



Winnipeg Regional  
Health Authority

Office régional de la  
santé de Winnipeg

# Diabetes in the Winnipeg Health Region 1996 - 1999

---

Please do not reproduce without permission

Diabetes in the Winnipeg Health Region, 1996-1999  
04/09/03 Population Health and Health Systems Analysis Unit, WRHA

## Table of Contents

<b>Preface .....</b>	<b>4</b>
<b>Acknowledgements .....</b>	<b>4</b>
<b>Introduction .....</b>	<b>5</b>
What is Diabetes? .....	5
Complications of Diabetes .....	5
Classification of Diabetes .....	5
Facts About Type 1 Diabetes .....	5
Facts About Type 2 Diabetes .....	6
Other Types of Diabetes .....	6
Diabetes in Aboriginal People .....	6
Diabetes Management .....	6
Planning for Effective Community-based Programs and Interventions .....	7
References .....	7
<b>Technical Introduction.....</b>	<b>8</b>
Definitions .....	8
<b>Using Relative Ratios and Rate Differences .....</b>	<b>10</b>
<b>Abbreviations .....</b>	<b>Error! Bookmark not defined.</b>
<b>Cautionary Note .....</b>	<b>12</b>
<b>Incidence of Diabetes in the Winnipeg Health Region.....</b>	<b>13</b>
Figure I1: Incidence of Diabetes in the Winnipeg Health Region by Age Group and Year; Both Genders .....	13
Table I1: Incidence of Diabetes in the WHR by Year .....	14
Geographic Variation of the Incidence of Diabetes within the Winnipeg Health Region (By Gender and Age), 1999 .....	14
Figure I2: Incidence of Diabetes in the Winnipeg Health Region, 1999; Ages 20-49 .....	15
Figure I3: Incidence of Diabetes in the Winnipeg Health Region, 1999; Ages 50-69 .....	16
Figure I4: Incidence of Diabetes in the Winnipeg Health Region, 1999; Ages 70+ .....	17
Comparison of Diabetes Incidence in Each Neighbourhood Cluster to the Rest of the Winnipeg Health Region (by Gender and Age), 1999 .....	18
Figure I5: Relative Ratio of each NC Area as compared to the rest of the WHR for Incidence of Diabetes, 1999; Females Age 20-49 .....	18
Figure I6: Difference in Incidence per 1000 between each NC Area and the rest of the WHR, 1999; Females Age 20-49 .....	18
Figure I7: Relative Ratio of each NC Area as compared to the rest of the WHR for Incidence of Diabetes, 1999; Males Age 20-49 .....	19
Figure I8: Difference in Incidence per 1000 between each NC Area and the rest of the WHR, 1999; Males Age 20-49 .....	19
Figure I9: Relative Ratio of each NC Area as compared to the rest of the WHR for Incidence of Diabetes, 1999; Females Age 50-69 .....	20
Figure I10: Difference in Incidence per 1000 between each NC Area and the rest of the WHR, 1999; Females Age 50-69 .....	20
Figure I11: Relative Ratio of each NC Area as compared to the rest of the WHR for Incidence of Diabetes, 1999; Males Age 50-69 .....	21
Figure I12: Difference in Incidence per 1000 between each NC Area and the rest of the WHR, 1999; Males Age 50-69 .....	21
Figure I13: Relative Ratio of each NC Area as compared to the rest of the WHR for Incidence of Diabetes, 1999; Females Age 70+ .....	22
Figure I14: Difference in Incidence per 1000 between each NC Area and the rest of the WHR, 1999; Females Age 70+ .....	22
Figure I15: Relative Ratio of each NC Area as compared to the rest of the WHR for Incidence of Diabetes, 1999; Males Age 70+ .....	23
Figure I16: Difference in Incidence per 1000 between each NC Area and the rest of the WHR, 1999; Males Age 70+ .....	23
<b>Prevalence of Diabetes in the Winnipeg Health Region .....</b>	<b>24</b>

Figure P1: Prevalence of Diabetes in the Winnipeg Health Region by Age Group and Year; Both Genders .....	24
Table P1: Prevalence of Diabetes in the WHR by Year .....	24
Geographic Variation of the Prevalence of Diabetes within the Winnipeg Health Region (By Gender and Age), 1999 .....	25
Figure P2: Prevalence of Diabetes in the Winnipeg Health Region, 1999; Ages 20-49 .....	25
Figure P3: Prevalence of Diabetes in the Winnipeg Health Region, 1999; Ages 50-69 .....	26
Figure P4: Prevalence of Diabetes in the Winnipeg Health Region, 1999; Ages 70+ .....	27
Comparison of Diabetes Prevalence in each Neighbourhood Cluster to the rest of the Winnipeg Health Region (By Gender and Age), 1999 .....	28
Figure P5: Relative Ratio of each NC Area as compared to the rest of the WHR for Prevalence of Diabetes, 1999; Females Age 20-49 .....	28
Figure P6: Difference in Prevalence per 1000 between each NC Area and the rest of the WHR, 1999; Females Age 20-49 .....	28
Figure P7: Relative Ratio of each NC Area as compared to the rest of the WHR for Prevalence of Diabetes, 1999; Males Age 20-49 .....	29
Figure P8: Difference in Prevalence per 1000 between each NC Area and the rest of the WHR, 1999; Males Age 20-49 .....	29
Figure P9: Relative Ratio of each NC Area as compared to the rest of the WHR for Prevalence of Diabetes, 1999; Females Age 50-69 .....	30
Figure P10: Difference in Prevalence per 1000 between each NC Area and the rest of the WHR, 1999; Females Age 50-69 .....	30
Figure P11: Relative Ratio of each NC Area as compared to the rest of the WHR for Prevalence of Diabetes, 1999; Males Age 50-69 .....	31
Figure P12: Difference in Prevalence per 1000 between each NC Area and the rest of the WHR, 1999; Males Age 50-69 .....	31
Figure P13: Relative Ratio of each NC Area as compared to the rest of the WHR for Prevalence of Diabetes, 1999; Females Age 70+ .....	32
Figure P14: Difference in Prevalence per 1000 between each NC Area and the rest of the WHR, 1999; Females Age 70+ .....	32
Figure P15: Relative Ratio of each NC Area as compared to the rest of the WHR for Prevalence of Diabetes, 1999; Males Age 70+ .....	33
Figure P16: Difference in Prevalence per 1000 between each NC Area and the rest of the WHR, 1999; Males Age 70+ .....	33
<b>Winnipeg Health Region Residents; Hospitalizations with a Diagnosis of Diabetes ICD-9-CM 250.0 - 250.9 .....</b>	<b>34</b>
Table H1: Counts of In-patient Hospital Discharge Records with ICD-9-CM 250.0 - 250.9 in any of 16 diagnosis fields .....	34
Table H2: Distribution of the Number of In-patient Hospital Visits for Individuals containing at least one ICD-9-CM codes 250.0 - 250.9 in any diagnostic field; 1995/1996 to 2000/2001 .....	35
Table H3: Number of In-patient Hospital Visits for Individuals with an ICD-9-CM Code 250.0 - 250.9 in any of 16 diagnosis fields by year, gender and age group .....	35
Table H4: Distribution of Recorded ICD-9-CM Codes 250.0 - 250.9 in all 16 diagnostic fields for all In-patient discharge records; 1995/1996 to 2000/2001 .....	37
Table H5: Top ten primary diagnosis categories based on in-patient records with ICD 250.0 - 250.9 code in any of 16 diagnosis fields compared to all other in-patient records, 1995/1996 to 2000/2001; Both genders, all ages .....	38
Table H6: Top ten primary diagnosis categories based on in-patient records with ICD 250.0 - 250.9 code in any of 16 diagnosis fields, 1995/1996 to 2000/2001; Both genders, Ages <20 .....	40
Table H7: Top ten primary diagnosis categories based on in-patient records with ICD 250.0 - 250.9 code in any of 16 diagnosis fields, 1995/1996 to 2000/2001; Ages 20+ .....	40
<b>For persons hospitalized and containing a diabetes diagnosis code (ICD-9-CM 250.0 - 250.9), how many are classified as having Type I and Type II diabetes? .....</b>	<b>41</b>
<b>APPENDIX A: Winnipeg Health Region Neighbourhood Cluster Geographies .....</b>	<b>42</b>

# Diabetes in the Winnipeg Health Region

## Preface

The purpose of this report is to provide detailed information on diabetes in the Winnipeg Health Region. This report is intended to contribute to the ongoing Population Health Assessment activities in the Winnipeg Regional Health Authority (WRHA). It is a resource to be used by WRHA staff and programs for discussion and planning about what the priorities ought to be to improve the health of our communities.

The report has three main sections:

- Measures of diabetes occurrence – incidence and prevalence;
- Measures for comparisons of diabetes occurrence – relative risk and rate differences; and
- Burden on the health care system – acute care in-patient hospitalizations for persons diagnosed with diabetes.

Information in this report is presented at the Regional, Community Area and Neighbourhood Cluster levels for the period of time from 1996 to 1999 for residents in the Winnipeg Health Region. Relative ratios and rate differences have also been calculated to provide additional detail that may be helpful for program and planning activities.

## Acknowledgements

This report is a product of the contributions, support and ideas of many people. A sincere thank-you is extended to all individuals for their time, expertise, and insights in the development and review of this report. A special thank-you is extended to Dr. S. Harlos, Medical Officer of Health and Ms. C. Rand, Diabetes Program Specialist, from the Population Health and Public Health Program.

The Population Health and Health System Analysis Team of the Winnipeg Regional Health Authority produced this report.

## **Introduction**

### **What is Diabetes?**

Diabetes is a serious health problem. It is a common chronic disease that can be managed, but not cured once well established. Diabetes can be diagnosed by a simple blood test that detects more than normal amount of glucose (sugar) in the blood. Either a lack of insulin or an ineffective use of insulin will cause blood glucose to rise. Insulin is a hormone produced in the pancreas which is required to change the sugar from food into energy.

Diabetes is a public health concern because it has a high disease burden in the population and prevention efforts may help to decrease the burden of illness. Since United States statistics demonstrate that for every known person with diabetes there is someone with undiagnosed diabetes, these statistics most likely underestimate the prevalence of the disease. Assuming that the same situation is true in Canada, up to 10% of Canadian adults may currently have diabetes. (1)

### **Complications of Diabetes**

While the cause of the different types of diabetes varies, the complications of diabetes are the same. It is the complications of diabetes or 'end organ damage' that accounts for the substantial morbidity and mortality of diabetes.

Examples of complications include chronic high blood sugar levels that affect the eyes, kidneys, nerves and blood vessels. Diabetes is also a major cause of heart disease. In adults, it is also a leading cause of blindness, kidney failure and loss of limbs due to amputations. In 1995, evidence indicated that the cost of diabetes and its complications (in adults, 15 years and older) to the health care system was over \$193 million per year or 18% of the 1995/96 provincial health care budget (2).

### **Classification of Diabetes**

Accurate classification of type of diabetes at the time of diagnosis is helpful to ensure appropriate medical treatment. The two types of diabetes are listed here, unfortunately the data sources do not accurately differentiate the types of diabetes.

### **Facts About Type 1 Diabetes**

- Previously called 'juvenile-onset' or insulin-dependent diabetes mellitus (IDDM).
- Type 1 diabetes is diagnosed mainly in children and young adults. It accounts for about 10% of all diabetes.
- Type 1 diabetes is an auto-immune disease characterized by a relative or absolute lack of insulin.
- Treatment always requires insulin replacement therapy.
- No environmental factors have been conclusively determined in the aetiology of type 1 diabetes.

## **Facts About Type 2 Diabetes**

- Previously called ‘adult-onset’ or non-insulin dependent diabetes mellitus (NIDDM).
- Type 2 diabetes can occur when there is resistance to insulin or a defect in insulin production or a combination of the two.
- Approximately 85-90 % of all people with diabetes are older adults who have type 2 diabetes.
- Treatment can vary from lifestyle management to the inclusion of five classes of anti-diabetes medication to the use of insulin.
- Risk for type 2 diabetes increases with family history, age, body weight and sedentary lifestyle.

## **Other Types of Diabetes**

Gestational diabetes is diagnosed during pregnancy and resolves after the pregnancy. Both mother and baby are at risk of developing diabetes in the future.

Secondary diabetes occurs as a result of other diseases or treatments for other diseases.

Six forms of MODY, or Maturity Onset Diabetes in Youth, have been identified. Diagnosis of these rare forms of genetically determined diabetes is currently in the research stage. The different forms of MODY can take the characteristics of type 1 or type 2 diabetes.

## **Diabetes in Aboriginal People**

While Aboriginal people are vastly over-represented in the numbers of case reports of diabetes, this document does not provide information on prevalence of diabetes based on ethnicity. The epidemic of type 2 diabetes is still on the rise among Aboriginal people, with a trend toward earlier age at onset, and genetic-environmental interactions are the likely cause (3). The prevalence of diabetes is almost five-fold higher in First Nation women and three-fold higher in First Nation men than in the general population in Manitoba (2). Type 2 diabetes in First Nations Cree children has been recognized since 1983 in Manitoba. The incidence and prevalence have increased twenty-fold over the past 20 years (4).

## **Diabetes Management**

Regardless of the type of diabetes, medical management, according to the evidence-based Clinical Practice Guidelines for the management of diabetes in Canada (1), recommends on going surveillance and glycemic blood pressure and blood lipid targets to minimize the complications of the disease. Intensive self-management on the part of the individual with diabetes and his or her family is imperative in order to achieve these targets. Diabetes self-management involves a complex and extensive list of behaviours and skills. It is best provided by a Diabetes Health Care team that employs, at a minimum, the services of a physician, nurse and dietitian with access to other allied health professionals (1).

## **Planning for Effective Community-based Programs and Interventions**

Appropriate management of diabetes has significant benefit to the individual with diabetes, his or her family and the community as a whole. It is not simply a metabolic disorder that can be managed on an individual basis in a clinic or hospital setting. It requires collaboration among those in government, health authorities, voluntary agencies and community groups and organizations to effectively address both prevention of diabetes and barriers to living well with diabetes.

### **References**

1. Meltzer S, Leiter L, Daneman D, et al., 1998 Clinical practice guidelines for the management of diabetes in Canada. *CMAJ* 1998;159(Suppl8):S1-29.
2. Diabetes: A Manitoba Strategy. Manitoba Health, 1998.
3. Young TK, Reading J, Elias B, O'Neil J. Type 2 diabetes mellitus in Canada's First Nations: Status of an epidemic in progress. *CMAJ* 2000;163(5):561-6.
4. Dean H. Guest, Editorial, *Diabetes Quarterly*, summer 2002.

## Technical Introduction

In order to quantify the occurrence of diabetes in the Winnipeg Health Region population we will consider two measures of disease occurrence. The first is the incidence of diabetes, which measures the number of people who develop diabetes during a specified time period. The second is prevalence, which measures the number of people who have diabetes at a specified time period.

Incidence is defined as the number of new cases in a fixed period of time divided by the number of people at risk. The time period in our case was chosen to be one year, in which case, we speak of the annual incidence. Incidence will be reported as cases per 1000 per year. Prevalence is defined as the number of people with diabetes divided by the population at risk. Prevalence reported is point prevalence, where the point in time chosen was June 1 for the given year.

For incidence the numerator is a count of “new” rather than “existing” cases. Incidence, therefore, can be viewed as becoming, whereas prevalence can be viewed as having something. Often when one is planning such things as screening programs for early detection, disease incidence is of immediate interest. However, if one is concerned with the provision of services for people with the disease, then the prevalence of the disease will be of interest.

The case definition for a clinically diagnosed case of diabetes is having at least two separate physician claims for diabetes within two years of each other or at least one hospital separation record with a diagnosis of diabetes (ICD-9-CM 250). Date of diagnosis was assigned, defined by the first physician claim, or by the first hospitalization record with a diagnosis of diabetes, whichever came first. The data do not distinguish between Type I and Type II diabetes, nor do they include persons with gestational diabetes.

Diabetes incidence and prevalence data used in this report were obtained from the Diabetes and Chronic Diseases Unit, Manitoba Health. Source of hospitalization data is the Hospital Abstract Database, Decision Support Services, Manitoba Health. All numerical values, tables and figures were generated by the Population Health and Health System Analysis Unit, Winnipeg Regional Health Authority.

## Definitions

1. Ratio: The value obtained by dividing one quantity by another; the numerator and denominator may be separate and distinct quantities, neither being included in the other, such as a gender ratio (number of females / number of males).
2. Proportion: A ratio in which the numerator is included in the denominator; a proportion always lies between 0 and 1.
3. Rate: A measure of the frequency of occurrence of a phenomenon. Typically, a rate is an expression of the frequency with which an event occurs in a defined population in a specified period of time. All rates are ratios, and some rates are proportions.

4. Incidence: The number of new events that occur during a specified period of time in a population at risk for experiencing the event in the specified time period.
5. Prevalence: The number of individuals who have an attribute or disease at a specified time period divided by the population at risk of having the attribute or disease at the specified time period.
6. Relative Ratio:

Relative Ratio for a Neighbourhood Cluster (NC) as compared to the rest of the WHR for Incidence of Diabetes

$$= \frac{\text{New cases in NC}}{\text{New cases in rest of WHR}} \times \frac{\text{population at risk in rest of WHR}}{\text{population at risk in NC}}$$

This is a relative ratio of new cases in a NC to new cases in the rest of the WHR, multiplied by a population(at risk) factor which adjusts for differences in populations.

Relative Ratio for a Neighbourhood Cluster (NC) as compared to the rest of the WHR for Prevalence of Diabetes

$$= \frac{\text{Diabetes cases in NC}}{\text{Diabetes cases in rest of WHR}} \times \frac{\text{population in rest of WHR}}{\text{population in NC}}$$

This is a relative ratio of existing cases in a NC to existing cases in the rest of the WHR, multiplied by a population factor which adjusts for differences in populations.

#### Example and Interpretation

Suppose the incidence rate in 1999 for females aged 30-39 in area A was 50 cases per 1000 population at risk and the comparable incidence rate for females aged 30-39 in all other areas in the region combined (excluding area A) was 25 cases per 1000 population at risk. The two groups can be compared by the ratio of their rates (see above). Considering all areas in the region combined (excluding the area to be compared) as the reference, we can calculate the ratio for females aged 30-39 in area A compared with females aged 30-39 in all other areas in the region combined (excluding area A) as  $50/25 = 2.0$ . Thus, we can say that females aged 30-39 in Area A have an incidence rate two times that of the rest of the region.

7. Difference in Incidence or Prevalence per 1000 population:

Difference in Incidence per 1000 between a Neighbourhood Cluster (NC) and the rest of the WHR :

$$\left( \left( \frac{\text{new cases in NC}}{\text{population at risk in NC}} \right) - \left( \frac{\text{new cases in rest of WHR}}{\text{population at risk in rest of WHR}} \right) \right) * 1000$$

Difference in Prevalence per 1000 between a Neighbourhood Cluster (NC) and the rest of the WHR :

$$\left( \left( \frac{\text{Diabetes cases in NC}}{\text{population in NC}} \right) - \left( \frac{\text{Diabetes cases in rest of WHR}}{\text{population in rest of WHR}} \right) \right) * 1000$$

Example and Interpretation

Suppose the incidence rate in 1999 for females aged 30-39 in area A was 50 cases per 1000 population at risk and the comparable incidence rate for females aged 30-39 in all other areas in the region combined (excluding area A) was 25 cases per 1000 population at risk. The two groups can be compared by a rate difference (see above). We can calculate the rate difference between females aged 30-39 in area A with females aged 30-39 in all other areas in the region combined (excluding area A) as 50 - 25 = 25 cases per 1000. This difference indicates how much, in absolute rather than relative terms, the incidence rates differ in these two populations. Thus, we can say there are 25 per 1000 more females aged 30-39 in Area A potentially at risk compared to the rest of the Winnipeg Health Region. Similarly, if the incidence rate in area A was 10 cases per 1000 and the comparable incidence rate in all other areas in the region combined (excluding area A) was 25 cases per 1000 population, the difference in incidence per 1000 would be 10-25= -15. Therefore, there are 15 cases per 1000 population fewer individuals potentially at risk compared to the rest of the Winnipeg Health Region.

**Using Relative Ratios and Rate Differences**

- Both the relative ratio and rate difference should be examined together when data permit.

Example 1:

Area	Disease Rate per 1000 Year 1	Disease Rate per 1000 Year 2	Relative Ratio (Rate Year 2 / Rate Year 1)	Rate Difference per 1000 (Rate Year 2 – Rate Year 1)
A	9	20	2.22	11
B	30	65	2.17	35

The relative ratio of the disease rate in year 2 compared to year 1 is slightly greater for Area A (i.e., the year 2 rate was 2.22 times the year 1 rate). However, the rate difference from year 2 to year 1 is greater for Area B. If each area had a population of 10000, the public health impact due to a similar twofold increase in disease in both areas would result in an increase of 110 cases in Area A and 350 cases in Area B.

Example 2:

Area	Disease Rate Per 1000 Year 1	Disease Rate per 1000 Year 2	Relative Ratio (Rate Year 2 / Rate Year 1)	Rate Difference per 1000 (Rate Year 2 – Rate Year 1)
A	12	125	10.4	113
B	150	265	1.8	115

The relative ratio of the disease rate in year 2 compared to year 1 is greater for Area A (i.e., the year 2 rate was 10.4 times the year 1 rate). However, the rate difference from year 2 to year 1 is slightly greater for Area B. The public health impact due to a twofold increase in disease in Area B is similar to a tenfold increase in Area A. That is, if each area had a population of 10000, the twofold increase in disease for Area B would have resulted in 1150 additional cases and the tenfold increase in disease for Area A would have resulted in 1130 additional cases.

Example 3:

NC Area	Cases	NC Area Prevalence per 1000	Prevalence of rest of Region excluding NC per 1000	*Relative Ratio of each NC Area as compared to the rest of the Region	**Difference in Prevalence per 1000 between each NC Area and the rest of the Region
B	227	179.9	146.8	1.23	33.1

The prevalence per 1000 population at risk in area B is 1.23 times the rest of the region. In order for Area B to have the same prevalence value per 1000 population at risk as the rest of the region (or a relative ratio of 1), the number of cases would need to be reduced by 42 (i.e.  $33.1 \times (227/179.9)$ ). That is, if area B could reduce the number of cases from the current 227 to 185 the prevalence value per 1000 population at risk would be approximately equivalent to the rest of the region.

## Cautionary Note

- Rates based on small numbers of events can fluctuate widely from year to year. In such circumstances, year-to-year changes must be interpreted with caution. Some events may be so rare that a change of one or two events results in a large change in the annual rate or rate ratio.

For example, an area of 20,000 people with one death one year and two the next will show a 100 per cent increase in its mortality rate. However, a 100 per cent increase in the rate does not have the same public health importance when going from one death to two as it does when going from 300 deaths to 600.

*The Population Health and Health System Analysis Unit, WRHA do not consider it feasible to suppress rates based on small numbers as they do describe what actually happened in a year(s). However, there is the potential for misinterpretation when uncritical comparisons are made between geographic areas or comparisons made over time when the rates or percentages have small numerators. These rates may show considerable variation, thus limiting their usefulness in comparisons.*

## Incidence of Diabetes in the Winnipeg Health Region

For the four-year time period from 1996 to 1999, 11408 residents of the Winnipeg Health Region (WHR) were newly diagnosed with diabetes. Of these, 5769 were female residents and 5639 were male residents. For each gender, the newly diagnosed cases occurred most frequent in the 50-69 age group (4781 cases), followed by the 20-49 age group (3639 cases) and 70+ age groups (2744 cases).

Yearly values of newly diagnosed WHR residents (both genders) with diabetes ranged from 2506 cases in 1996 to 3171 cases in 1999. Across all years, newly diagnosed cases occurred most frequent in the 50-69 age group, followed by the 20-49 age group, the 70+ age group and the 0-19 age group (See Table I1 for newly diagnosed cases for each individual year by gender and age group).

Over the period 1996 to 1999 the incidence of diabetes has been increasing at an average rate of 0.4 cases per 1000 population at risk per year, all residents with all ages combined. For both genders, the incidence of diabetes over the period from 1996 to 1999 in the 70+ age group has been increasing at an average rate of 0.9 cases per 1000 population at risk in the Winnipeg Health Region per year. Similarly, the 50-69 age group shows an increasing average rate of 0.8 cases per 1000 population at risk per year, while the 20-49 age group shows an increasing average rate of 0.3 cases per 1000 population at risk per year. The average rate of change in the incidence of diabetes over the period 1996 to 1999 in the 0-19 age remained virtually unchanged (see Figure I1 and Table I1).

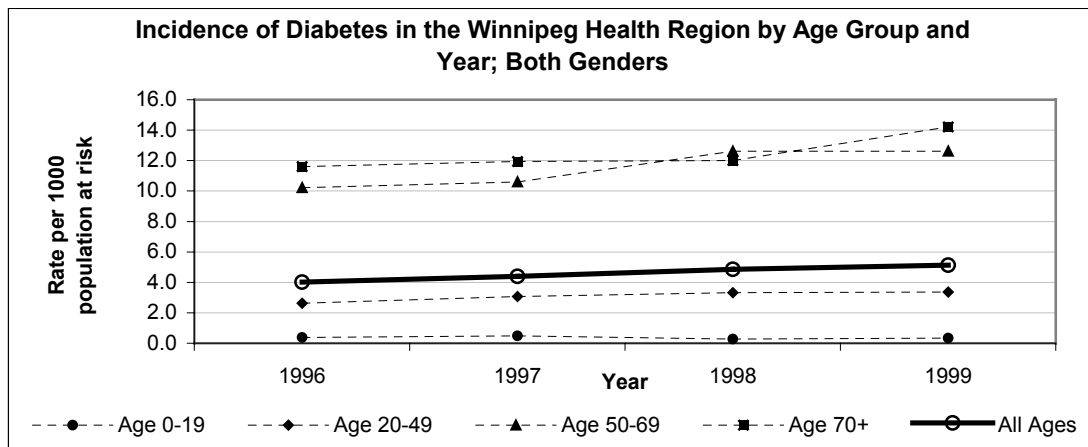


Figure I1: Incidence of Diabetes in the Winnipeg Health Region by Age Group and Year; Both Genders

	Gender	Age	New Cases of Diabetes				Incidence of Diabetes per 1000				Average Rate of Change in the Incidence of Diabetes between 1996 and 1999 (cases per 1000 population at risk per year)
			1996	1997	1998	1999	1996	1997	1998	1999	
WHR	Both	0-19	63	81	44	56	0.4	0.5	0.3	0.3	0.0
WHR	Both	20-49	786	907	969	977	2.6	3.1	3.3	3.4	0.2
WHR	Both	50-69	1024	1086	1322	1349	10.2	10.6	12.6	12.6	0.8
WHR	Both	70+	633	656	666	789	11.6	11.9	12.0	14.2	0.9
WHR	Both	All Ages	2506	2730	3001	3171	4.0	4.4	4.8	5.1	0.4
WHR	F	0-19	42	45	18	26	0.5	0.5	0.2	0.3	-0.1
WHR	F	20-49	408	459	527	475	2.7	3.1	3.6	3.3	0.2
WHR	F	50-69	467	479	591	611	8.9	8.9	10.8	10.9	0.7
WHR	F	70+	361	406	390	464	10.4	11.6	11.1	13.2	0.9
WHR	F	All Ages	1278	1389	1526	1576	4.0	4.4	4.8	5.0	0.3
WHR	M	0-19	21	36	26	30	0.2	0.4	0.3	0.4	0.0
WHR	M	20-49	378	448	442	502	2.5	3.0	3.0	3.5	0.3
WHR	M	50-69	557	607	731	738	11.7	12.4	14.6	14.5	0.9
WHR	M	70+	272	250	276	325	13.7	12.5	13.6	16.0	0.8
WHR	M	All Ages	1228	1341	1475	1595	4.1	4.4	4.9	5.3	0.4

Table I1: Incidence of Diabetes in the WHR by Year

### Geographic Variation of the Incidence of Diabetes within the Winnipeg Health Region (By Gender and Age), 1999

The incidence of diabetes in the 25 neighbourhood clusters for 1999 for age groups 20-49, 50-69 and 70+ can be seen in Figures I2, I3 and I4. Among these three age groups, incidence rates are smallest in the 20-49 age group and highest in the 50-69 and 70+ groups. For each age group, variation in the incidence of diabetes exists among the neighbourhood clusters within and between gender classes.

Incidence of Diabetes in the Winnipeg Health Region, 1999  
Ages 20-49

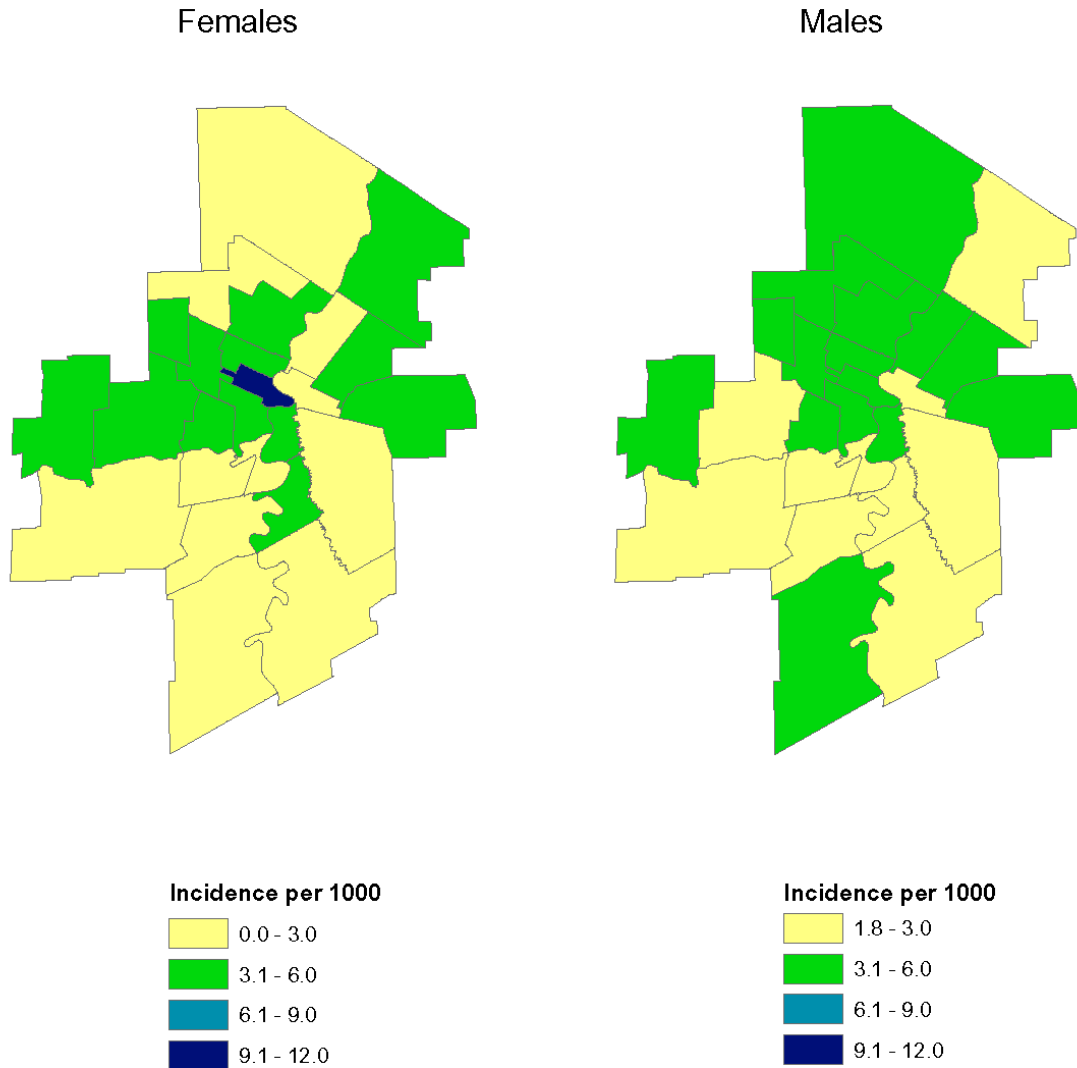


Figure I2: Incidence of Diabetes in the Winnipeg Health Region, 1999; Ages 20-49

Incidence of Diabetes in the Winnipeg Health Region, 1999  
Ages 50-69

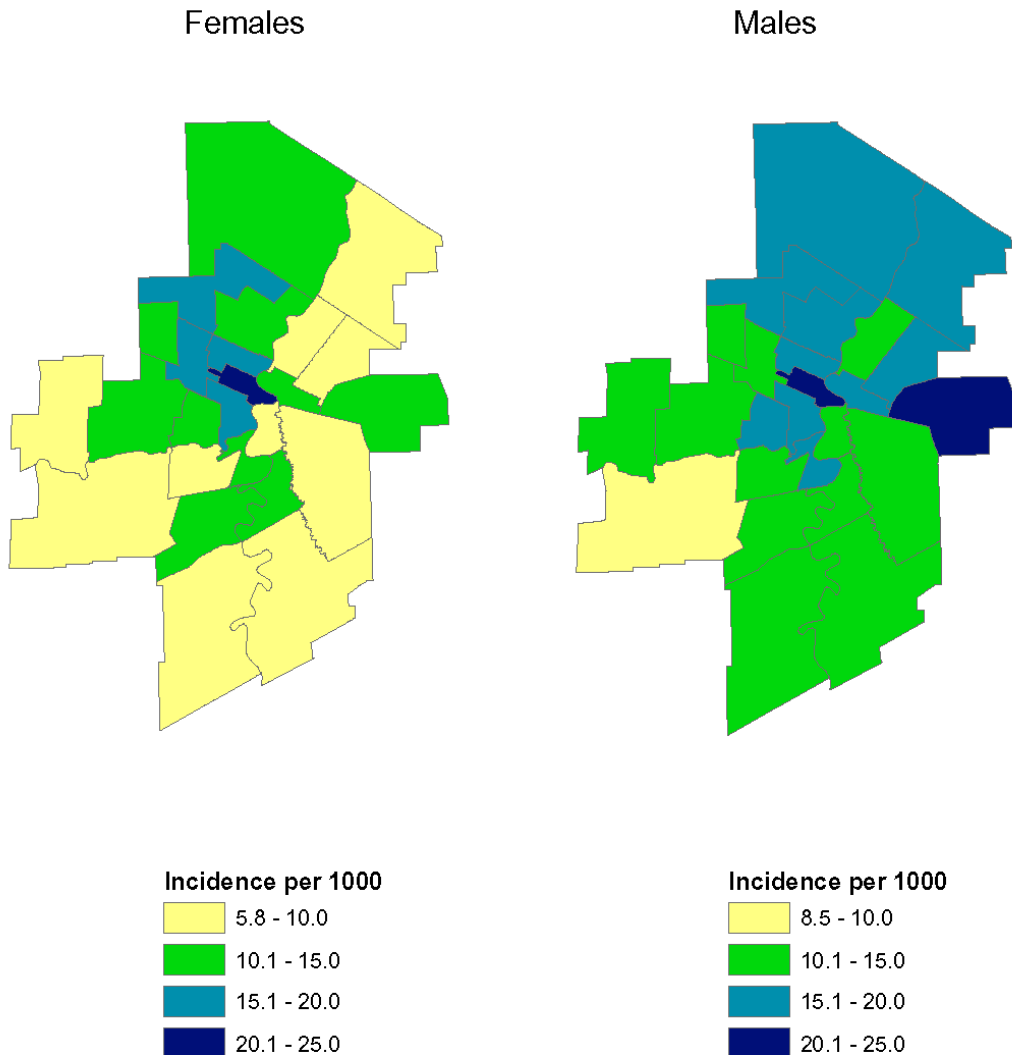


Figure I3: Incidence of Diabetes in the Winnipeg Health Region, 1999; Ages 50-69

Incidence of Diabetes in the Winnipeg Health Region, 1999  
Ages 70+

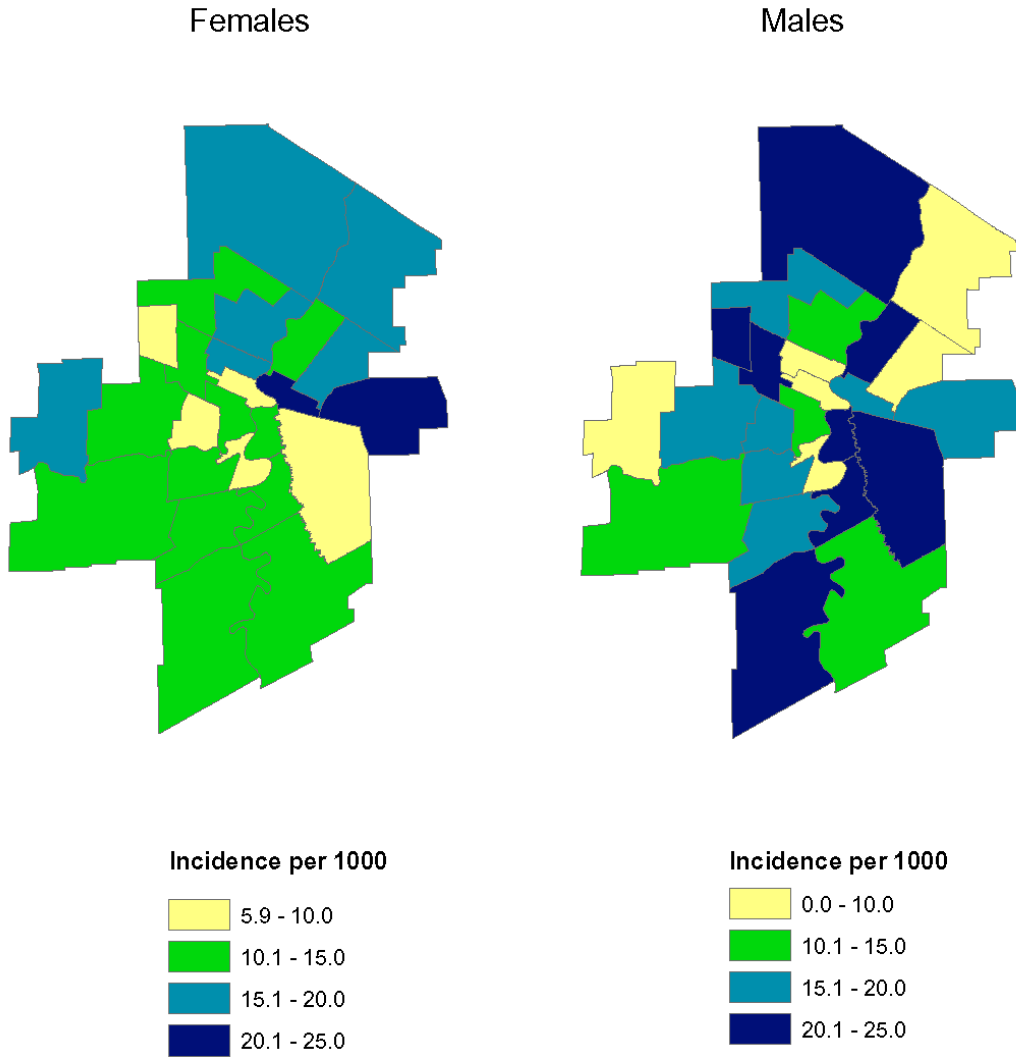


Figure 14: Incidence of Diabetes in the Winnipeg Health Region, 1999; Ages 70+

## Comparison of Diabetes Incidence in Each Neighbourhood Cluster to the Rest of the Winnipeg Health Region (by Gender and Age), 1999

Relative ratios and differences in incidence per 1000 population at risk for each neighbourhood cluster compared to the rest of the Winnipeg Health Region have been provided for comparative purposes.

### Diabetes Incidence Cases (ages 20-49) -- 1999 in Winnipeg Health Region

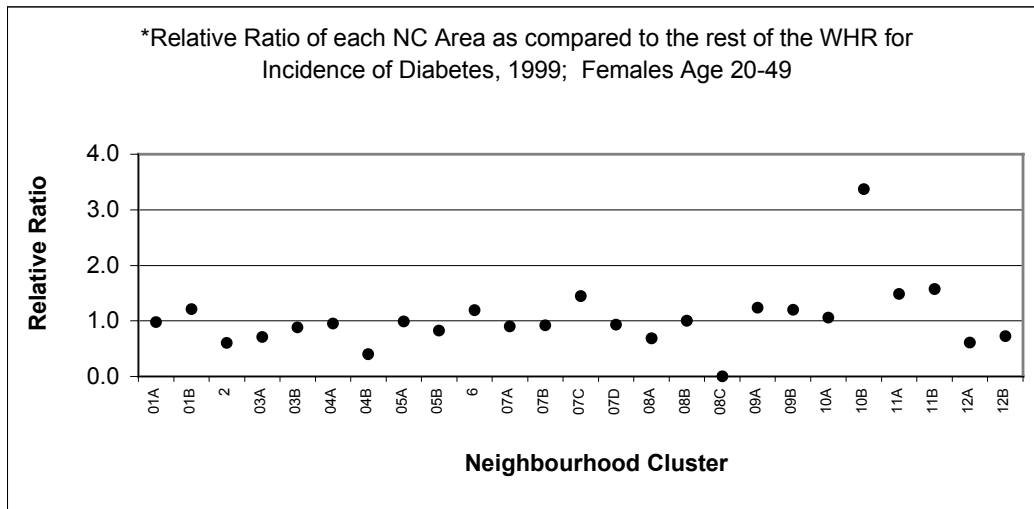


Figure 15: Relative Ratio of each NC Area as compared to the rest of the WHR for Incidence of Diabetes, 1999; Females Age 20-49

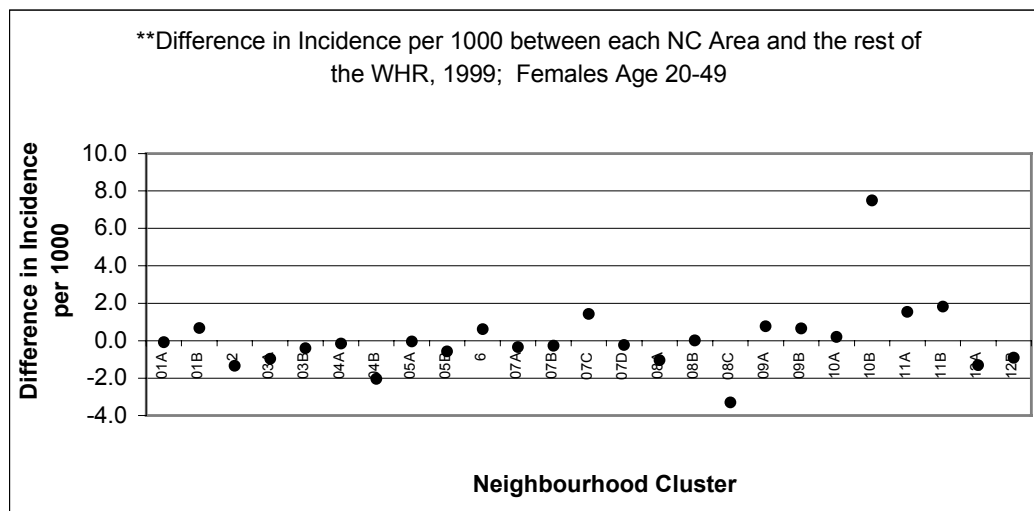


Figure 16: Difference in Incidence per 1000 between each NC Area and the rest of the WHR, 1999; Females Age 20-49

\* See pages 9 and 10

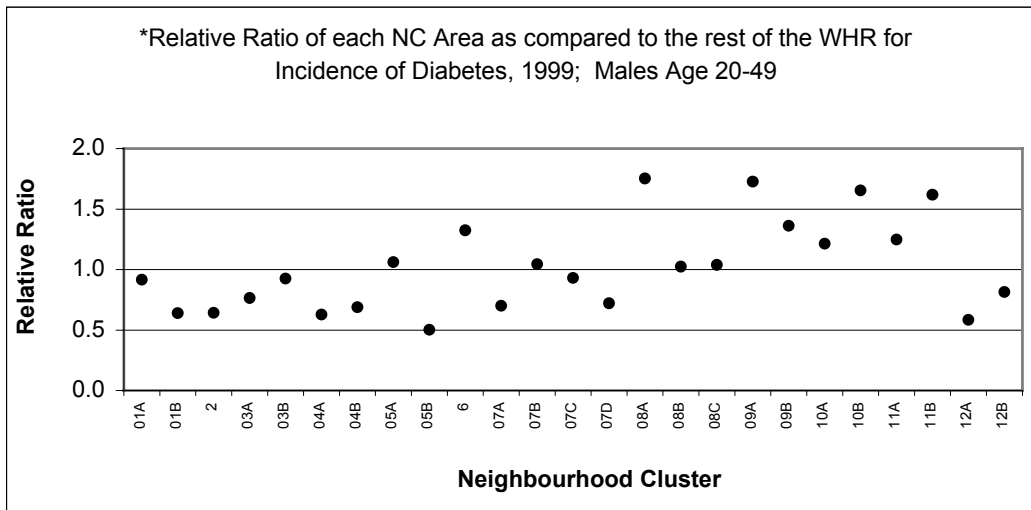


Figure 17: Relative Ratio of each NC Area as compared to the rest of the WHR for Incidence of Diabetes, 1999; Males Age 20-49

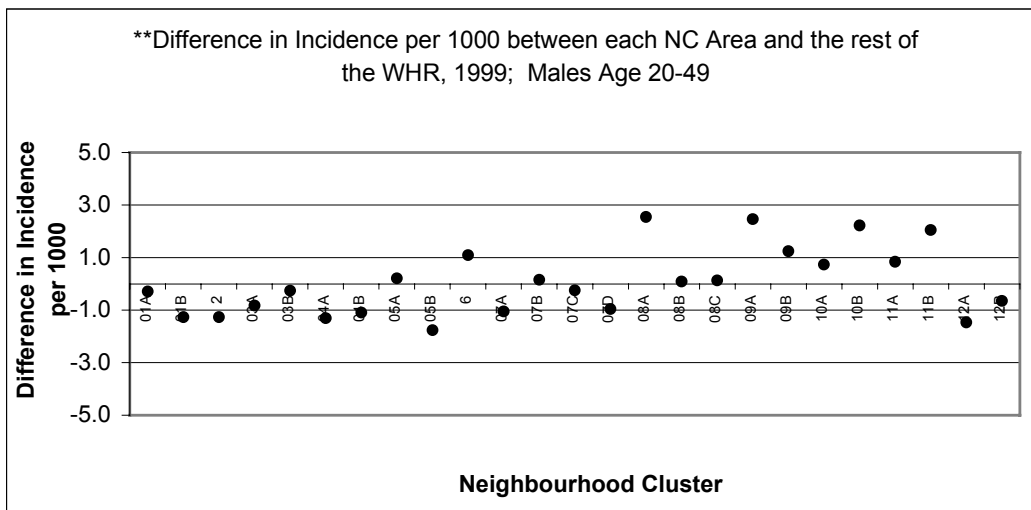


Figure 18: Difference in Incidence per 1000 between each NC Area and the rest of the WHR, 1999; Males Age 20-49

\*\* See pages 9 and 10

\* See pages 9 and 10

\*\* See pages 9 and 10

## Diabetes Incidence Cases (ages 50-69) -- 1999 in Winnipeg Health Region

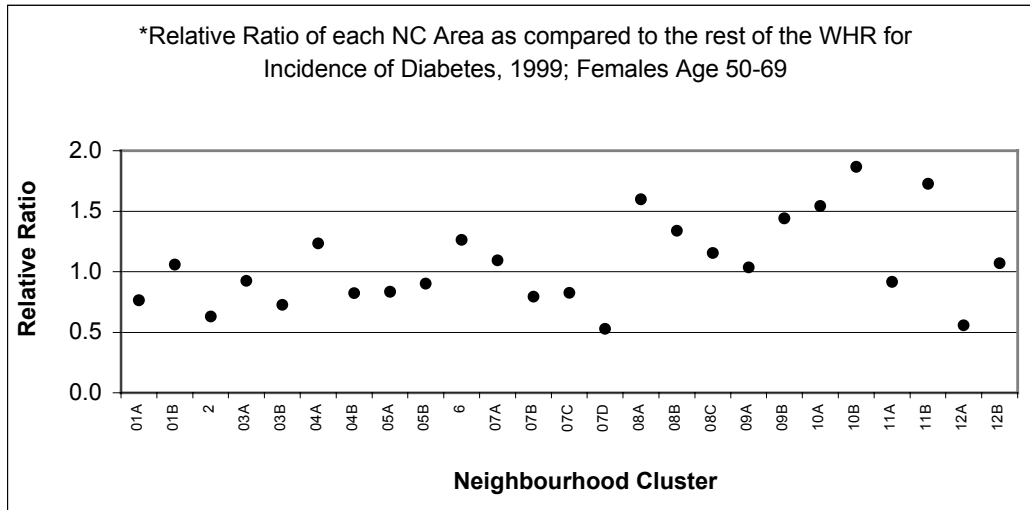


Figure I9: Relative Ratio of each NC Area as compared to the rest of the WHR for Incidence of Diabetes, 1999; Females Age 50-69

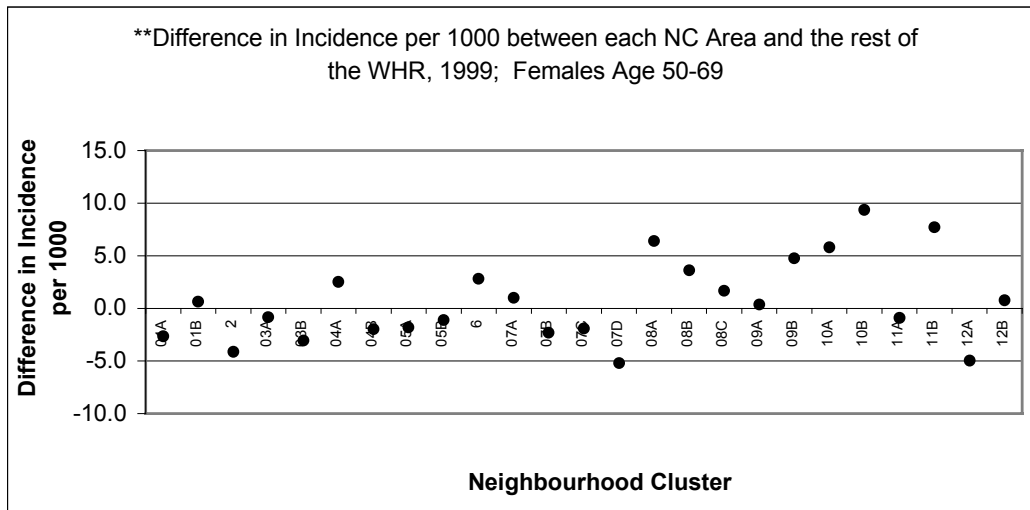


Figure I10: Difference in Incidence per 1000 between each NC Area and the rest of the WHR, 1999; Females Age 50-69

\* See pages 9 and 10

\*\* See pages 9 and 10

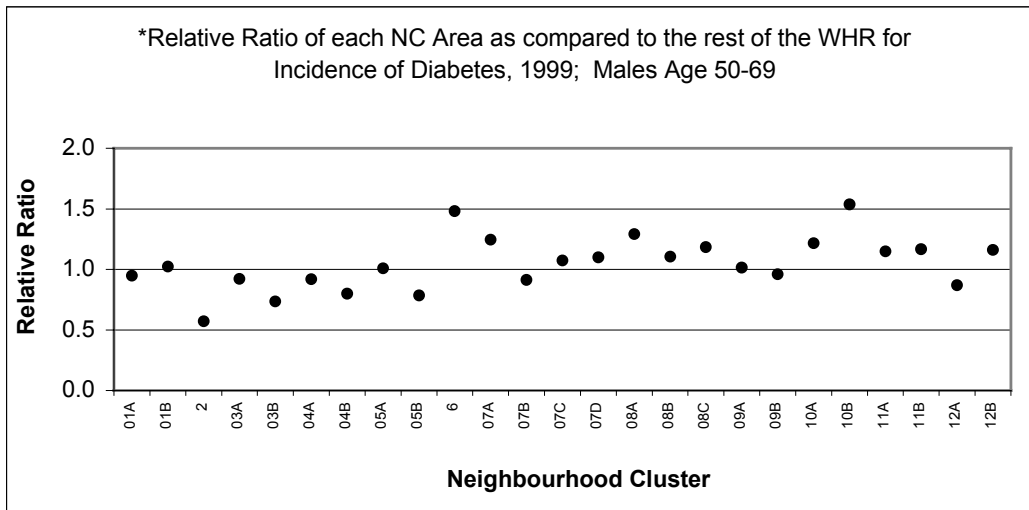


Figure I11: Relative Ratio of each NC Area as compared to the rest of the WHR for Incidence of Diabetes, 1999; Males Age 50-69

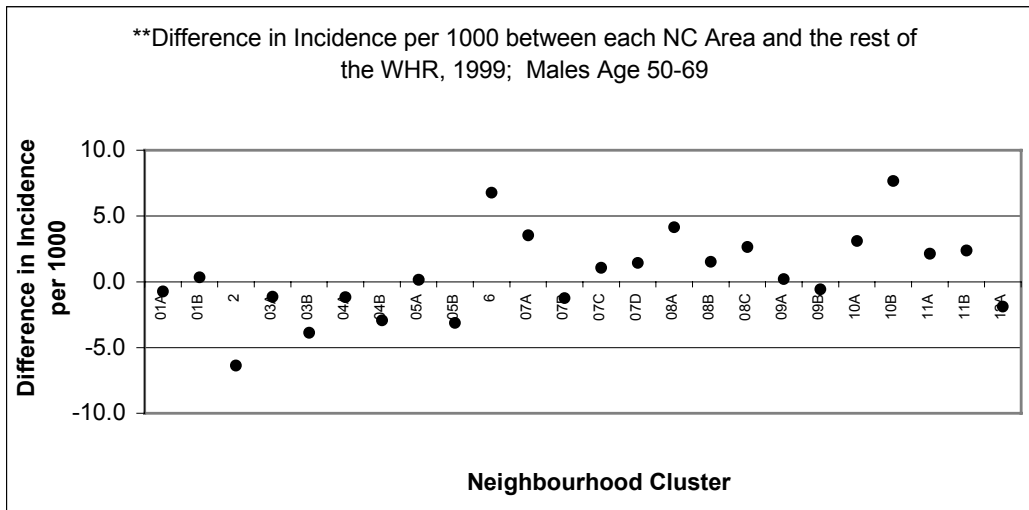


Figure I12: Difference in Incidence per 1000 between each NC Area and the rest of the WHR, 1999; Males Age 50-69

\* See pages 9 and 10  
 \*\* See pages 9 and 10

## Diabetes Incidence Cases (ages 70+) -- 1999 in Winnipeg Health Region

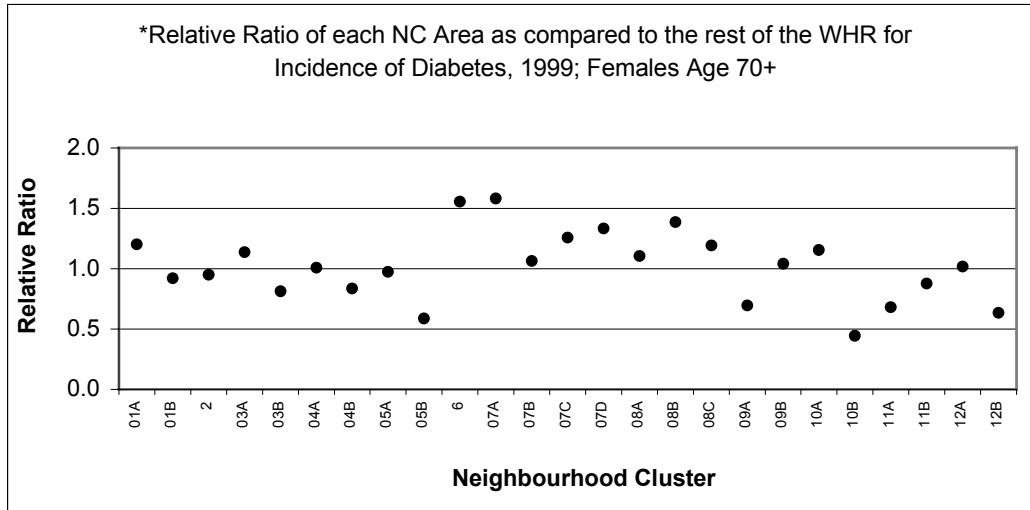


Figure I13: Relative Ratio of each NC Area as compared to the rest of the WHR for Incidence of Diabetes, 1999; Females Age 70+

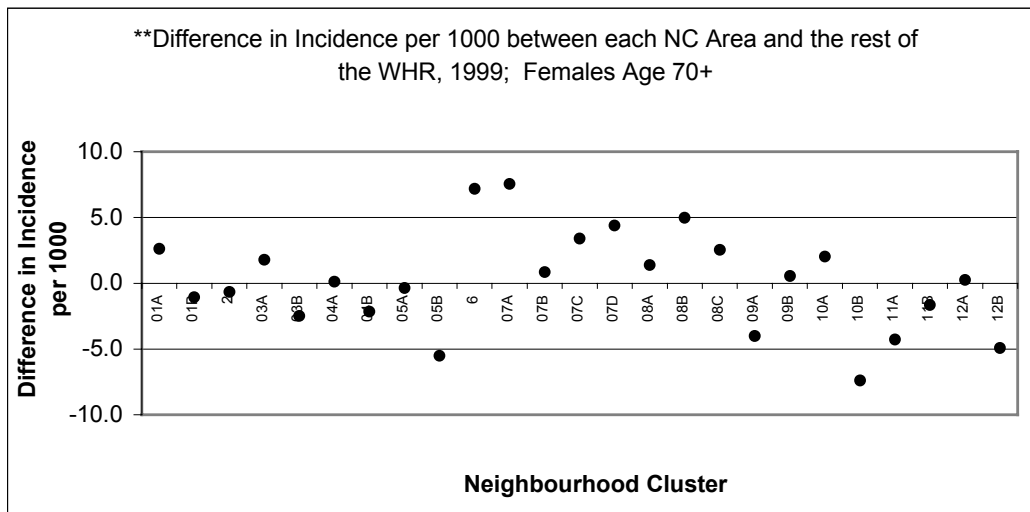


Figure I14: Difference in Incidence per 1000 between each NC Area and the rest of the WHR, 1999; Females Age 70+

\* See pages 9 and 10

\*\* See pages 9 and 10

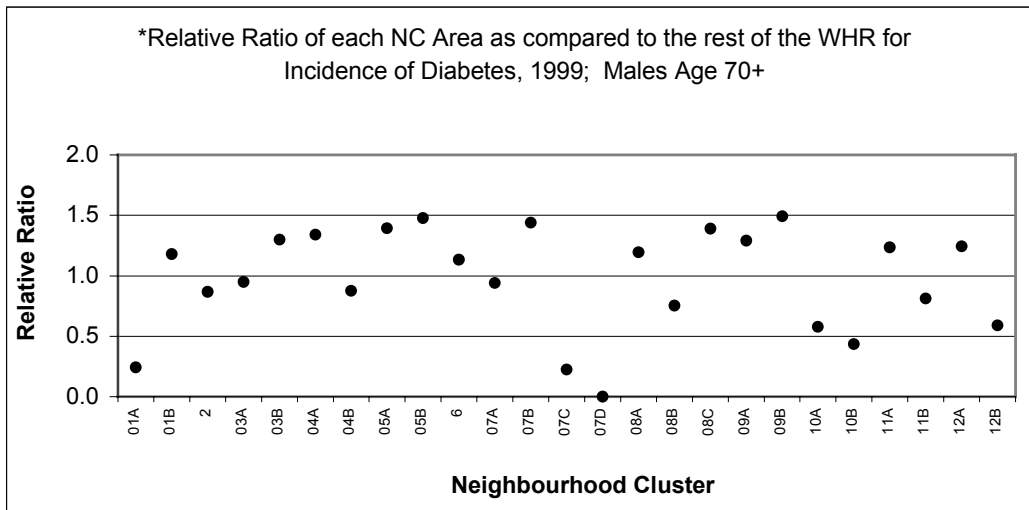


Figure I15: Relative Ratio of each NC Area as compared to the rest of the WHR for Incidence of Diabetes, 1999; Males Age 70+

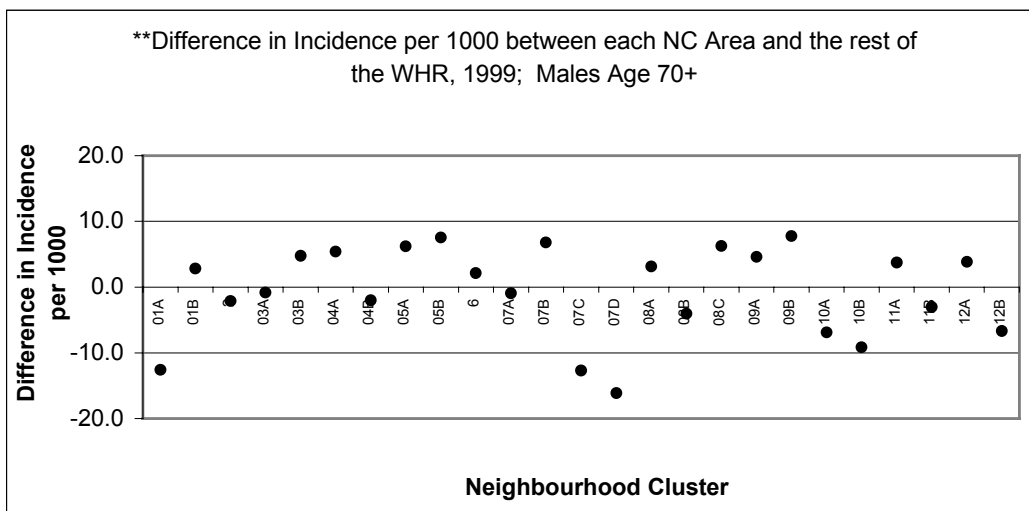


Figure I16: Difference in Incidence per 1000 between each NC Area and the rest of the WHR, 1999; Males Age 70+

\* See pages 9 and 10

\*\* See pages 9 and 10

## Prevalence of Diabetes in the Winnipeg Health Region

Based on 1999 data, there are 31580 people in the Winnipeg Health Region known to have diabetes which represents approximately 5 % of the general population. Over the four-year period from 1996 to 1999, the prevalence of diabetes has been increasing at an average rate of 2.2 cases per 1000 population per year for both genders and all ages (see Figure P1 and Table P1).

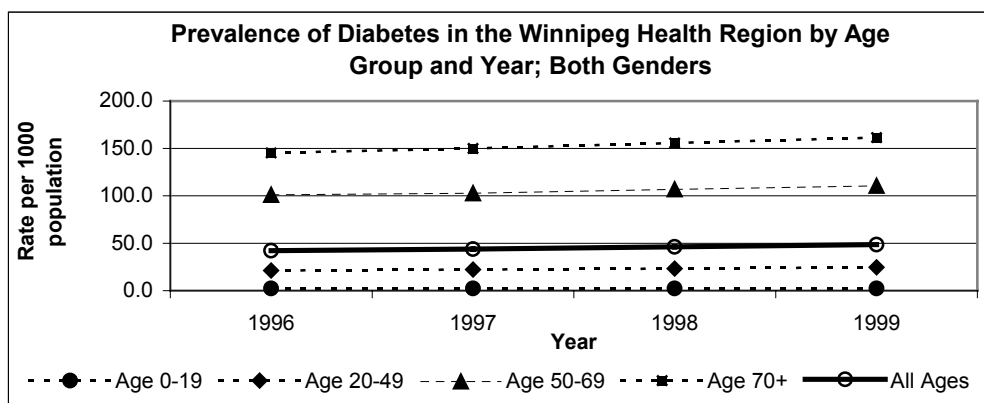


Figure P1: Prevalence of Diabetes in the Winnipeg Health Region by Age Group and Year; Both Genders

Gender	Age	Diabetes Cases				Prevalence of Diabetes per 1000				Average Rate of Change in the Incidence of Diabetes between 1996 and 1999 (cases per 1000 population at risk per year)	
		1996	1997	1998	1999	1996	1997	1998	1999		
WHR	Both	0-19	411	419	418	422	2.4	2.5	2.5	2.5	0.0
WHR	Both	20-49	6524	6696	6986	7305	21.4	22.2	23.4	24.6	1.1
WHR	Both	50-69	11218	11687	12430	13214	101.1	102.8	106.6	110.6	3.2
WHR	Both	70+	9233	9644	10166	10639	145.3	149.9	155.6	161.6	5.4
WHR	Both	All Ages	27386	28446	30000	31580	42.1	43.9	46.3	48.6	2.2
WHR	F	0-19	215	227	216	209	2.6	2.7	2.6	2.6	0.0
WHR	F	20-49	3483	3584	3799	3989	22.7	23.7	25.4	26.8	1.4
WHR	F	50-69	5293	5533	5845	6200	91.7	93.9	96.9	100.4	2.9
WHR	F	70+	5293	5507	5816	6076	132.7	136.7	142.3	147.7	5.0
WHR	F	All Ages	14284	14851	15676	16474	42.7	44.6	47.2	49.5	2.2
WHR	M	0-19	196	192	202	213	2.2	2.2	2.4	2.5	0.1
WHR	M	20-49	3041	3112	3187	3316	20.1	20.7	21.4	22.4	0.8
WHR	M	50-69	5925	6154	6585	7014	111.2	112.3	117.1	121.4	3.4
WHR	M	70+	3940	4137	4350	4563	166.5	172.1	177.8	184.7	6.0
WHR	M	All Ages	13102	13595	14324	15106	41.5	43.1	45.4	47.8	2.1

Table P1: Prevalence of Diabetes in the WHR by Year

## Geographic Variation of the Prevalence of Diabetes within the Winnipeg Health Region (By Gender and Age), 1999

The prevalence of diabetes by gender and age groups in the 25 neighbourhood clusters within the WHR for the year 1999 can be seen in Figures P2, P3 and P4.

### Prevalence of Diabetes in the Winnipeg Health Region, 1999 Ages 20-49

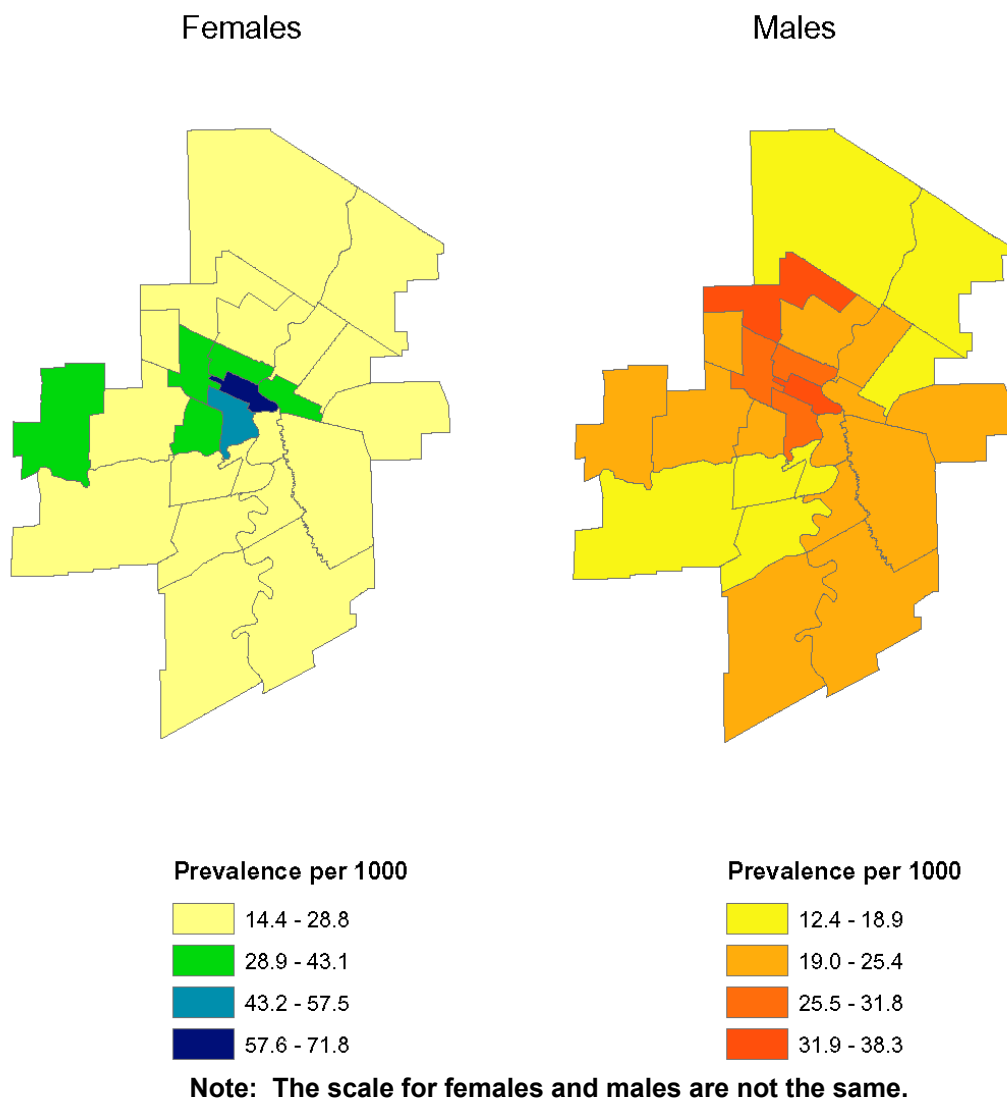
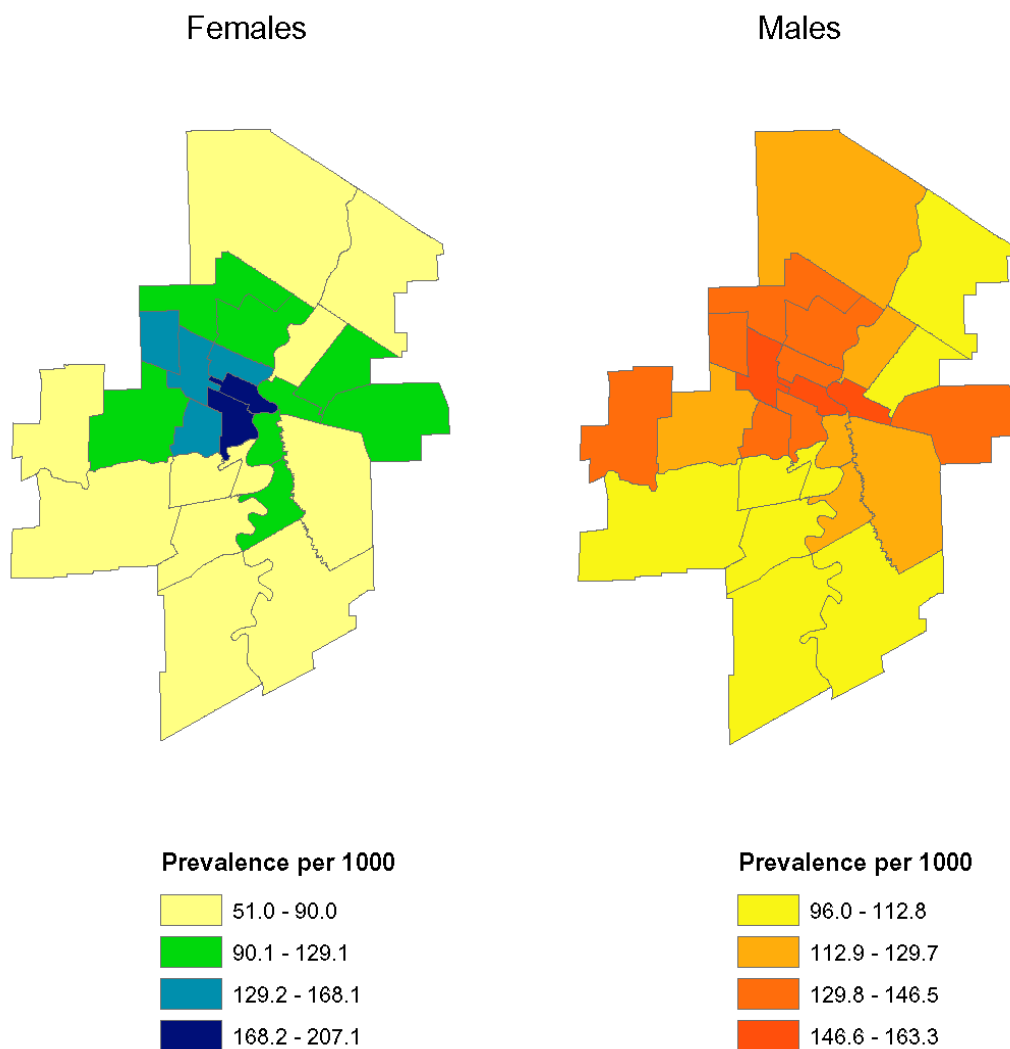


Figure P2: Prevalence of Diabetes in the Winnipeg Health Region, 1999; Ages 20-49

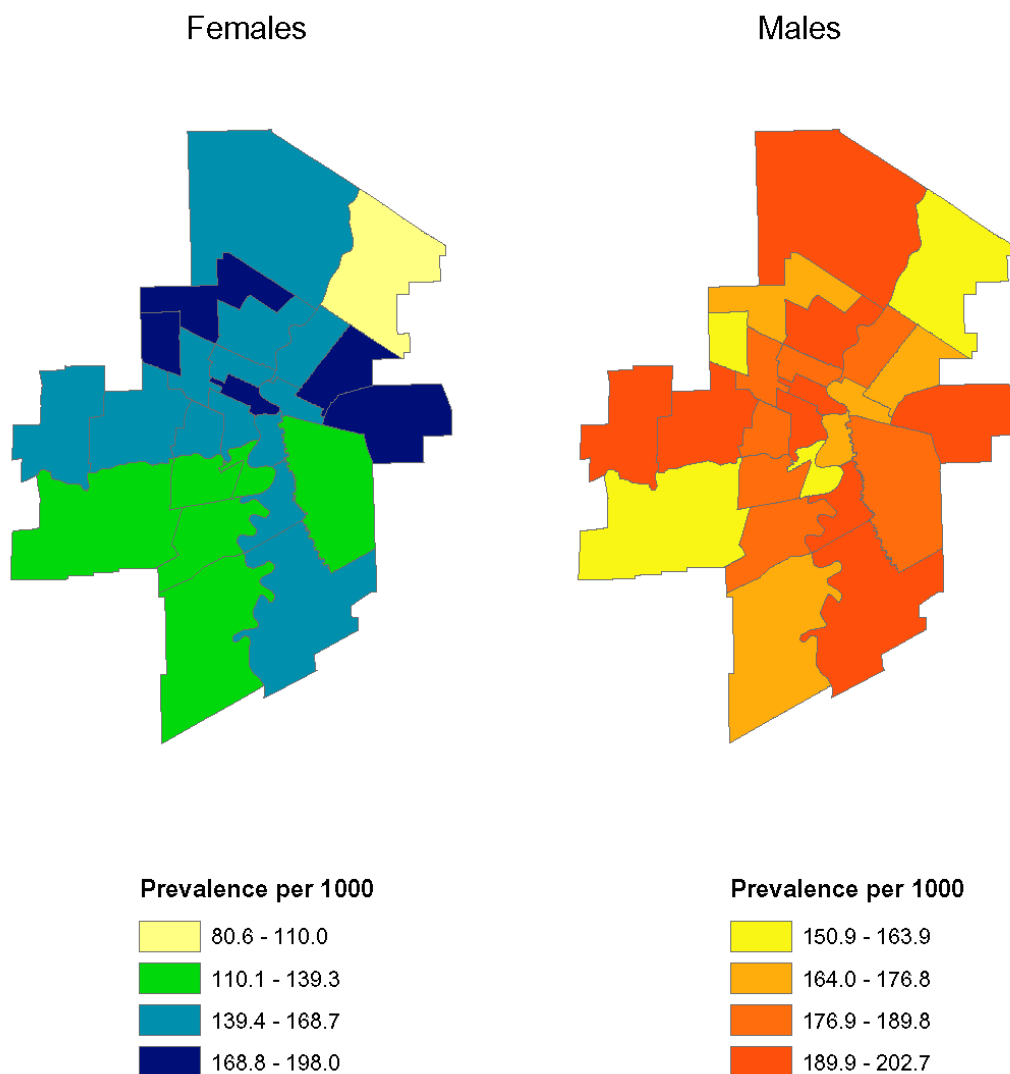
## Prevalence of Diabetes in the Winnipeg Health Region, 1999 Ages 50-69



**Note: The scale for females and males are not the same.**

Figure P3: Prevalence of Diabetes in the Winnipeg Health Region, 1999; Ages 50-69

## Prevalence of Diabetes in the Winnipeg Health Region, 1999 Ages 70+



**Note: The scale for females and males are not the same.**

Figure P4: Prevalence of Diabetes in the Winnipeg Health Region, 1999; Ages 70+

## Comparison of Diabetes Prevalence in each Neighbourhood Cluster to the rest of the Winnipeg Health Region (By Gender and Age), 1999

Relative ratios and differences in the prevalence of diabetes per 1000 population for each neighbourhood cluster compared to the rest of the Winnipeg Health Region have been provided for comparative purposes.

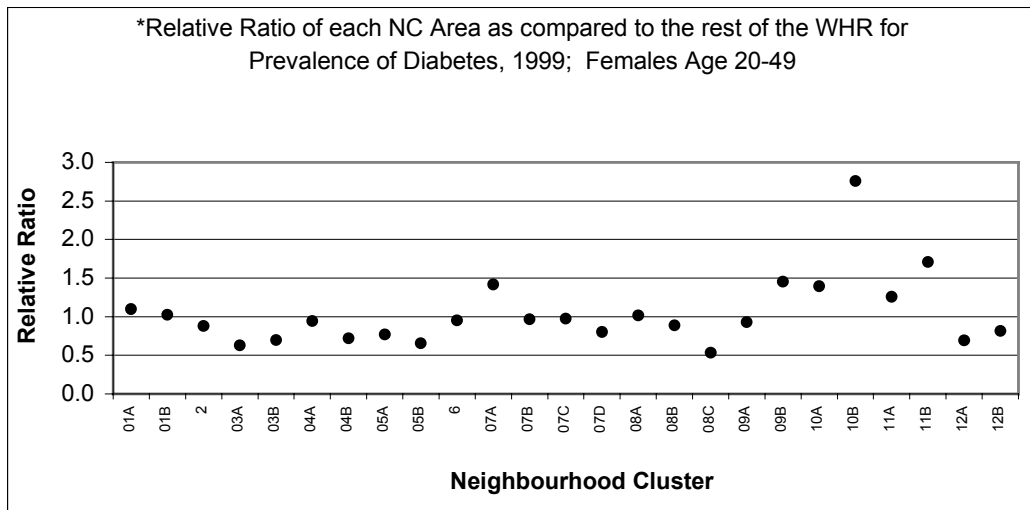


Figure P5: Relative Ratio of each NC Area as compared to the rest of the WHR for Prevalence of Diabetes, 1999; Females Age 20-49

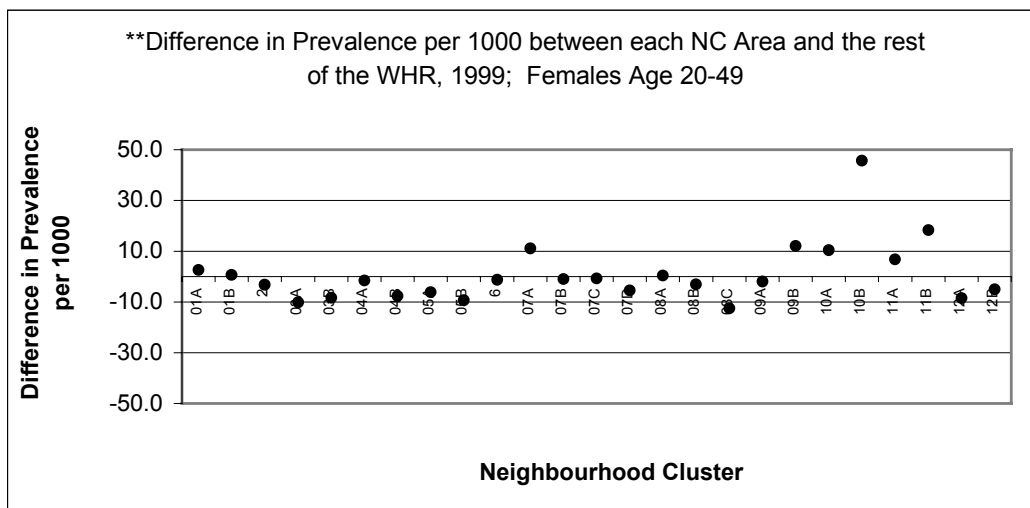


Figure P6 : Difference in Prevalence per 1000 between each NC Area and the rest of the WHR, 1999; Females Age 20-49

\* See pages 9 and 10

\*\* See pages 9 and 10

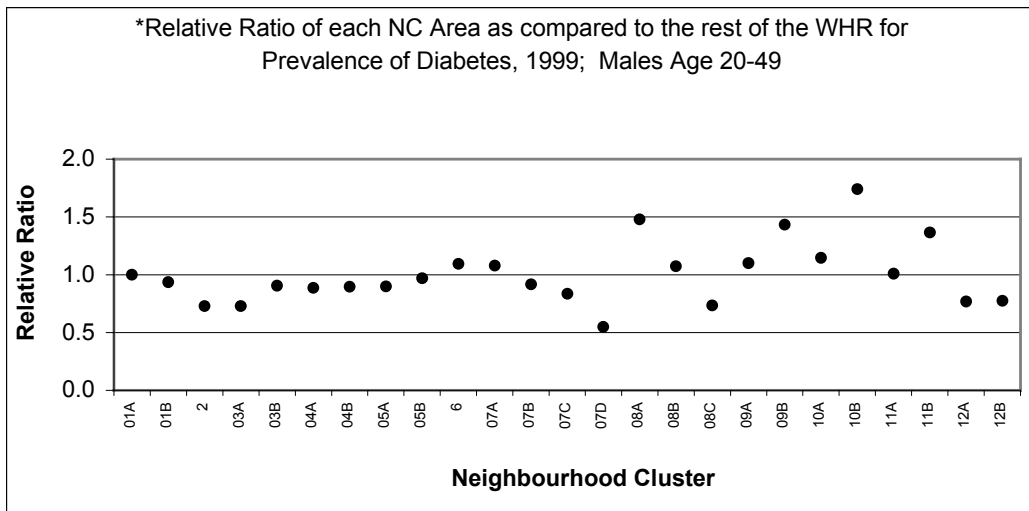


Figure P7: Relative Ratio of each NC Area as compared to the rest of the WHR for Prevalence of Diabetes, 1999; Males Age 20-49

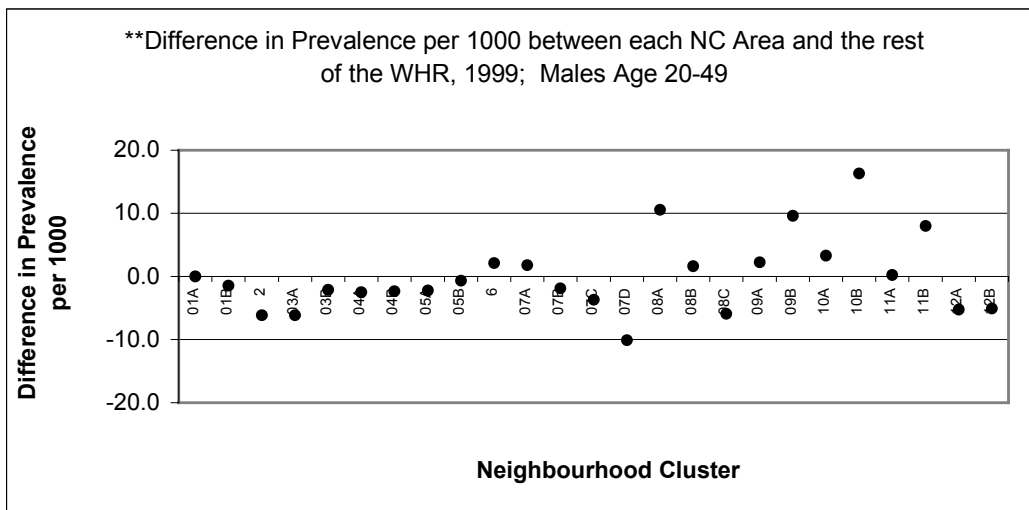


Figure P8: Difference in Prevalence per 1000 between each NC Area and the rest of the WHR, 1999; Males Age 20-49

\* See pages 9 and 10

\*\* See pages 9 and 10

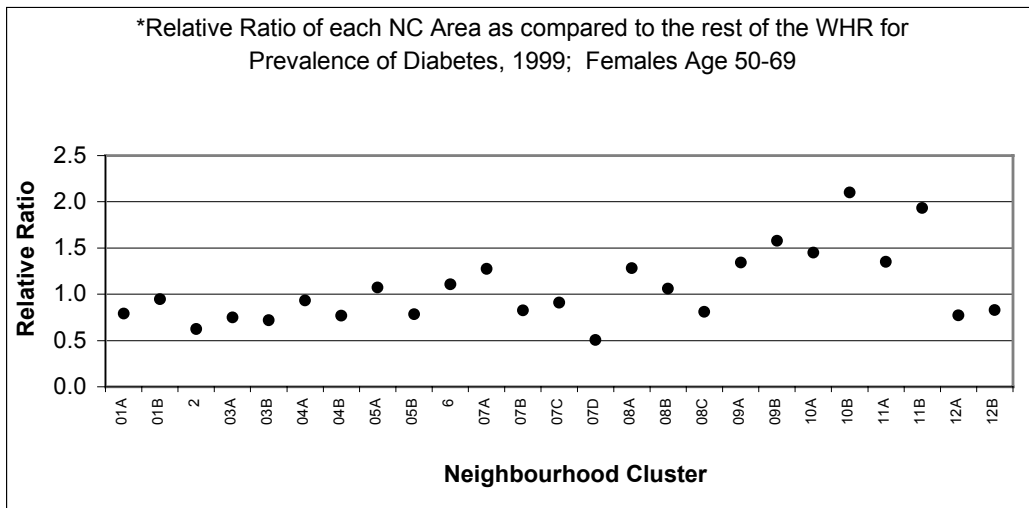


Figure P9: Relative Ratio of each NC Area as compared to the rest of the WHR for Prevalence of Diabetes, 1999; Females Age 50-69

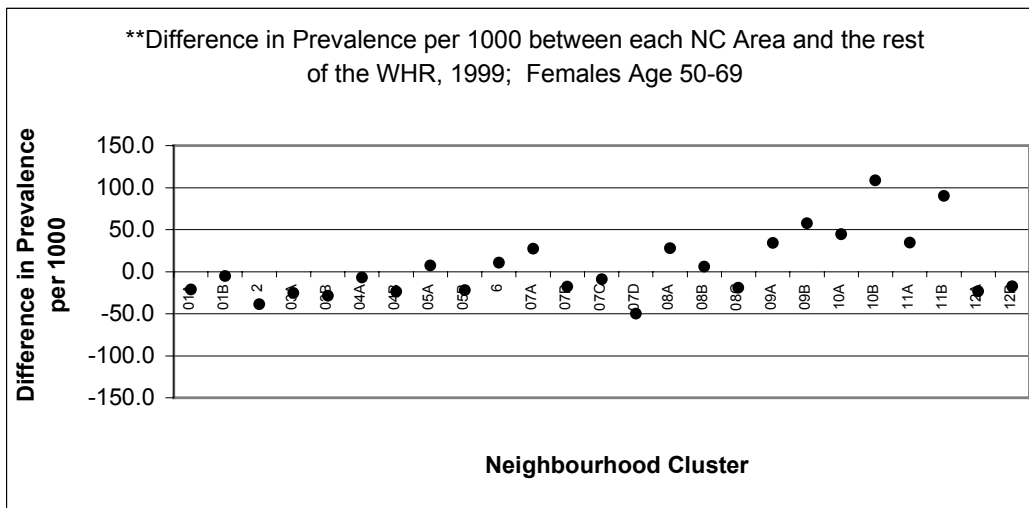


Figure P10: Difference in Prevalence per 1000 between each NC Area and the rest of the WHR, 1999; Females Age 50-69

\* See pages 9 and 10  
 \*\* See pages 9 and 10

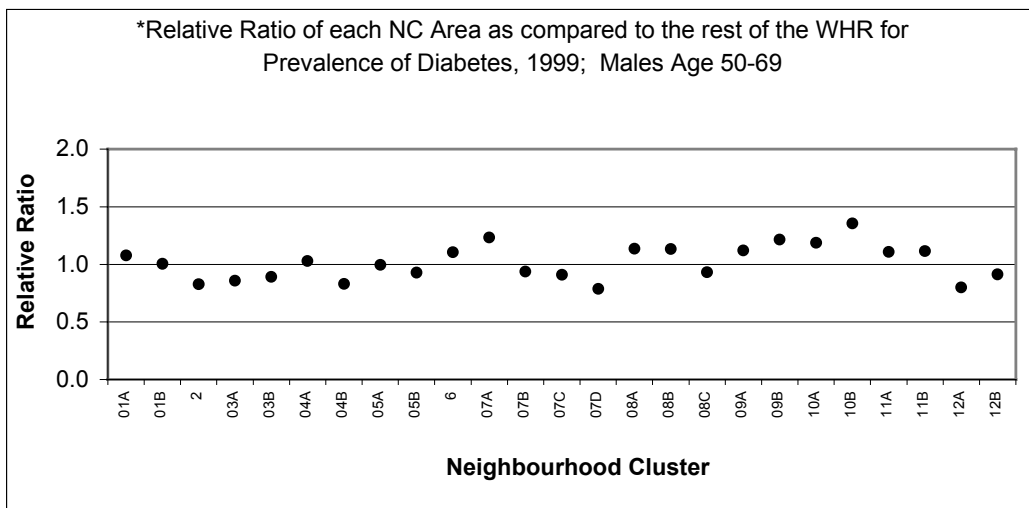


Figure P11: Relative Ratio of each NC Area as compared to the rest of the WHR for Prevalence of Diabetes, 1999; Males Age 50-69

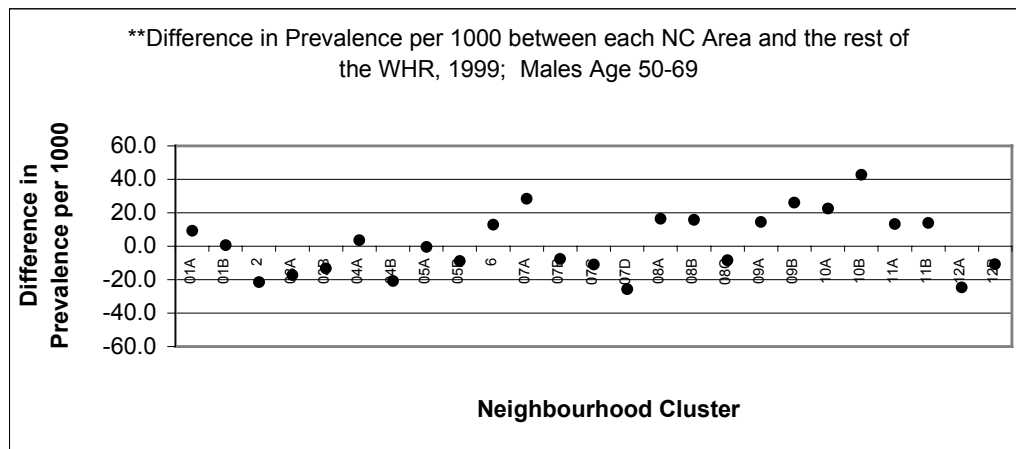


Figure P12: Difference in Prevalence per 1000 between each NC Area and the rest of the WHR, 1999; Males Age 50-69

\* See pages 9 and 10

\*\* See pages 9 and 10

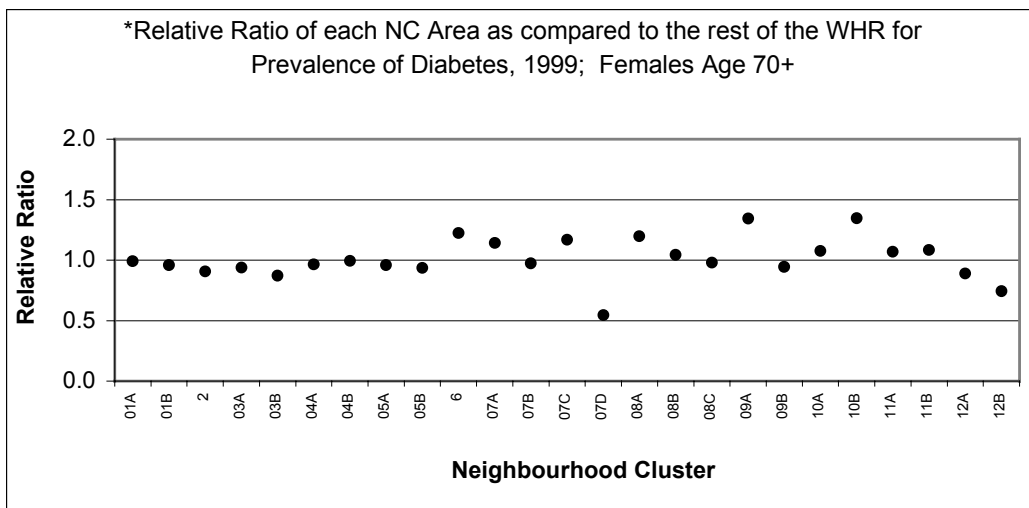


Figure P13: Relative Ratio of each NC Area as compared to the rest of the WHR for Prevalence of Diabetes, 1999; Females Age 70+

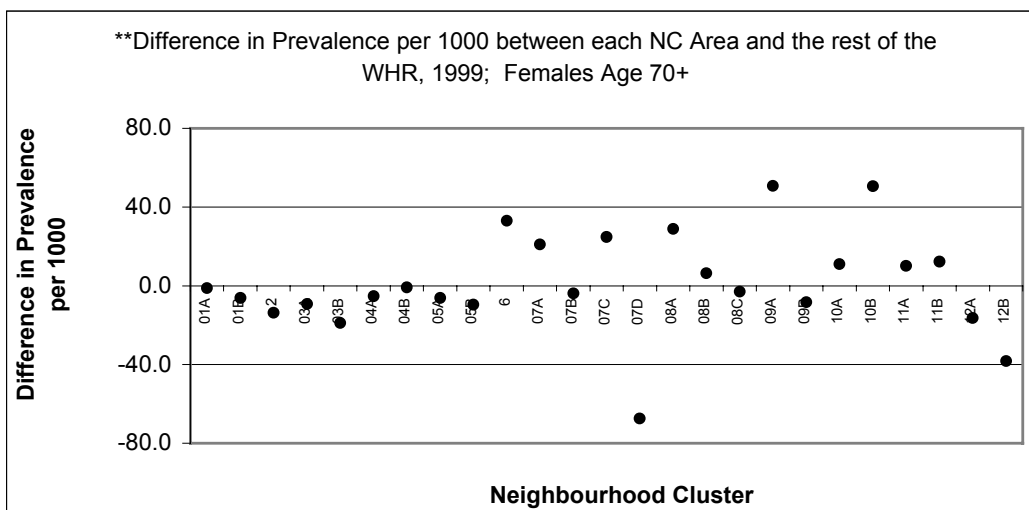


Figure P14: Difference in Prevalence per 1000 between each NC Area and the rest of the WHR, 1999; Females Age 70+

\* See pages 9 and 10

\*\* See pages 9 and 10

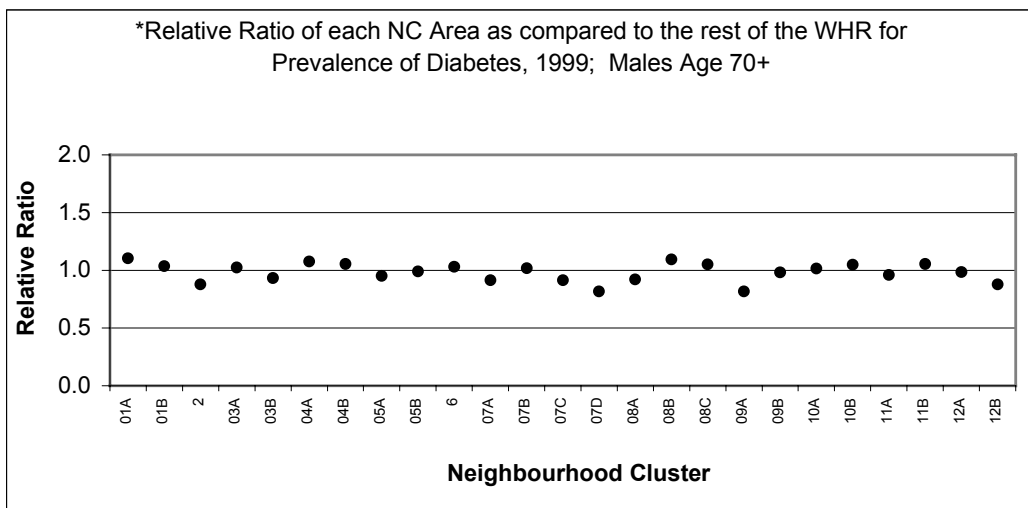


Figure P15: Relative Ratio of each NC Area as compared to the rest of the WHR for Prevalence of Diabetes, 1999; Males Age 70+

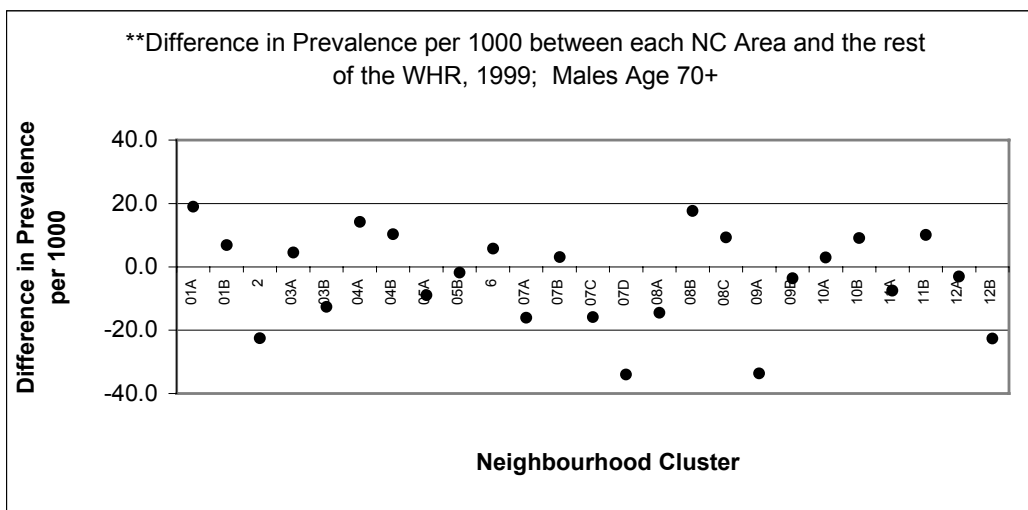


Figure P16: Difference in Prevalence per 1000 between each NC Area and the rest of the WHR, 1999; Males Age 70+

\* See pages 9 and 10

\*\* See pages 9 and 10

## Winnipeg Health Region Residents; Hospitalizations with a Diagnosis of Diabetes ICD-9-CM 250.0 - 250.9

Another source of information that can be used to describe diabetes is the investigation of in-patient hospitalizations that occur with a diagnosis of diabetes (ICD-9-CM 250.0 - 250.9 codes in any of 16 diagnosis fields).

The first approach was to determine the number of hospitalizations that had a discharge record with at least one ICD-9-CM 250.0 - 250.9 code. This was assumed to be a proxy for the number of patients who had diabetes and were hospitalized in that time frame. It is expected that this number underestimates the true value, as some patients with diabetes may not have been captured during their hospital stay. Six years of data from the hospital abstract database (1995/1996 – 2000/2001) were used to generate this information.

Gender	Agebreak	Fiscal Year						TOTAL
		1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001	
F	0-19	25	22	22	24	25	42	<b>160</b>
F	20-49	384	384	394	394	349	415	<b>2320</b>
F	50-69	778	776	827	808	796	876	<b>4861</b>
F	70+	1190	1237	1280	1361	1332	1421	<b>7821</b>
M	0-19	19	20	16	25	34	48	<b>162</b>
M	20-49	359	336	272	301	293	364	<b>1925</b>
M	50-69	799	852	845	988	1078	1120	<b>5682</b>
M	70+	1032	1101	1115	1203	1269	1289	<b>7009</b>
	<b>TOTAL</b>	<b>4586</b>	<b>4728</b>	<b>4771</b>	<b>5104</b>	<b>5176</b>	<b>5575</b>	<b>29940</b>

Table H1: Counts of In-patient Hospital Discharge Records with ICD-9-CM 250.0 - 250.9 in any of 16 diagnosis fields

Of the 29940 in-patient discharge records containing at least one ICD-9-CM code between 250.0 - 250.9, approximately 12% had one of these codes in the primary diagnosis field. The primary diagnosis field is typically associated with the diagnosis responsible for the largest portion of time spent in the hospital. Therefore, 12% of in-patients who have been diagnosed with diabetes had the largest portion of his or her time spent in hospital attributed to the disease itself.

Number of Hospital Visits	Observed Patients	Probability
1	6900	0.51
2	2969	0.22
3	1499	0.11
4	761	0.06
5	451	0.03
6	278	0.02
7	177	0.01
8	113	0.01
9	75	0.01
10	57	0.00
11	47	0.00
12	32	0.00
13	19	0.00
14	16	0.00
>=15	43	0.00
<b>Total</b>	<b>13437</b>	<b>1.00</b>

Table H2: Distribution of the Number of In-patient Hospital Visits for Individuals containing at least one ICD-9-CM codes 250.0 - 250.9 in any diagnostic field; 1995/1996 to 2000/2001

There were 13437 unique patients over the time period from fiscal year 1995/1996 to 2000/2001 which accounted for 29940 in-patient discharges. Of these unique patients, just over half had only one hospital discharge during this six-year period. The following table show the counts of unique patients for each of the six years by gender and age group.

Gender	Age	Fiscal Year					
		1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001
F	0-19	23	17	16	20	21	27
F	20-49	232	234	257	242	244	268
F	50-69	544	531	545	553	549	602
F	70+	835	867	920	957	966	1009
M	0-19	17	20	11	14	27	29
M	20-49	221	239	183	223	215	244
M	50-69	555	601	615	684	732	805
M	70+	715	751	743	817	860	881
	<b>TOTAL</b>	<b>3142</b>	<b>3260</b>	<b>3290</b>	<b>3510</b>	<b>3614</b>	<b>3865</b>

Table H3: Number of In-patient Hospital Visits for Individuals with an ICD-9-CM Code 250.0 - 250.9 in any of 16 diagnosis fields by year, gender and age group.

Note: If the same individual was hospitalized multiple times in one fiscal year, he or she was counted only once. If however, the same individual appeared in more than one fiscal year, he or she was counted once in each of those years where he or she appeared.

The distribution of ICD-9-CM codes (250.0 - 250.9) in the 29940 in-patient records was determined to reflect the most common diabetes description. It should be noted that a single record may contain several ICD-9-CM codes between 250.0 and 250.9. The frequency of occurrence of all diabetes codes is presented below in Table H4.

ICD-9-CM	Counts 1995/96 - 2000/01	Probability	Counts by Fiscal Year					
			1995/96	1996/97	1997/98	1998/99	1999/00	2000/2001
250.0	22467	0.682	3332	3438	3598	3854	4010	4235
250.1	886	0.027	163	142	134	141	130	176
250.2	229	0.007	49	25	24	48	32	51
250.3	38	0.001	6	6	10	8	4	4
250.4	2607	0.079	389	410	439	464	389	516
250.5	1556	0.047	293	317	244	241	215	246
250.6	1972	0.060	322	346	310	350	292	352
250.7	1336	0.041	219	253	202	244	209	209
250.8	1693	0.051	230	288	282	287	292	314
250.9	175	0.005	51	41	38	14	17	14
<b>Total</b>	<b>32959</b>	<b>1.000</b>	<b>5054</b>	<b>5266</b>	<b>5281</b>	<b>5651</b>	<b>5590</b>	<b>6117</b>

Note: A single discharge record may contain several ICD-9-CM codes between 250.0 - 250.9.

Table H4: Distribution of Recorded ICD-9-CM Codes 250.0 - 250.9 in all 16 diagnostic fields for all In-patient discharge records; 1995/1996 to 2000/2001

#### Legend

Diabetes mellitus	
ICD-9-CM	General Description (see ICD-9-CM code book for details)
250.0	Diabetes mellitus without mention of complication
250.1	Diabetes with ketoacidosis
250.2	Diabetes with hyperosmolarity
250.3	Diabetes with other coma (excludes hyperosmolar coma)
250.4	Diabetes with renal manifestations
250.5	Diabetes with ophthalmic manifestations
250.6	Diabetes with neurological manifestations
250.7	Diabetes with peripheral circulatory disorders
250.8	Diabetes with other specified manifestations
250.9	Diabetes with unspecified complication

Another question that was investigated was the primary reason for hospitalization of the 29940 in-patient discharges. The ICD-9-CM code in the primary diagnosis field was used to categorize the reasons for the largest portion of the hospital stay. The standard diagnostic classification categories were used (N=199 categories) to identify the top 10 reasons for hospitalization. The number of cases, average length of stay, standard deviation and coefficient of variation were determined for two groups: 1) those 29940 in-patient discharge records containing at least one ICD-9-CM code between 250.0 and 250.9, and 2) all other in-patient records with the same primary diagnosis category code but not containing a ICD-9-CM code between 250.0 and 250.9.

Primary Diagnostic Category Description	ICD-9-CM Diagnosis Code Range	Discharge Records with ICD 250.0 - 250.9 in any of 16 diagnosis fields.				All In-patient Hospital Discharge Records without ICD 250.0 - 250.9 in any of 16 diagnosis fields.			
		Count	Average Length of Stay (Days)	SD (Days)	Coefficient of Variation	Count	Average Length of Stay (Days)	SD (Days)	Coefficient of Variation
Ischemic Heart Disease	(410-414)	3656	10.4	15.5	1.5	13683	9.1	15.4	1.7
Dis. of other Endocrine Glands	(250-259)	3585*	19.3	40.1	2.1	242	11.9	52.7	4.4
Other Forms of Heart Disease	(420-429)	2941	16.0	29.9	1.9	12114	11.5	26.2	2.3
Cerebrovascular Disease	(430-438)	1530	38.6	90.8	2.4	7443	34.9	130.9	3.8
Symptoms	(780-789)	1242	16.1	92.6	5.8	13139	7.4	51.4	6.9
Other Dis. of Digestive System	(570-579)	1113	11.3	19.6	1.7	11088	6.9	14.9	2.2
Pneumonia and Influenza	(480-487)	1056	13.6	34.9	2.6	8830	11.1	28.0	2.5
Health Service for specific procedure	(V50-V59)	1006	65.6	62.5	1.0	11826	24.1	47.8	2.0
Chronic Obstructive Pulm. Disease	(490-496)	871	24.1	110.4	4.6	10532	18.8	93.3	5.0
Complications of surg. & med. Care	(996-999)	753	16.9	32.8	1.9	6487	10.8	23.6	2.2

Table H5: Top ten primary diagnosis categories based on in-patient records with ICD 250.0 - 250.9 code in any of 16 diagnosis fields compared to all other in-patient records, 1995/1996 to 2000/2001; Both genders, all ages

Note: \* ICD-9-CM code 250 accounts for 99% of counts in ICD-9-CM Diagnosis Code Range(250-259)

Note: SD refers to the population Standard Deviation

Note: The Coefficient of Variation (CV) is the ratio of the standard deviation to the mean. The CV expresses variability relative to the mean.

Of the 29940 inpatient discharge records containing at least one ICD-9-CM code between 250.0 - 250.9, 3656 records had a primary diagnosis code related to Ischemic Heart Disease and 3585 (12%) had a primary diagnosis code related to Diseases of other Endocrine Glands(where ICD-9-CM code 250 accounted for 99% of the counts in the category Diseases of other Endocrine Glands).

For those records (both genders, all ages) where the primary diagnosis was Ischemic Heart disease, the average length of stay was higher for those records containing a ICD 250 code than those not containing an ICD 250 code, 10.4 days versus 9.1 days. Also, the variability in absolute terms was slightly higher for those records containing a ICD 250 code than those not containing an ICD 250 code, 15.5 days vs 15.4 days. However, in relative terms as measured by the coefficient of variation, those records not containing an ICD 250 code and having a primary

diagnosis of Ischemic Heart disease had greater variability, 1.7 versus 1.5, than those containing an ICD 250 code and having a primary diagnosis of Ischemic Heart disease.

For those records (both genders, all ages) where the primary diagnosis was Diseases of other Endocrine Glands, the average length of stay was higher for those records containing an ICD 250 code than those not containing an ICD 250 code, 19.3 days versus 11.9 days. However, both the absolute and relative measures of variability are higher for those records not containing an ICD 250 code with a primary diagnosis of Diseases of other Endocrine Glands compared to those records containing an ICD 250 code with a primary diagnosis of Diseases of other Endocrine Glands.

Primary Diagnostic Category Description	ICD-9-CM Diagnosis Code Range	Discharge Records with ICD 250.0 - 250.9 in any of 16 diagnosis fields.				All In-patient Hospital Discharge Records without ICD 250.0 - 250.9 in any of 16 diagnosis fields.			
		Count	Average Length of Stay (Days)	SD (Days)	Coefficient of Variation	Count	Average Length of Stay (Days)	SD (Days)	Coefficient of Variation
Dis. of other Endocrine Glands	(250-259)	247	3.0	2.4	0.8	31	4.3	4.8	1.1
Symptoms	(780-789)	7	6.1	4.7	0.8	2098	3.6	6.4	1.8
Other Dis. of Digestive System	(570-579)	6	5.8	4.9	0.8	351	4.0	6.0	1.5
Fractures	(800-829)	6	2.0	1.0	0.5	1631	4.2	8.2	2.0
Other Metabolic & Immunity Disorders	(270-279)	5	8.6	6.2	0.7	354	8.1	11.1	1.4
Appendicitis	(540-543)	4	4.5	3.2	0.7	875	4.0	2.7	0.7
Infections of Skin & Subcut. Tissue	(680-686)	3	7.0	3.3	0.5	584	3.7	4.7	1.3
Other Psychoses	(295-299)	3	30.7	11.6	0.4	877	46.3	82.1	1.8
Complications of Surg. & Med. Care	(996-999)	3	2.3	1.2	0.5	624	5.8	10.7	1.8
Viral Dis. with Exanthem	(050-057)	3	3.3	1.7	0.5	128	4.5	6.5	1.4

Table H6: Top ten primary diagnosis categories based on in-patient records with ICD 250.0 - 250.9 code in any of 16 diagnosis fields, 1995/1996 to 2000/2001; Both genders, Ages <20

Note: SD refers to the population Standard Deviation

Note: The Coefficient of Variation (CV) is the ratio of the standard deviation to the mean. The CV expresses variability relative to the mean.

Primary Diagnostic Category Description	ICD-9-CM Diagnosis Code Range	Discharge Records with ICD 250.0 - 250.9 in any of 16 diagnosis fields.				All In-patient Hospital Discharge Records without ICD 250.0 - 250.9 in any of 16 diagnosis fields.			
		Count	Average Length of Stay (Days)	SD (Days)	Coefficient of Variation	Count	Average Length of Stay (Days)	SD (Days)	Coefficient of Variation
Ischemic Heart Disease	(410-414)	3656	10.4	15.5	1.5	13675	9.1	15.4	1.7
Dis. of other Endocrine Glands	(250-259)	3338	20.5	41.3	2.0	211	13.0	56.3	4.3
Other Forms of Heart Disease	(420-429)	2941	16.0	29.9	1.9	11967	11.6	26.3	2.3
Cerebrovascular Disease	(430-438)	1530	38.6	90.8	2.4	7412	35.0	131.2	3.8
Symptoms	(780-789)	1235	16.1	92.8	5.8	11041	8.1	55.9	6.9
Other Dis. of Digestive System	(570-579)	1107	11.3	19.6	1.7	10737	7.0	15.1	2.2
Pneumonia and Influenza	(480-487)	1056	13.6	34.9	2.6	7339	12.4	30.5	2.5
Health Service for specific procedure	(V50-V59)	1006	65.6	62.5	1.0	10827	25.9	49.2	1.9
Chronic Obstructive Pulm. Disease	(490-496)	870	24.1	110.5	4.6	8223	23.4	105.0	4.5
Complications of Surg. & Med. Care	(996-999)	750	16.9	32.8	1.9	5863	11.3	24.6	2.2

Table H7: Top ten primary diagnosis categories based on in-patient records with ICD 250.0 - 250.9 code in any of 16 diagnosis fields, 1995/1996 to 2000/2001; Ages 20+

Note: SD refers to the population Standard Deviation

Note: The Coefficient of Variation (CV) is the ratio of the standard deviation to the mean. The CV expresses variability relative to the mean.

**For persons hospitalized and containing a diabetes diagnosis code (ICD-9-CM 250.0 - 250.9), how many are classified as having Type I and Type II diabetes?**

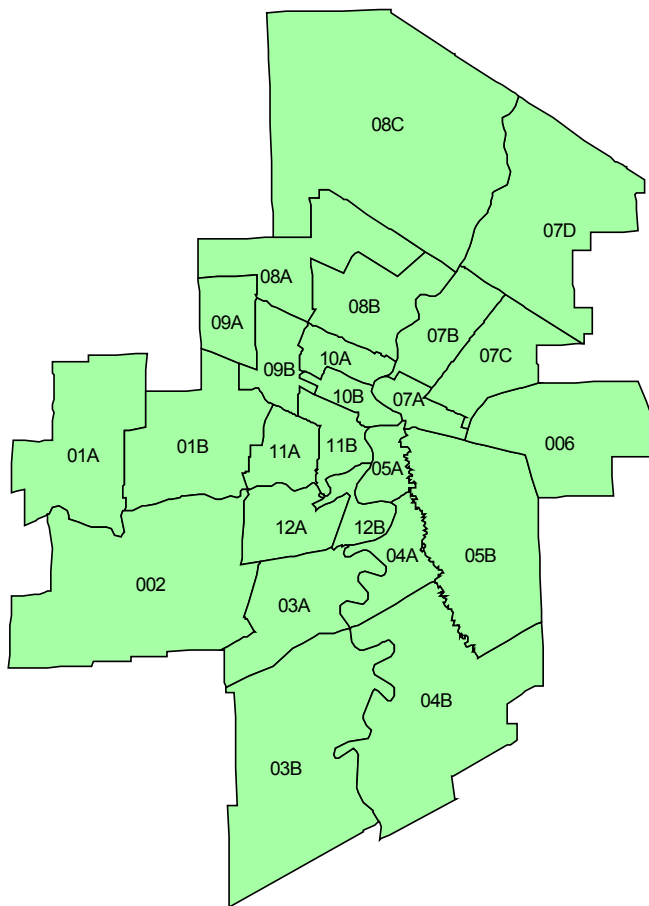
All in-patient hospital discharge records with a ICD-9-CM 250.0 - 250.9 code in any of 16 diagnosis fields over the time period from fiscal year 1995/1996 to 2000/2001 were examined. The fifth-digit subclassification for use with ICD-9-CM code 250 was used to classify Type I (insulin dependent) and Type II (non-insulin dependent or Type II requiring insulin) diabetes.

Over the period from 1995/1996 to 2000/2001, all ICD-9-CM 250 codes associated with a unique PHIN were examined. If the fifth-digit for all ICD-9-CM 250 codes for a unique PHIN indicated Type I diabetes, the person was classified as having Type I diabetes. If the fifth-digit for all ICD-9-CM 250 codes for a unique PHIN indicated Type II diabetes, the person was classified as having Type II diabetes. Where the fifth-digit indicated Type I for some 250 codes and Type II for other 250 codes for the same unique PHIN, the person was classified as unknown type.

There were 13437 unique patients with a ICD-9-CM 250.0 - 250.9 code over the time period from fiscal year 1995/1996 to 2000/2001. Of these 13437 unique patients, approximately 85% were classified as having Type II diabetes and 7% were classified as having Type I diabetes. For approximately 8% of the unique inpatients, both Type I and Type II codes were observed and therefore classified as unknown type.

**APPENDIX A: Winnipeg Health Region Neighbourhood Cluster Geographies**

**Winnipeg Health Region:  
Neighbourhood Clusters.**



Neighbourhood Clusters

- 1A St. James - Assiniboia West
- 1B St. James - Assiniboia East
- 2 Assiniboine South
- 3A Fort Garry North
- 3B Fort Garry South
- 4A St. Vital North
- 4B St. Vital South
- 5A St. Boniface West
- 5B St. Boniface East
- 6 Transcona
- 7A River East South
- 7B River East West
- 7C River East East
- 7D River East North
- 8A Seven Oaks West
- 8B Seven Oaks East
- 8C Seven Oaks North
- 9A Inkster West
- 9B Inkster East
- 10A Point Douglas North
- 10B Point Douglas South
- 11A Downtown West
- 11B Downtown East
- 12A River Heights West
- 12B River Heights East