 - 9.8)	8.2	(7.9 - 8.4)	1.10
2004	5,606	9.0	(8.8 - 9.2)	7.4	(7.2 - 7.6)	5,828	9.9	(9.6 - 10.1)	8.4	(8.2 - 8.6)	1.10
2005	5,862	9.4	(9.1 - 9.6)	7.7	(7.5 – 8.0)	6,094	10.3	(10.0 - 10.5)	8.8	(8.5 – 9.0)	1.10
2006	6,093	9.8	(9.5 – 10.0)	8.0	(7.8 - 8.2)	6,367	10.7	(10.5 – 11.0)	9.1	(8.8 - 9.3)	1.09
2007	6,264	10.0	(9.7 - 10.2)	8.1	(7.9 - 8.4)	6,606	11.0	(10.8 - 11.3)	9.3	(9.1 - 9.5)	1.10
2008	6,455	10.2	(10.0 - 10.5)	8.3	(8.1 - 8.6)	6,774	11.2	(10.9 - 11.5)	9.4	(9.2 - 9.6)	1.10
2009	6,653	10.4	(10.2 - 10.7)	8.5	(8.3 - 8.7)	6,997	11.5	(11.2 - 11.7)	9.6	(9.4 - 9.9)	1.11
2010	6,833	10.6	(10.4 - 10.9)	8.7	(8.5 - 8.9)	7,165	11.6	(11.4 - 11.9)	9.7	(9.5 – 10.0)	1.09
2011	6,961	10.7	(10.5 – 11.0)	8.8	(8.6 – 9.0)	7,410	11.9	(11.7 - 12.2)	10.0	(9.7 - 10.2)	1.11
2012	7,209	11.0	(10.8 - 11.3)	9.0	(8.8 - 9.3)	7,709	12.2	(12.0 - 12.5)	10.2	(10.0 - 10.5)	1.11
2013	7,539	11.4	(11.1 - 11.7)	9.4	(9.1 - 9.6)	8,010	12.6	(12.3 - 12.9)	10.5	(10.3 - 10.8)	1.11

Diabetes among Adults in Manitoba (1989-2013)

Table 16: Number, crude prevalence rate (%), and adjusted prevalence rate (%) of diabetes in Northern Health Region by sex, ages 20+ years, 1989-2013

			Northern Health Region								
		Female					**Male**				**RR**
Year	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**	**M/F**
1989	1,201	6.1	(5.8 - 6.5)	8.2	(7.7 - 8.8)	852	4.0	(3.7 - 4.3)	5.6	(5.2 – 6.0)	0.66
1990	1,298	6.6	(6.2 - 6.9)	8.8	(8.3 - 9.3)	922	4.3	(4.0 - 4.6)	5.9	(5.5 - 6.4)	0.65
1991	1,386	7.0	(6.6 - 7.4)	9.3	(8.8 - 9.8)	989	4.6	(4.3 - 4.9)	6.3	(5.9 - 6.8)	0.66
1992	1,466	7.4	(7.0 - 7.8)	9.8	(9.2 - 10.3)	1,048	4.9	(4.6 - 5.2)	6.6	(6.2 - 7.1)	0.66
1993	1,555	7.8	(7.4 - 8.2)	10.3	(9.7 - 10.8)	1,121	5.2	(4.9 - 5.5)	6.9	(6.5 - 7.4)	0.67
1994	1,651	8.2	(7.9 - 8.7)	10.7	(10.2 - 11.3)	1,177	5.5	(5.2 - 5.8)	7.2	(6.7 - 7.7)	0.67
1995	1,761	8.7	(8.3 - 9.1)	11.2	(10.6 - 11.8)	1,266	5.9	(5.5 - 6.2)	7.5	(7.1 – 8.0)	0.68
1996	1,878	9.1	(8.7 - 9.5)	11.6	(11.0 - 12.2)	1,412	6.4	(6.1 - 6.8)	8.3	(7.8 - 8.8)	0.70
1997	1,994	9.6	(9.2 – 10.0)	12.1	(11.5 - 12.7)	1,509	6.8	(6.5 - 7.2)	8.7	(8.2 - 9.2)	0.71
1998	2,105	10.1	(9.7 - 10.6)	12.6	(12.0 - 13.2)	1,635	7.4	(7.1 - 7.8)	9.4	(8.9 - 9.9)	0.73
1999	2,229	10.7	(10.3 - 11.2)	13.0	(12.5 - 13.7)	1,719	7.9	(7.5 - 8.2)	9.7	(9.2 - 10.2)	0.74
2000	2,371	11.4	(11.0 - 11.9)	13.6	(13.1 - 14.3)	1,836	8.4	(8.0 - 8.8)	10.1	(9.6 - 10.7)	0.74
2001	2,529	12.1	(11.6 - 12.6)	14.2	(13.6 - 14.8)	1,966	9.0	(8.6 - 9.4)	10.6	(10.1 - 11.2)	0.74
2002	2,675	12.8	(12.3 - 13.3)	14.9	(14.3 - 15.5)	2,068	9.4	(9.0 - 9.9)	11.0	(10.5 - 11.6)	0.73
2003	2,796	13.3	(12.8 - 13.8)	15.4	(14.8 - 16.1)	2,156	9.8	(9.4 - 10.2)	11.2	(10.7 - 11.8)	0.74
2004	2,935	13.9	(13.4 - 14.4)	15.9	(15.3 - 16.6)	2,277	10.4	(9.9 - 10.8)	11.7	(11.1 - 12.2)	0.75
2005	3,071	14.5	(14.0 – 15.0)	16.4	(15.8 - 17.1)	2,348	10.7	(10.3 - 11.1)	11.9	(11.4 - 12.5)	0.74
2006	3,214	15.0	(14.5 - 15.5)	16.8	(16.2 - 17.5)	2,552	11.5	(11.1 – 12.0)	12.7	(12.1 - 13.2)	0.77
2007	3,347	15.5	(15.0 - 16.1)	17.3	(16.6 - 17.9)	2,703	12.1	(11.7 - 12.6)	13.4	(12.8 – 14.0)	0.78
2008	3,427	15.7	(15.2 - 16.2)	17.4	(16.8 - 18)	2,826	12.5	(12.1 – 13.0)	13.7	(13.2 - 14.3)	0.80
2009	3,592	16.2	(15.7 - 16.7)	17.8	(17.2 - 18.5)	2,996	13.1	(12.6 - 13.6)	14.2	(13.6 - 14.8)	0.81
2010	3,769	16.6	(16.1 - 17.1)	18.2	(17.6 - 18.9)	3,194	13.7	(13.2 - 14.2)	14.8	(14.3 - 15.5)	0.83
2011	3,908	17.0	(16.5 - 17.5)	18.6	(17.9 - 19.2)	3,402	14.4	(13.9 - 14.9)	15.5	(14.9 - 16.1)	0.85
2012	4,108	17.6	(17.1 - 18.2)	19.1	(18.5 - 19.7)	3,521	14.8	(14.3 - 15.3)	15.9	(15.3 - 16.5)	0.84
2013	4,313	18.3	(17.7 - 18.8)	19.7	(19.1 - 20.4)	3,666	15.1	(14.6 - 15.6)	16.2	(15.6 - 16.8)	0.83

Table 17: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) of diabetes in Manitoba, ages 20+ years, 1989–2013

			Manitoba		
Year	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**
1989	3,763	4.7	(4.6 – 4.9)	4.9	(4.8 – 5.1)
1990	3,657	4.6	(4.4 – 4.7)	4.8	(4.6 – 4.9)
1991	3,805	4.8	(4.6 – 4.9)	4.9	(4.8 – 5.1)
1992	3,859	4.8	(4.7 – 5.0)	5.0	(4.8 – 5.1)
1993	3,909	4.9	(4.7 – 5.1)	5.0	(4.8 – 5.2)
1994	3,999	5.0	(4.9 – 5.2)	5.1	(4.9 – 5.2)
1995	3,940	4.9	(4.8 – 5.1)	5.0	(4.8 – 5.1)
1996	4,014	5.0	(4.9 – 5.2)	5.0	(4.9 – 5.2)
1997	4,493	5.6	(5.4 – 5.8)	5.6	(5.4 – 5.8)
1998	4,819	6.0	(5.9 – 6.2)	6.0	(5.8 – 6.1)
1999	5,156	6.4	(6.3 – 6.6)	6.4	(6.2 – 6.5)
2000	5,637	7.0	(6.8 – 7.2)	6.8	(6.7 – 7.0)
2001	5,947	7.4	(7.2 – 7.6)	7.2	(7.0 – 7.4)
2002	6,170	7.6	(7.4 – 7.8)	7.4	(7.2 – 7.6)
2003	6,016	7.4	(7.2 – 7.6)	7.2	(7.0 – 7.4)
2004	6,518	8.0	(7.8 – 8.2)	7.7	(7.6 – 7.9)
2005	6,706	8.2	(8.0 – 8.4)	7.9	(7.8 – 8.1)
2006	6,660	8.1	(7.9 – 8.3)	7.8	(7.6 – 8.0)
2007	6,444	7.8	(7.6 – 8.0)	7.4	(7.2 – 7.6)
2008	6,319	7.6	(7.4 – 7.7)	7.2	(7.0 – 7.4)
2009	6,755	8.0	(7.8 – 8.2)	7.6	(7.4 – 7.8)
2010	7,038	8.2	(8.0 – 8.4)	7.8	(7.6 – 8.0)
2011	7,489	8.6	(8.4 – 8.8)	8.1	(8.0 – 8.3)
2012	8,729	9.8	(9.6 – 10.1)	9.4	(9.2 – 9.6)
2013	9,001	10.0	(9.8 – 10.2)	9.6	(9.4 – 9.8)

Table 18: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) of diabetes in Manitoba by sex, ages 20+ years, 1989–2013

| Year | Female | | | | | Male | | | | | RR |
	N	Crude Rate	(95% CIs)	Adjusted Rate	(95%CIs)	N	Crude Rate	(95%CIs)	Adjusted Rate	(95%CIs)	M/F
1989	1,856	4.5	(4.3 – 4.8)	4.6	(4.4 – 4.8)	1,907	4.9	(4.7 – 5.1)	5.3	(5.1 – 5.6)	1.07
1990	1,847	4.5	(4.3 – 4.7)	4.5	(4.3 – 4.7)	1,810	4.6	(4.4 – 4.8)	5.1	(4.8 – 5.3)	1.03
1991	1,890	4.6	(4.4 – 4.8)	4.6	(4.4 – 4.8)	1,915	4.9	(4.7 – 5.1)	5.3	(5.0 – 5.5)	1.06
1992	1,933	4.7	(4.5 – 4.9)	4.7	(4.5 – 4.9)	1,926	4.9	(4.7 – 5.2)	5.3	(5.0 – 5.5)	1.05
1993	1,946	4.8	(4.5 – 5.0)	4.7	(4.5 – 4.9)	1,963	5.0	(4.8 – 5.3)	5.4	(5.1 – 5.6)	1.06
1994	1,894	4.6	(4.4 – 4.8)	4.5	(4.3 – 4.7)	2,105	5.4	(5.2 – 5.6)	5.7	(5.4 – 5.9)	1.17
1995	1,954	4.8	(4.5 – 5.0)	4.7	(4.4 – 4.9)	1,986	5.1	(4.9 – 5.3)	5.3	(5.1 – 5.6)	1.07
1996	1,952	4.7	(4.5 – 5.0)	4.6	(4.4 – 4.8)	2,062	5.3	(5.1 – 5.5)	5.5	(5.3 – 5.8)	1.12
1997	2,156	5.2	(5.0 – 5.5)	5.1	(4.9 – 5.3)	2,337	6.0	(5.8 – 6.2)	6.2	(5.9 – 6.4)	1.14
1998	2,276	5.5	(5.3 – 5.8)	5.4	(5.1 – 5.6)	2,543	6.5	(6.3 – 6.8)	6.7	(6.4 – 7.0)	1.18
1999	2,467	6.0	(5.8 – 6.2)	5.8	(5.5 – 6.0)	2,689	6.9	(6.6 – 7.2)	7.0	(6.7 – 7.3)	1.15
2000	2,766	6.7	(6.4 – 6.9)	6.4	(6.1 – 6.6)	2,871	7.3	(7.1 – 7.6)	7.4	(7.1 – 7.6)	1.10
2001	2,824	6.8	(6.6 – 7.1)	6.5	(6.3 – 6.8)	3,123	8.0	(7.7 – 8.2)	8.0	(7.7 – 8.3)	1.17
2002	2,929	7.1	(6.8 – 7.3)	6.7	(6.4 – 6.9)	3,241	8.2	(8.0 – 8.5)	8.2	(7.9 – 8.5)	1.17
2003	2,839	6.8	(6.6 – 7.1)	6.5	(6.2 – 6.7)	3,177	8.0	(7.8 – 8.3)	8.0	(7.7 – 8.3)	1.18
2004	3,190	7.6	(7.3 – 7.9)	7.3	(7.0 – 7.5)	3,328	8.4	(8.1 – 8.7)	8.3	(8.0 – 8.6)	1.10
2005	3,227	7.7	(7.4 – 7.9)	7.3	(7.1 – 7.6)	3,479	8.7	(8.4 – 9.0)	8.7	(8.4 – 9.0)	1.14
2006	3,180	7.5	(7.3 – 7.8)	7.1	(6.8 – 7.3)	3,480	8.7	(8.4 – 9.0)	8.6	(8.3 – 8.9)	1.15
2007	2,964	7.0	(6.7 – 7.2)	6.6	(6.3 – 6.8)	3,480	8.6	(8.4 – 8.9)	8.3	(8.1 – 8.6)	1.24
2008	2,940	6.9	(6.6 – 7.1)	6.4	(6.2 – 6.7)	3,379	8.3	(8.0 – 8.6)	8.0	(7.7 – 8.3)	1.21
2009	3,149	7.3	(7.0 – 7.5)	6.9	(6.6 – 7.1)	3,606	8.7	(8.5 – 9.0)	8.4	(8.1 – 8.7)	1.21
2010	3,323	7.5	(7.3 – 7.8)	7.1	(6.8 – 7.3)	3,715	8.9	(8.6 – 9.2)	8.6	(8.3 – 8.9)	1.18
2011	3,374	7.5	(7.3 – 7.8)	7.1	(6.9 – 7.4)	4,115	9.7	(9.4 – 10.0)	9.3	(9.0 – 9.6)	1.28
2012	4,005	8.8	(8.6 – 9.1)	8.3	(8.0 – 8.5)	4,724	10.9	(10.6 – 11.2)	10.6	(10.3 – 10.9)	1.24
2013	4,192	9.1	(8.9 – 9.4)	8.6	(8.3 – 8.8)	4,809	10.9	(10.6 – 11.3)	10.7	(10.4 – 11.0)	1.20

Table 19: Crude incidence rate (per 1,000 persons) of diabetes in Manitoba by age group, ages 20+ years, 1989–2013

Age group in years	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
20-24	0.5	0.5	0.6	0.7	0.7	0.5	0.5	0.8	0.7	0.9	0.7	1.1	0.9
25-29	0.7	0.9	0.8	1.0	1.0	1.1	1.4	1.4	1.6	1.4	1.7	1.4	1.7
30-34	1.4	1.1	1.3	1.3	1.5	1.7	1.6	1.8	2.2	2.1	2.0	2.2	2.9
35-39	2.2	2.0	1.9	2.2	2.5	2.3	2.4	2.3	2.6	2.8	3.2	3.6	3.7
40-44	3.6	3.7	4.0	3.6	4.0	3.9	3.5	3.2	4.2	4.3	4.5	4.6	4.9
45-49	4.7	4.9	5.2	5.2	4.9	5.7	5.5	5.5	5.6	6.4	6.2	7.1	6.9
50-54	6.8	6.8	7.1	7.5	6.1	7.5	7.3	6.5	8.2	8.4	8.8	10.9	10.2
55-59	8.3	9.0	9.4	9.7	8.6	9.7	9.0	9.1	10.0	10.2	11.7	12.3	13.1
60-64	10.4	9.9	10.2	9.7	11.0	11.0	10.8	10.9	12.4	12.9	13.3	14.5	15.0
65-69	11.8	11.1	10.7	11.7	13.2	11.6	11.3	11.6	12.5	14.5	14.8	15.8	17.3
70-74	12.2	10.8	11.1	11.0	10.6	10.1	11.2	11.6	12.7	12.9	15.1	15.3	16.2
75-79	11.7	10.9	11.7	11.5	10.8	9.5	10.1	10.4	10.9	12.5	14.5	13.3	15.7
80-84	10.9	10.9	10.2	9.7	10.3	9.7	8.4	10.4	10.0	11.2	11.2	12.6	13.0
85+	8.5	8.1	8.6	7.3	7.5	8.0	7.3	6.9	7.7	8.3	8.2	10.3	10.4

Age group in years	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
20-24	0.8	1.0	1.1	1.3	1.1	1.2	1.1	1.1	1.2	1.2	1.3	1.4
25-29	2.0	1.7	1.8	2.0	1.9	1.8	2.1	2.2	2.1	2.3	2.1	2.4
30-34	2.8	2.7	3.3	3.5	3.1	3.0	3.2	3.5	3.6	4.0	3.9	3.7
35-39	4.0	4.1	4.3	4.7	4.5	4.4	5.0	4.8	5.3	5.5	5.7	5.6
40-44	5.6	5.1	5.3	5.9	6.1	5.8	6.0	7.2	6.6	7.8	7.9	8.4
45-49	7.5	7.3	7.1	7.8	8.0	7.9	7.8	7.8	8.8	9.3	11.1	10.9
50-54	11.0	10.0	10.5	9.9	9.9	10.6	9.9	10.7	10.4	11.7	13.0	13.3
55-59	13.4	12.9	13.3	12.8	13.8	12.4	12.0	12.6	13.2	13.3	15.3	15.7
60-64	14.2	14.6	16.0	16.7	15.4	14.8	14.4	13.9	14.3	15.8	18.4	18.5
65-69	15.2	17.1	18.1	17.5	18.0	15.7	15.2	15.6	14.9	15.6	19.0	19.7
70-74	17.2	15.1	17.3	17.9	17.6	15.3	14.2	15.6	15.7	15.8	20.3	19.5
75-79	16.7	16.0	16.8	17.6	16.3	15.8	13.9	15.0	16.6	15.3	19.7	21.7
80-84	13.3	12.8	14.8	14.0	14.4	13.9	12.2	14.1	13.0	12.5	16.7	16.6
85+	10.5	9.6	12.6	12.1	10.1	11.0	8.8	9.8	11.5	9.8	12.8	13.5

Table 20: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) of diabetes in Manitoba by Regional Health Authority (RHA) and sex, ages 20+ years, 2013

RHA	N	Crude Rate	(95%CIs)	Adjusted Rate	(95%CIs)	RR M/F
			All			
Winnipeg RHA	5,368	10.1	(9.8 – 10.4)	9.7	(9.4 – 10.0)	1.19
Southern Health-Santé Sud	885	7.2	(6.7 – 7.7)	6.9	(6.5 – 7.4)	1.51
Interlake-Eastern RHA	919	10.7	(10.0 – 11.4)	9.2	(8.5 – 9.8)	1.31
Prairie Mountain Health	1,259	10.9	(10.3 – 11.5)	9.9	(9.3 – 10.4)	1.10
Northern Health Region	570	14.1	(13.0 – 15.3)	15.4	(14.0 – 16.9)	0.89

RHA	N	Crude Rate	(95%CIs)	Adjusted Rate	(95%CIs)
			Female		
Winnipeg RHA	2,534	9.2	(8.9 – 9.6)	8.7	(8.3 – 9.0)
Southern Health-Santé Sud	355	5.7	(5.1 – 6.3)	5.4	(4.8 – 6.0)
Interlake-Eastern RHA	395	9.2	(8.3 – 10.2)	7.8	(7.0 – 8.6)
Prairie Mountain Health	615	10.4	(9.6 – 11.2)	9.3	(8.5 – 10.1)
Northern Health Region	293	15.0	(13.3 – 16.8)	15.6	(13.7 – 17.8)

RHA	N	Crude Rate	(95%CIs)	Adjusted Rate	(95%CIs)
			Male		
Winnipeg RHA	2,834	11.0	(10.6 – 11.4)	10.9	(10.5 – 11.3)
Southern Health-Santé Sud	530	8.6	(7.9 – 9.4)	8.6	(7.8 – 9.4)
Interlake-Eastern RHA	524	12.1	(11.1 – 13.2)	10.6	(9.7 – 11.6)
Prairie Mountain Health	644	11.5	(10.6 – 12.4)	10.6	(9.8 – 11.5)
Northern Health Region	277	13.3	(11.8 – 14.9)	15.2	(13.2 – 17.5)

Table 21: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) of diabetes in Winnipeg RHA, ages 20+ years, 1989-2013

			Winnipeg RHA		
Year	**N**	**Crude Rate**	**(95%CIs)**	**Adjusted Rate**	**(95%CIs)**
1989	4,000	4.2	(4.1 – 4.3)	4.5	(4.4 – 4.7)
1990	4,088	4.2	(4.1 – 4.4)	4.6	(4.4 – 4.7)
1991	4,312	4.5	(4.4 – 4.6)	4.8	(4.6 – 4.9)
1992	4,390	4.6	(4.5 – 4.7)	4.9	(4.7 – 5.0)
1993	4,430	4.7	(4.5 – 4.8)	4.9	(4.7 – 5.0)
1994	4,482	4.7	(4.6 – 4.9)	4.9	(4.7 – 5.0)
1995	4,374	4.6	(4.5 – 4.8)	4.7	(4.6 – 4.9)
1996	4,320	4.6	(4.4 – 4.7)	4.7	(4.5 – 4.8)
1997	4,784	5.0	(4.9 – 5.2)	5.1	(4.9 – 5.2)
1998	5,036	5.3	(5.2 – 5.5)	5.3	(5.2 – 5.5)
1999	5,754	6.1	(5.9 – 6.2)	6.0	(5.9 – 6.2)
2000	6,280	6.6	(6.4 – 6.8)	6.5	(6.3 – 6.7)
2001	6,592	6.9	(6.7 – 7.1)	6.8	(6.6 – 7.0)
2002	7,000	7.3	(7.1 – 7.5)	7.1	(6.9 – 7.3)
2003	6,842	7.1	(6.9 – 7.3)	6.9	(6.8 – 7.1)
2004	7,448	7.7	(7.5 – 7.9)	7.5	(7.3 – 7.7)
2005	7,644	7.9	(7.7 – 8.1)	7.7	(7.5 – 7.9)
2006	7,406	7.6	(7.4 – 7.8)	7.4	(7.2 – 7.5)
2007	7,244	7.4	(7.2 – 7.6)	7.1	(6.9 – 7.2)
2008	7,188	7.3	(7.1 – 7.5)	7.0	(6.8 – 7.1)
2009	7,750	7.8	(7.6 – 7.9)	7.4	(7.3 – 7.6)
2010	8,036	7.9	(7.7 – 8.1)	7.5	(7.3 – 7.7)
2011	8,824	8.5	(8.4 – 8.7)	8.1	(8.0 – 8.3)
2012	10,384	9.9	(9.7 – 10.1)	9.5	(9.3 – 9.7)
2013	10,736	10.1	(9.9 – 10.3)	9.7	(9.5 – 9.9)

Table 22: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) of diabetes in Southern Health – Santé Sud, ages 20+ years, 1989-2013

	Southern Health-Santé Sud				
Year	N	Crude Rate	(95%CIs)	Adjusted Rate	(95%CIs)
1989	826	4.5	(4.2 – 4.8)	4.6	(4.3 – 4.9)
1990	730	4.0	(3.7 – 4.3)	4.0	(3.8 – 4.3)
1991	764	4.2	(3.9 – 4.5)	4.2	(3.9 – 4.5)
1992	802	4.3	(4.0 – 4.6)	4.3	(4.0 – 4.6)
1993	854	4.5	(4.2 – 4.8)	4.5	(4.2 – 4.9)
1994	778	4.1	(3.8 – 4.4)	4.1	(3.8 – 4.4)
1995	760	3.9	(3.6 – 4.2)	3.9	(3.7 – 4.2)
1996	880	4.5	(4.2 – 4.8)	4.5	(4.2 – 4.9)
1997	982	5.0	(4.7 – 5.4)	5.1	(4.8 – 5.4)
1998	1,136	5.8	(5.4 – 6.1)	5.8	(5.5 – 6.2)
1999	1,054	5.3	(5.0 – 5.7)	5.3	(5.0 – 5.7)
2000	1,156	5.8	(5.4 – 6.1)	5.7	(5.4 – 6.0)
2001	1,296	6.4	(6.1 – 6.8)	6.4	(6.1 – 6.8)
2002	1,280	6.3	(5.9 – 6.6)	6.2	(5.9 – 6.6)
2003	1,266	6.1	(5.8 – 6.4)	6.1	(5.7 – 6.4)
2004	1,444	6.9	(6.5 – 7.2)	6.8	(6.5 – 7.2)
2005	1,528	7.2	(6.8 – 7.5)	7.1	(6.7 – 7.5)
2006	1,456	6.7	(6.4 – 7.1)	6.7	(6.4 – 7.1)
2007	1,410	6.4	(6.1 – 6.7)	6.2	(5.9 – 6.6)
2008	1,346	6.0	(5.7 – 6.3)	5.8	(5.5 – 6.1)
2009	1,378	6.1	(5.7 – 6.4)	5.8	(5.5 – 6.2)
2010	1,498	6.5	(6.1 – 6.8)	6.3	(6.0 – 6.6)
2011	1,462	6.2	(5.9 – 6.5)	6.0	(5.7 – 6.3)
2012	1,724	7.1	(6.8 – 7.5)	6.9	(6.5 – 7.2)
2013	1,770	7.2	(6.8 – 7.5)	6.9	(6.6 – 7.3)

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Table 23: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) of diabetes in Interlake-Eastern RHA, ages 20+ years, 1989-2013

			Interlake-Eastern RHA		
Year	**N**	**Crude Rate**	**(95%CIs)**	**Adjusted Rate**	**(95%CIs)**
1989	856	5.9	(5.5 – 6.3)	5.9	(5.5 – 6.3)
1990	748	5.2	(4.8 – 5.5)	5.1	(4.8 – 5.5)
1991	776	5.3	(4.9 – 5.7)	5.2	(4.8 – 5.6)
1992	866	5.9	(5.5 – 6.3)	5.7	(5.3 – 6.1)
1993	814	5.5	(5.1 – 5.9)	5.4	(5.0 – 5.8)
1994	768	5.1	(4.8 – 5.5)	4.9	(4.6 – 5.3)
1995	780	5.2	(4.8 – 5.5)	5.0	(4.7 – 5.4)
1996	792	5.2	(4.8 – 5.6)	5.1	(4.7 – 5.4)
1997	998	6.5	(6.1 – 6.9)	6.3	(5.9 – 6.7)
1998	1,066	7.0	(6.5 – 7.4)	6.5	(6.1 – 6.9)
1999	1,044	6.8	(6.4 – 7.2)	6.3	(5.9 – 6.7)
2000	1,240	8.0	(7.6 – 8.5)	7.4	(7.0 – 7.8)
2001	1,340	8.7	(8.2 – 9.1)	8.1	(7.6 – 8.5)
2002	1,404	9.1	(8.6 – 9.6)	8.3	(7.9 – 8.8)
2003	1,284	8.2	(7.8 – 8.7)	7.6	(7.1 – 8.0)
2004	1,402	8.9	(8.4 – 9.4)	8.2	(7.7 – 8.6)
2005	1,300	8.2	(7.8 – 8.7)	7.7	(7.2 – 8.1)
2006	1,518	9.5	(9.1 – 10.0)	8.5	(8.1 – 9.0)
2007	1,368	8.5	(8.1 – 9.0)	7.8	(7.3 – 8.2)
2008	1,360	8.4	(8.0 – 8.9)	7.8	(7.3 – 8.2)
2009	1,454	8.9	(8.5 – 9.4)	7.9	(7.4 – 8.3)
2010	1,518	9.2	(8.8 – 9.7)	8.3	(7.8 – 8.7)
2011	1,642	9.7	(9.3 – 10.2)	8.5	(8.1 – 8.9)
2012	1,950	11.4	(10.9 – 11.9)	9.9	(9.4 – 10.4)
2013	1,838	10.7	(10.2 – 11.2)	9.2	(8.7 – 9.6)

Table 24: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) of diabetes in Prairie Mountain Health, ages 20+ years, 1989-2013

Prairie Mountain Health					
Year	N	Crude Rate	(95%CIs)	Adjusted Rate	(95%CIs)
1989	1,318	5.6	(5.3 – 5.9)	5.0	(4.8 – 5.3)
1990	1,244	5.3	(5.1 – 5.7)	4.8	(4.5 – 5.0)
1991	1,262	5.5	(5.2 – 5.8)	4.9	(4.6 – 5.1)
1992	1,180	5.1	(4.8 – 5.4)	4.7	(4.4 – 4.9)
1993	1,210	5.3	(5.0 – 5.6)	4.7	(4.5 – 5.0)
1994	1,434	6.2	(5.9 – 6.6)	5.6	(5.3 – 5.9)
1995	1,332	5.8	(5.5 – 6.1)	5.3	(5.0 – 5.6)
1996	1,350	5.9	(5.6 – 6.2)	5.4	(5.1 – 5.7)
1997	1,550	6.8	(6.5 – 7.2)	6.2	(5.9 – 6.5)
1998	1,700	7.5	(7.2 – 7.9)	6.8	(6.5 – 7.2)
1999	1,752	7.8	(7.4 – 8.1)	7.0	(6.7 – 7.4)
2000	1,790	8.0	(7.6 – 8.4)	7.1	(6.8 – 7.5)
2001	1,788	8.0	(7.6 – 8.4)	7.2	(6.9 – 7.6)
2002	1,788	8.0	(7.7 – 8.4)	7.3	(6.9 – 7.6)
2003	1,864	8.4	(8.0 – 8.8)	7.6	(7.2 – 7.9)
2004	1,910	8.6	(8.2 – 9.0)	7.8	(7.5 – 8.2)
2005	2,056	9.3	(8.9 – 9.7)	8.4	(8.1 – 8.8)
2006	1,954	8.8	(8.5 – 9.3)	7.9	(7.6 – 8.3)
2007	1,894	8.6	(8.2 – 8.9)	7.6	(7.2 – 7.9)
2008	1,838	8.3	(7.9 – 8.6)	7.5	(7.1 – 7.8)
2009	1,852	8.3	(7.9 – 8.6)	7.5	(7.1 – 7.8)
2010	1,896	8.4	(8.0 – 8.8)	7.6	(7.3 – 8.0)
2011	1,936	8.5	(8.1 – 8.9)	7.7	(7.4 – 8.1)
2012	2,332	10.2	(9.8 – 10.6)	9.2	(8.8 – 9.6)
2013	2,518	10.9	(10.5 – 11.3)	9.9	(9.5 – 10.3)

Table 25: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) of diabetes in Northern Health Region, ages 20+ years, 1989-2013

	N	Crude Rate	(95%CIs)	Adjusted Rate	(95%CIs)
1989	526	6.7	(6.2 – 7.3)	8.8	(8.0 – 9.7)
1990	504	6.4	(5.9 – 7.0)	8.3	(7.5 – 9.2)
1991	496	6.3	(5.8 – 6.9)	8.0	(7.3 – 8.9)
1992	480	6.1	(5.6 – 6.7)	7.7	(7.0 – 8.6)
1993	510	6.5	(6.0 – 7.1)	8.6	(7.8 – 9.5)
1994	536	6.9	(6.3 – 7.5)	8.5	(7.8 – 9.4)
1995	634	8.1	(7.5 – 8.7)	10.2	(9.3 – 11.1)
1996	686	8.7	(8.0 – 9.3)	10.4	(9.6 – 11.4)
1997	672	8.5	(7.8 – 9.1)	10.5	(9.6 – 11.5)
1998	700	8.9	(8.2 – 9.6)	11.1	(10.2 – 12.1)
1999	708	9.1	(8.4 – 9.8)	11.1	(10.2 – 12.1)
2000	808	10.4	(9.7 – 11.1)	12.3	(11.3 – 13.3)
2001	878	11.3	(10.6 – 12.1)	13.4	(12.4 – 14.5)
2002	868	11.3	(10.5 – 12.0)	13.0	(12.1 – 14.1)
2003	776	10.1	(9.4 – 10.8)	11.3	(10.4 – 12.3)
2004	832	10.9	(10.1 – 11.6)	12.7	(11.7 – 13.8)
2005	884	11.6	(10.8 – 12.4)	12.9	(12.0 – 14.0)
2006	986	12.9	(12.1 – 13.7)	14.8	(13.7 – 15.9)
2007	972	12.7	(11.9 – 13.5)	14.7	(13.6 – 15.8)
2008	906	11.7	(11.0 – 12.5)	13.0	(12.0 – 14.0)
2009	1,076	13.8	(13.0 – 14.6)	14.7	(13.7 – 15.8)
2010	1,128	14.2	(13.4 – 15.1)	15.8	(14.8 – 16.9)
2011	1,114	14.0	(13.1 – 14.8)	14.6	(13.7 – 15.6)
2012	1,068	13.3	(12.6 – 14.2)	14.4	(13.4 – 15.4)
2013	1,140	14.1	(13.3 – 14.9)	15.4	(14.4 – 16.4)

Table 26: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) in Winnipeg RHA, by sex, ages 20+ years, 1989-2013

	Winnipeg RHA										RR
	Female					**Male**					**RR**
Year	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**	**M/F**
1989	994	4.0	(3.7 - 4.2)	4.1	(3.8 - 4.3)	1,006	4.4	(4.1 - 4.7)	5.1	(4.7 - 5.4)	1.10
1990	1,013	4.0	(3.8 - 4.3)	4.1	(3.9 - 4.4)	1,031	4.5	(4.2 - 4.8)	5.1	(4.8 - 5.5)	1.11
1991	1,077	4.3	(4.1 - 4.6)	4.4	(4.1 - 4.6)	1,079	4.7	(4.4 - 5.0)	5.3	(4.9 - 5.6)	1.09
1992	1,094	4.4	(4.1 - 4.7)	4.4	(4.2 - 4.7)	1,101	4.8	(4.5 - 5.1)	5.4	(5.0 - 5.7)	1.10
1993	1,145	4.6	(4.3 - 4.9)	4.6	(4.3 - 4.9)	1,070	4.7	(4.4 - 5.0)	5.2	(4.9 - 5.6)	1.02
1994	1,043	4.2	(4.0 - 4.5)	4.2	(3.9 - 4.4)	1,198	5.3	(5.0 - 5.6)	5.8	(5.4 - 6.1)	1.26
1995	1,108	4.5	(4.2 - 4.7)	4.4	(4.1 - 4.7)	1,079	4.8	(4.5 - 5.1)	5.1	(4.8 - 5.5)	1.07
1996	1,058	4.3	(4.0 - 4.5)	4.2	(3.9 - 4.4)	1,102	4.9	(4.6 - 5.2)	5.2	(4.9 - 5.6)	1.14
1997	1,160	4.7	(4.4 - 5.0)	4.5	(4.3 - 4.8)	1,232	5.4	(5.1 - 5.8)	5.7	(5.4 - 6.0)	1.16
1998	1,221	4.9	(4.7 - 5.2)	4.8	(4.5 - 5.1)	1,297	5.7	(5.4 - 6.1)	5.9	(5.6 - 6.3)	1.16
1999	1,402	5.7	(5.4 - 6.0)	5.4	(5.1 - 5.7)	1,475	6.5	(6.2 - 6.8)	6.7	(6.4 - 7.1)	1.15
2000	1,558	6.3	(6.0 - 6.6)	6.0	(5.7 - 6.3)	1,582	6.9	(6.6 - 7.3)	7.2	(6.8 - 7.5)	1.11
2001	1,615	6.5	(6.2 - 6.8)	6.2	(5.9 - 6.5)	1,681	7.4	(7.0 - 7.7)	7.5	(7.2 - 7.9)	1.13
2002	1,690	6.8	(6.5 - 7.1)	6.3	(6.0 - 6.7)	1,810	7.9	(7.5 - 8.3)	8.0	(7.6 - 8.4)	1.16
2003	1,657	6.6	(6.3 - 6.9)	6.2	(5.9 - 6.6)	1,764	7.7	(7.3 - 8.0)	7.8	(7.4 - 8.1)	1.16
2004	1,848	7.4	(7.0 - 7.7)	7.0	(6.6 - 7.3)	1,876	8.1	(7.7 - 8.5)	8.2	(7.8 - 8.5)	1.10
2005	1,830	7.3	(6.9 - 7.6)	6.8	(6.5 - 7.2)	1,992	8.6	(8.2 - 9.0)	8.8	(8.4 - 9.2)	1.18
2006	1,833	7.3	(6.9 - 7.6)	6.8	(6.5 - 7.1)	1,870	8.0	(7.6 - 8.4)	8.0	(7.6 - 8.4)	1.10
2007	1,694	6.7	(6.4 - 7.0)	6.2	(5.9 - 6.6)	1,928	8.2	(7.9 - 8.6)	8.0	(7.7 - 8.4)	1.23
2008	1,696	6.6	(6.3 - 6.9)	6.2	(5.9 - 6.5)	1,898	8.0	(7.7 - 8.4)	7.8	(7.5 - 8.2)	1.21
2009	1,855	7.1	(6.8 - 7.5)	6.8	(6.5 - 7.1)	2,020	8.4	(8.0 - 8.8)	8.2	(7.8 - 8.6)	1.18
2010	1,933	7.3	(7.0 - 7.7)	6.8	(6.5 - 7.1)	2,085	8.5	(8.2 - 8.9)	8.3	(8.0 - 8.7)	1.16
2011	2,046	7.7	(7.3 - 8.0)	7.2	(6.9 - 7.5)	2,366	9.5	(9.1 - 9.9)	9.2	(8.8 - 9.6)	1.24
2012	2,409	8.9	(8.5 - 9.2)	8.3	(8.0 - 8.7)	2,783	11.0	(10.6 - 11.4)	10.9	(10.5 - 11.3)	1.24
2013	2,534	9.2	(8.9 - 9.6)	8.7	(8.3 - 9.0)	2,834	11.0	(10.6 - 11.4)	10.9	(10.5 - 11.3)	1.19

Table 27: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) in Southern Health – Santé Sud, by sex, ages 20+ years, 1989-2013

	Southern Health-Santé Sud										
	Female					**Male**					**RR**
Year	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**	**N**	**Crude Rate**	**(95% CIs)**	**Adjusted Rate**	**(95% CIs)**	**M/F**
1989	181	3.9	(3.4 - 4.6)	3.8	(3.3 - 4.5)	232	5.1	(4.4 - 5.7)	5.3	(4.7 - 6.1)	1.28
1990	179	3.9	(3.3 - 4.5)	3.8	(3.2 - 4.4)	186	4.1	(3.5 - 4.7)	4.3	(3.7 - 5.0)	1.05
1991	179	3.9	(3.3 - 4.5)	3.8	(3.2 - 4.4)	203	4.4	(3.9 - 5.1)	4.7	(4.0 - 5.3)	1.15
1992	213	4.5	(3.9 - 5.2)	4.4	(3.8 - 5.0)	188	4.0	(3.4 - 4.6)	4.2	(3.6 - 4.9)	0.88
1993	200	4.2	(3.7 - 4.9)	4.1	(3.5 - 4.7)	227	4.8	(4.2 - 5.5)	5.0	(4.4 - 5.7)	1.14
1994	179	3.7	(3.2 - 4.3)	3.6	(3.1 - 4.2)	210	4.4	(3.8 - 5.0)	4.6	(4.0 - 5.2)	1.18
1995	167	3.4	(2.9 - 4.0)	3.3	(2.8 - 3.9)	213	4.4	(3.8 - 5.0)	4.6	(4.0 - 5.2)	1.28
1996	237	4.8	(4.2 - 5.5)	4.7	(4.1 - 5.4)	203	4.2	(3.6 - 4.8)	4.4	(3.8 - 5.0)	0.86
1997	232	4.7	(4.1 - 5.4)	4.6	(4.1 - 5.3)	259	5.3	(4.7 - 6.0)	5.6	(4.9 - 6.3)	1.12
1998	257	5.2	(4.6 - 5.9)	5.0	(4.4 - 5.7)	311	6.4	(5.7 - 7.1)	6.7	(6.0 - 7.5)	1.22
1999	232	4.7	(4.1 - 5.3)	4.5	(3.9 - 5.1)	295	6.0	(5.3 - 6.7)	6.1	(5.4 - 6.9)	1.28
2000	286	5.7	(5.0 - 6.4)	5.5	(4.9 - 6.2)	292	5.9	(5.2 - 6.6)	5.9	(5.2 - 6.6)	1.03
2001	298	5.9	(5.2 - 6.6)	5.7	(5.1 - 6.5)	350	6.9	(6.2 - 7.7)	7.2	(6.4 - 8.0)	1.18
2002	273	5.3	(4.7 - 6.0)	5.2	(4.6 - 5.9)	367	7.2	(6.5 - 8.0)	7.3	(6.6 - 8.1)	1.36
2003	274	5.3	(4.7 - 5.9)	5.2	(4.6 - 5.8)	359	6.9	(6.2 - 7.7)	7.0	(6.3 - 7.8)	1.32
2004	317	6.0	(5.3 - 6.7)	5.9	(5.3 - 6.6)	405	7.7	(7.0- 8.5)	7.8	(7.0 - 8.6)	1.29
2005	357	6.7	(6.0- 7.4)	6.5	(5.8 - 7.3)	407	7.7	(7.0 - 8.5)	7.8	(7.0 - 8.6)	1.16
2006	333	6.1	(5.5 - 6.8)	6.0	(5.4 - 6.7)	395	7.4	(6.7 - 8.1)	7.5	(6.7 - 8.3)	1.21
2007	326	5.9	(5.2 - 6.5)	5.7	(5.1 - 6.4)	379	7.0	(6.3 - 7.7)	6.7	(6.1 - 7.5)	1.19
2008	307	5.4	(4.8 - 6.1)	5.1	(4.5 - 5.8)	366	6.6	(5.9 - 7.3)	6.5	(5.8 - 7.2)	1.21
2009	310	5.4	(4.8 - 6.0)	5.2	(4.6 - 5.8)	379	6.7	(6.1 - 7.4)	6.5	(5.9 - 7.3)	1.24
2010	320	5.5	(4.9 - 6.1)	5.2	(4.6 - 5.8)	429	7.5	(6.8 - 8.2)	7.4	(6.7 - 8.2)	1.37
2011	319	5.3	(4.8 - 6.0)	5.0	(4.5 - 5.6)	412	7.0	(6.4 - 7.7)	7.0	(6.3 - 7.7)	1.32
2012	375	6.1	(5.5 - 6.8)	5.8	(5.2 - 6.5)	487	8.1	(7.4 - 8.9)	8.0	(7.3 - 8.8)	1.32
2013	355	5.7	(5.1 - 6.3)	5.4	(4.8 - 6.0)	530	8.6	(7.9 - 9.4)	8.6	(7.8 - 9.4)	1.51

Table 28: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) in Interlake – Eastern RHA, by sex, ages 20+ years, 1989-2013

												RR
			Female						Male			
Year	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)		M/F
1989	236	6.7	(5.9 - 7.6)	6.6	(5.8 - 7.5)	192	5.2	(4.5 - 6.0)	5.2	(4.5 - 6.0)		0.77
1990	192	5.4	(4.7 - 6.2)	5.3	(4.6 - 6.1)	182	4.9	(4.2 - 5.7)	4.9	(4.2 - 5.7)		0.91
1991	192	5.4	(4.6 - 6.2)	5.2	(4.5 - 6.0)	196	5.2	(4.5 - 6.0)	5.1	(4.4 - 5.9)		0.98
1992	218	6.0	(5.3 - 6.9)	5.8	(5 .0-6.6)	215	5.7	(5.0 - 6.5)	5.6	(4.9 - 6.4)		0.95
1993	188	5.2	(4.4 - 6.0)	5.1	(4.4 - 5.9)	219	5.8	(5 .0- 6.6)	5.7	(5 .0- 6.6)		1.12
1994	177	4.8	(4.1 - 5.6)	4.6	(4 .0- 5.4)	207	5.4	(4.7 - 6.2)	5.2	(4.5 - 5.9)		1.13
1995	187	5.1	(4.4 - 5.8)	4.9	(4.2 - 5.7)	203	5.3	(4.6 - 6.1)	5.1	(4.4 - 5.9)		1.05
1996	180	4.8	(4.1 - 5.5)	4.7	(4 .0- 5.5)	216	5.6	(4.9 - 6.4)	5.4	(4.7 - 6.2)		1.16
1997	210	5.6	(4.8 - 6.4)	5.4	(4.7 - 6.3)	289	7.5	(6.6 - 8.4)	7.1	(6.3 - 8.0)		1.34
1998	239	6.3	(5.5 - 7.2)	5.9	(5.2 - 6.7)	294	7.6	(6.7 - 8.5)	7.2	(6.4 - 8.1)		1.20
1999	250	6.6	(5.8 - 7.4)	6.1	(5.3 - 6.9)	272	7.0	(6.2 - 7.9)	6.6	(5.8 - 7.4)		1.07
2000	306	8.0	(7.1 - 9.0)	7.5	(6.7 - 8.4)	314	8.1	(7.2 - 9.0)	7.3	(6.5 - 8.2)		1.01
2001	281	7.3	(6.5 - 8.2)	6.8	(6 .0- 7.7)	389	10.0	(9.0 - 11)	9.3	(8.4 - 10.3)		1.36
2002	335	8.7	(7.8 - 9.7)	8.1	(7.2 - 9.0)	367	9.4	(8.5 - 10.5)	8.5	(7.7 - 9.5)		1.08
2003	276	7.1	(6.3 - 8.0)	6.6	(5.8 - 7.4)	366	9.3	(8.4 - 10.3)	8.6	(7.7 - 9.6)		1.32
2004	321	8.2	(7.3 - 9.1)	7.7	(6.8 - 8.6)	380	9.6	(8.7 - 10.6)	8.7	(7.9 - 9.7)		1.18
2005	319	8.1	(7.2 - 9.0)	7.8	(7.0- 8.8)	331	8.3	(7.5 - 9.3)	7.6	(6.7 - 8.5)		1.03
2006	336	8.5	(7.6 - 9.5)	7.6	(6.8 - 8.5)	423	10.6	(9.6 - 11.6)	9.5	(8.6 - 10.5)		1.24
2007	295	7.4	(6.6 - 8.3)	6.8	(6 .0- 7.7)	389	9.7	(8.7 - 10.7)	8.8	(7.9 - 9.8)		1.31
2008	302	7.5	(6.7 - 8.4)	6.9	(6.1 - 7.8)	378	9.4	(8.5 - 10.4)	8.5	(7.7 - 9.5)		1.25
2009	286	7.1	(6.3 - 7.9)	6.1	(5.4 - 6.9)	441	10.8	(9.8 - 11.8)	9.6	(8.7 - 10.6)		1.53
2010	346	8.4	(7.6 - 9.4)	7.7	(6.8 - 8.6)	413	10.0	(9 .0- 11.0)	8.9	(8.0 - 9.9)		1.18
2011	338	8.0	(7.2 - 8.9)	7.2	(6.4 - 8.1)	483	11.4	(10.4 - 12.5)	9.8	(8.9 - 10.8)		1.42
2012	409	9.6	(8.7 - 10.6)	8.5	(7.6 - 9.4)	566	13.2	(12.1 - 14.3)	11.2	(10.3 - 12.3)		1.37
2013	395	9.2	(8.3 - 10.2)	7.8	(7 .0- 8.6)	524	12.1	(11.1 - 13.2)	10.6	(9.7 - 11.6)		1.31

Diabetes among Adults in Manitoba (1989-2013)

Table 29: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) in Prairie Mountain Health, by sex, ages 20+ years, 1989-2013

	Prairie Mountain Health										RR
	Female					Male					
Year	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)	M/F
1989	305	5.1	(4.5 - 5.7)	4.5	(4.0 - 5.0)	354	6.1	(5.5 - 6.8)	5.7	(5.1 - 6.3)	1.20
1990	326	5.5	(4.9 - 6.1)	4.8	(4.2 - 5.3)	296	5.2	(4.6 - 5.8)	4.8	(4.2 - 5.4)	0.94
1991	305	5.2	(4.6 - 5.8)	4.4	(3.9 - 5.0)	326	5.8	(5.2 - 6.4)	5.3	(4.7 - 5.9)	1.11
1992	282	4.8	(4.3 - 5.4)	4.2	(3.8 - 4.8)	308	5.5	(4.9 - 6.1)	5.1	(4.5 - 5.7)	1.14
1993	292	5.0	(4.4 - 5.6)	4.4	(3.9 - 5.0)	313	5.6	(5 .0- 6.2)	5.2	(4.6 - 5.8)	1.12
1994	344	5.8	(5.2 - 6.5)	5.1	(4.6 - 5.7)	373	6.7	(6 .0- 7.4)	6.2	(5.6 - 6.9)	1.14
1995	314	5.3	(4.8 - 6.0)	4.8	(4.3 - 5.4)	352	6.3	(5.7 - 7.0)	5.8	(5.2 - 6.5)	1.18
1996	316	5.4	(4.8 - 6.0)	4.9	(4.3 - 5.5)	359	6.5	(5.8 - 7.2)	6.0	(5.4 - 6.6)	1.20
1997	376	6.4	(5.8 - 7.1)	5.8	(5.2 - 6.4)	399	7.2	(6.5 - 8.0)	6.7	(6.1 - 7.5)	1.12
1998	376	6.4	(5.8 - 7.1)	5.7	(5.2 - 6.4)	474	8.7	(7.9 - 9.5)	8.1	(7.4 - 8.9)	1.34
1999	396	6.8	(6.2 - 7.5)	6.0	(5.4 - 6.7)	480	8.8	(8.0 - 9.6)	8.1	(7.4 - 8.9)	1.29
2000	415	7.2	(6.5 - 7.9)	6.3	(5.7 - 7.0)	480	8.8	(8.1 - 9.7)	8.1	(7.4 - 8.9)	1.23
2001	414	7.2	(6.5 - 7.9)	6.5	(5.8 - 7.1)	480	8.9	(8.1 - 9.7)	8.2	(7.4 - 9.0)	1.23
2002	406	7.1	(6.4 - 7.8)	6.4	(5.8 - 7.1)	488	9.0	(8.3 - 9.9)	8.2	(7.5 - 9.0)	1.28
2003	430	7.5	(6.8 - 8.3)	6.8	(6.2 - 7.5)	502	9.3	(8.5 - 10.2)	8.5	(7.7 - 9.3)	1.24
2004	492	8.6	(7.9 - 9.4)	7.8	(7.1 - 8.6)	463	8.6	(7.8 - 9.4)	7.9	(7.2 - 8.7)	1.00
2005	486	8.5	(7.8 - 9.3)	7.7	(7.0 - 8.5)	542	10.1	(9.3 - 11.0)	9.3	(8.5 - 10.1)	1.19
2006	457	8.0	(7.3 - 8.8)	7.0	(6.3 - 7.7)	520	9.7	(8.9 - 10.6)	9.0	(8.2 - 9.8)	1.21
2007	425	7.5	(6.8 - 8.2)	6.6	(5.9 - 7.3)	522	9.7	(8.9 - 10.6)	8.7	(8 .0- 9.5)	1.30
2008	429	7.5	(6.8 - 8.3)	6.9	(6.2 - 7.6)	490	9.0	(8.3 - 9.9)	8.2	(7.4 - 8.9)	1.20
2009	431	7.5	(6.8 - 8.2)	6.7	(6.1 - 7.4)	495	9.1	(8.3 - 9.9)	8.3	(7.6 - 9.1)	1.21
2010	456	7.9	(7.2 - 8.6)	7.1	(6.5 - 7.9)	492	9.0	(8.2 - 9.8)	8.2	(7.5 - 9.0)	1.14
2011	419	7.2	(6.5 - 7.9)	6.5	(5.9 - 7.2)	549	9.9	(9.1 - 10.8)	9.0	(8.3 - 9.9)	1.38
2012	536	9.1	(8.4 - 9.9)	8.3	(7.6 - 9.1)	630	11.3	(10.4 - 12.2)	10.2	(9.4 - 11.1)	1.24
2013	615	10.4	(9.6 - 11.2)	9.3	(8.5 - 10.1)	644	11.5	(10.6 - 12.4)	10.6	(9.8 - 11.5)	1.10

Table 30: Number, crude incidence rate (per 1,000 persons), and adjusted incidence rate (per 1,000 persons) in Northern Health Region, by sex, ages 20+ years, 1989-2013

		Female					Male				RR
Year	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)	N	Crude Rate	(95% CIs)	Adjusted Rate	(95% CIs)	M/F
1989	140	7.6	(6.4 - 8.9)	9.9	(8.2 - 12.0)	123	6.0	(4.9 - 7.1)	7.7	(6.3 - 9.5)	0.79
1990	137	7.4	(6.2 - 8.7)	9.1	(7.5 - 11.1)	115	5.6	(4.6 - 6.7)	7.6	(6.1 - 9.4)	0.76
1991	137	7.4	(6.2 - 8.7)	9.2	(7.6 - 11.2)	111	5.4	(4.5 - 6.5)	7.0	(5.6 - 8.8)	0.73
1992	126	6.8	(5.7 - 8.1)	9.0	(7.3 - 10.9)	114	5.6	(4.6 - 6.7)	6.8	(5.4 - 8.5)	0.82
1993	121	6.6	(5.4 - 7.8)	8.4	(6.8 - 10.3)	134	6.5	(5.5 - 7.8)	8.8	(7.1 - 10.8)	1.00
1994	151	8.1	(6.9 - 9.6)	10.1	(8.4 - 12.1)	117	5.7	(4.8 - 6.9)	7.1	(5.7 - 8.8)	0.71
1995	178	9.5	(8.2 - 11.0)	12.1	(10.2 - 14.4)	139	6.8	(5.7 - 8.0)	8.2	(6.7 - 10.1)	0.71
1996	161	8.5	(7.3 - 10.0)	9.9	(8.2 - 11.8)	182	8.8	(7.6 - 10.2)	11.0	(9.2 - 13.2)	1.03
1997	178	9.4	(8.1 - 10.9)	10.7	(9 .0- 12.7)	158	7.6	(6.5 - 8.9)	10.5	(8.7 - 12.7)	0.81
1998	183	9.7	(8.3 - 11.2)	12.0	(10.1 - 14.2)	167	8.1	(6.9 - 9.5)	10.4	(8.6 - 12.6)	0.84
1999	187	10.0	(8.6 - 11.5)	12.4	(10.5 - 14.7)	167	8.2	(7.0- 9.6)	9.8	(8.1 - 11.8)	0.82
2000	201	10.8	(9.4 - 12.4)	12.4	(10.6 - 14.6)	203	10.0	(8.7 - 11.5)	12.2	(10.3 - 14.4)	0.93
2001	216	11.6	(10.1 - 13.3)	13.5	(11.5 - 15.8)	223	11.1	(9.6 - 12.6)	13.3	(11.3 - 15.6)	0.95
2002	225	12.2	(10.6 - 13.9)	14.3	(12.3 - 16.7)	209	10.4	(9.1 - 11.9)	11.8	(10.0 - 14.0)	0.86
2003	202	11.0	(9.5 - 12.6)	13.1	(11.1 - 15.4)	186	9.3	(8.0- 10.7)	9.6	(8.1 - 11.6)	0.85
2004	212	11.5	(10.0 - 13.2)	13.5	(11.5 - 15.8)	204	10.2	(8.9 - 11.7)	11.9	(10.1 - 14.2)	0.89
2005	235	12.8	(11.2 - 14.5)	14.4	(12.4 - 16.8)	207	10.4	(9.1 - 12.0)	11.5	(9.8 - 13.6)	0.82
2006	221	12.0	(10.5 - 13.7)	13.1	(11.2 - 15.2)	272	13.7	(12.1 - 15.4)	16.0	(13.9 - 18.4)	1.14
2007	224	12.2	(10.6 - 13.9)	13.1	(11.3 - 15.3)	262	13.2	(11.6 - 14.9)	16.2	(14.0 - 18.8)	1.08
2008	206	11.1	(9.6 - 12.7)	13.0	(11.1 - 15.2)	247	12.3	(10.9 - 14.0)	12.9	(11.2 - 15.0)	1.11
2009	267	14.2	(12.5 - 16)	15.4	(13.4 - 17.7)	271	13.4	(11.9 - 15.1)	14.1	(12.3 - 16.4)	0.95
2010	268	14.0	(12.3 - 15.7)	15.2	(13.3 - 17.5)	296	14.5	(12.9 - 16.3)	16.4	(14.3 - 18.9)	1.04
2011	252	13.0	(11.5 - 14.7)	13.5	(11.8 - 15.6)	305	14.8	(13.2 - 16.6)	15.5	(13.6 - 17.8)	1.14
2012	276	14.2	(12.6 - 16.0)	14.6	(12.7 - 16.6)	258	12.5	(11.1 - 14.2)	14.3	(12.4 - 16.7)	0.88
2013	293	15.0	(13.3 - 16.8)	15.6	(13.7 - 17.8)	277	13.3	(11.8 - 14.9)	15.2	(13.2 - 17.5)	0.89

Appendix C – Definitions of Type 1 and Type 2 Diabetes

Type I diabetes was formerly called insulin-dependent or juvenile-onset diabetes. The beta cells of the pancreas produce no, or inadequate levels of, insulin. It usually begins before an individual is 20 years of age. Type 1 diabetes is believed to be caused by a combination of genetic factors and environmental stressors leading the body's own immune system to attack insulin secreting beta cells in the pancreas. People with Type 1 diabetes must administer multiple, daily insulin injections and carefully monitor their blood sugar levels, physical activity and food intake. People with Type 1 diabetes may die if they do not take their insulin.

Type II diabetes was formerly called non-insulin-dependent or adult-onset diabetes. These individuals either cannot produce enough insulin for their body's needs, cannot use the insulin they produce properly (insulin resistance), or both. Obese individuals more than 40 years old are at highest risk of Type II diabetes. It appears that certain ethnic groups are at particularly high risk of developing Type II diabetes, specifically South Asians, African Americans and North American First Nations populations. Type II diabetes is managed with weight reduction, changes in food intake and exercise, and regular monitoring of blood sugar. In many cases people with Type II diabetes may require medication to stimulate insulin release by the pancreas, help overcome insulin resistance, or may require insulin injections.