# Manitoba Adult Suicide Mortality Review: Risk Factors Associated with Mental Health & Substance Use Disorders

## Research Team:
Tracey Peter, Ph.D.
Randy Goossen, M.D., CCFP, FRCPC
Susan Chipperfield, MS
Marion Cooper, RSW
Annette Alix- Roussin, BSW
Anne-Marie Brown, BScN
Diana Clarke, Ph.D.
Barry Fogg, BSW
Bev Pageau, MSW
Liping Zhang, MSc

**March 10, 2009**

# Table of Contents

# List of Figures

**Preface**

The purpose of the *Manitoba Adult Suicide Mortality Review* is to advance our understanding of death by suicide and the risk factors associated with mental health and substance use disorders in the province of Manitoba and in particular the Winnipeg Health Region.  This research project grew out two very important provincial and regional initiatives, the Co-occurring Mental Health and Substance Use Disorders Initiative and Suicide Prevention initiatives.  The link between suicide and substance use is clear in the literature and this report reiterates that correlation.

This report is a resource to be used by Provincial and Regional Health Authority staff and programmes for discussion and evidence based planning to improve the health of our communities.  The analysis has been completed with the intent of informing regions and communities about persons who have died by suicide in their communities with the hope that this information will assist in better identifying people at risk of suicide before a fatal event occurs.

This report is also intended to contribute to the ongoing research activities in the WRHA Regional Mental Health Program.   In June 2008 a Research to Action event on Suicide Prevention was hosted by the WRHA's Regional Mental Health Program and Research and Evaluation Unit and represents the type of knowledge mobilization that is required in the area of Suicide Prevention as we strive to enhance evidence informed action.

It is our hope that this report contributes to knowledge about suicide in Manitoba and the Winnipeg Health Region and supports the ongoing development of partnerships between suicide prevention providers, planners and researchers.

Dr. Murray Enns                                 Carolyn Strutt
Medical Director,                               Regional Director
Mental Health Program                           Winnipeg Regional Health Authority
Professor in Head,                              Regional Adult Mental Health Program
Department of Psychiatry,
University of Manitoba

# Research Project Collaborators and Acknowledgements

The Winnipeg Regional Health Authority (WRHA) Mental Health Program has led this research endeavour, in partnership with Manitoba Health & Healthy Living and the Addictions Foundation of Manitoba. The WRHA was the formal sponsor for all ethical review processes and data sharing contract agreements with the Manitoba Department of Justice.

## Research Committee

*Research Project Co-Investigators*:

Dr. Tracey Peter, Ph.D.
Assistant Professor, Dept. of Sociology, University of Manitoba

Dr. Randy Goossen, M.D., CCFP, FRCPC
Medical Director of Community Mental Health, Winnipeg, Regional Health Authority, and Assistant Professor, Dept. of Psychiatry, University of Manitoba

*Research Committee Co-Chairs*:

Susan Chipperfield, MS
Mental Health Policy & Planning Specialist, Winnipeg Regional Health Authority

Marion Cooper, RSW
Program Specialist – Mental Health Promotion, Winnipeg Regional Health Authority

*Research Committee Members*:

Annette Alix-Roussin, BSW
Regional Community Project Coordinator, Aboriginal Health Programs, Winnipeg Regional Health Authority

Anne-Marie Brown, RN, BScN
Coordinator Program Development and Evaluation Adult Mental Health
Health Sciences Centre

Dr. Diana Clarke, Ph.D.
Scholar in Residence, Health Sciences Centre and Associate Professor, Faculty of Nursing, University of Manitoba

Barry Fogg, BSW
Programs and Systems Coordinator, Addictions Foundation of Manitoba

# Operational Definitions

## Suicide

Suicide is defined as 'deaths that resulted from a self-inflicted injury,' but did not include accidents and/or inconclusive deaths. When working in the area of suicide, it is important to ensure that the language of 'suicide' is respectful. For example, the term "committed suicide" has often been used to describe a tragic death. The term "commit," however, presents a particular problem since it is also used for criminal offences such as homicide and assault. As such, "death by suicide," "died by suicide," or "suicide" more accurately describes the reality of the situation as well as respects the needs of those left behind (Alberta Mental Health Board, 2007).

## Aboriginal Status

The term 'Aboriginal' is commonly used to refer to the Indigenous populations of Canada. To this end, 'Aboriginal' includes: First Nations, Inuit, and Métis peoples. In this research project, Aboriginal status was primarily assigned based on a clear identification of ethnic origin in the file. However, if such information was not readily available, other factors such as postal code associated with a First Nations community or visual identifiers were used to classify Aboriginal status.

## Diagnostic impression

Diagnostic impressions were based on multiple factors including: clear psychiatric or addiction diagnosis or behavioural descriptions, medications prescribed, and service involvement.  Based on the information gathered, one of four diagnostic impression categories was identified:

1. Substance Use (SU) Disorder;
2. Mental Health (MH) Disorder;
3. Co-Occurring Mental Health and Substance Use Disorder (COD MH & SU); or
4. No Disorder.

It is important to emphasize that selection to one of these four categories was often derived from the shared expertise of the auditors who, together, were able to infer a diagnostic impression with considerable confidence – again, often based on a list of medications or symptomology patterns.

## Service Use

Service use was defined as the following agencies: child welfare, justice/corrections, addiction services, community health, psychiatry, community living, primary care, and hospital care (including emergency).

## Executive Summary

### Introduction

Suicide and suicidal behaviour has long been regarded as a serious social problem. It is also known to be associated with a complex interaction of biological, psychological, and social risk factors including: mental illness and/or addictions, histories of trauma, multiple personal problems, ill health, and personal loss. Despite this multifaceted interplay of risk factors, poor mental health and/or substance addictions are regarded as central correlates for suicidality (SIEC Alert #51, 2003).

Within the province of Manitoba, death by suicide is an infrequent but devastating event with a rate per 100,000 from 1994 to 2003 of 13.7 (Balachandra, 2003). In Canada, suicide is the second leading cause of unnatural deaths, accounting for 11.3 per 100,000 of accidental/adverse fatalities (Statistics Canada, 2006). Given this information, this research project attempts to increase the ability of identifying adults within Manitoba who are at a high risk for suicide 'before the fact' and to determine possible factors that may contribute to suicide deaths particularly influenced by the presence of a mental health and/or substance use disorder.

### Research Data Collection and Methodology

The data included in this study are from deaths in Manitoba identified as suicides by the Office of the Chief Medical Examiners during the years of 2002 *and* 2004. The end product was an audit of 257 adult files from the Office of the Chief Medical Examiner, Manitoba Department of Justice.

### Research Findings

In terms of overall rates within the various Health Regions, for both 2002 and 2004, the Burntwood region had the highest crude suicide rates in the province at 31.3 and 38 per 100,000, respectively). In 2002, Brandon had the lowest crude suicide rate (4.2 per 100,000), while the Central region had the lowest rate in 2004 (2 per 100,000). In general, results reveal that crude suicide rates tend to be higher in the north.

*Analyses by Region*

- Overall, men were more likely to die by suicide compared to women. Results were similar in the North and South regions, but the female suicide percentage was higher in Winnipeg.

- The distributions in the South and Winnipeg were similar with the highest age group of suicide completions being over 45 years. In contrast, the age distribution in the North region shows that the highest age grouping is between 18 and 24 years.

- There were a higher number of Aboriginal suicides compared to the total population of First Nations people living in that area.

- In the North, hanging was the most common method of suicide death. Even though hanging was the most common means of death in the southern regions, the use of firearms was disproportionally higher compared to the North and Winnipeg. Finally, drug and alcohol overdose in Winnipeg was disproportionally higher in this region.

- The further north one goes, the less likely services are to be used.

*Diagnostic Impression*

- Profiles of diagnostic impression in Winnipeg and the South were very similar in that 'Mental Health Only' was the most common grouping. The classification of a 'Co-Occurring Diagnosis of a Mental Health or Substance Use (COD MH & SU)' problem was substantially higher in Winnipeg compared to the South and the North. Finally, a 'Substance Use Only' diagnostic impression was the highest in the North.

- Results show that females over the age of 45 were more likely to have a 'mental health only' diagnostic impression compared to males in the same age group.

- Aboriginals were more likely to be categorized as having a 'substance use only' diagnostic impression. Almost half of the non-Aboriginal individuals had a 'mental health only' diagnostic impression.

- Those with a 'mental health only' and 'COD MH & SU' labelled diagnostic impression were significantly more likely to use services in their last year of life. It is important to note that the 'substance use only' suicide completers were receiving the same amount of services as the 'no diagnostic impression' group.

*Analyses by the Winnipeg Region*

- The final analysis of the data looked at Winnipeg regional profiles in order to examine geographical differences within the city. According to the crude data, the Downtown/Point Douglas area had the most suicides in both 2002 (14.3 per 100,000) and 2004 (20.5 per 100,000). Both rates were

well above the overall city rate of 10.8 per 100,000 in 2002 and 11.4 per 100,000 in 2004. Figures and descriptions of each community region can be found in the body of the report as well as Appendix D.

**Discussion**

*Regional or Community Area Differences*

Analysis of the Winnipeg region reveals several important differences in the paired community areas. For instance, in the Downtown/Point Douglas community area there were higher rates of 'substance use only' and 'COD MH & SU,' compared to the rest of Winnipeg. In fact, findings from Downtown/Point Douglas mirror the suicide rate as well as the profile (i.e. under 45 males, higher incidence of Aboriginals, who die by hanging) of northern Manitoba. Conversely, in the St. Boniface/St. Vital community area the profile reflects a higher number of women, an older population (i.e. over 45), who are accessing few services.

The research also shows that there are several key findings when the data were compared by areas in Manitoba (North, South, and Winnipeg). For example, the sex breakdown of death by suicide is over 80% male in the North and the South; however, the rate in Winnipeg is significantly lower (64%). Moreover, results reveal that suicide deaths occur in younger populations in the North as well as some Winnipeg community areas, while the southern regions and much of Winnipeg reveal higher rates among the 45-plus group.

*Aboriginal Status*

Given the regional differences by Aboriginal status, prevention strategies could be mindful of the higher than proportional rates of Aboriginal suicides throughout Manitoba, but especially in the northern regions. Any suicide prevention strategy would be remiss not to include a specific Aboriginal focus in its framework.

*Means of Death*

A significant difference by Manitoba region and means of death was found. While the differences in all the regions require more exploration, the significance of hanging over other methods in the North as well as some areas of Winnipeg, warrants further research, especially in relation to the large Aboriginal population in these jurisdictions. Questions that require more consideration include whether there is a 'culture of hanging' that is predominant in the North among Aboriginal peoples and whether there is a 'contagion effect' of hanging where younger populations are modelling familiar suicidal behaviours.

*Diagnostic Impression*

Several important results were found when specific diagnostic impressions were analyzed. One important finding is the significance of substance use problems (both 'COD MH & SU' and 'substance use only'), especially in the Downtown/Point Douglas community area that accounted for 67% of all suicide deaths in Winnipeg. Equally concerning is the finding that individuals with a 'COD MH & SU' as well as a 'substance use only' diagnostic impression are less involved in receiving interventions, despite having a large number of risks, and thus may lack the necessary support services required to keep them safe. Conversely, individuals with a 'mental health only' diagnostic impression were significantly more likely to receive some type of intervention.

*Diagnostic Comparisons and Key Demographics*

In terms of demographic comparisons by diagnostic impression, there were some noteworthy findings. Of particular interest is when we analyze the tri-variate relationship between sex, age, and diagnostic impression, it was found that females over 45 years of age were significantly more likely to have a 'mental health only' diagnostic impression. Certainly, the high number of women over 45 years old with a mental illness is not a surprising finding. However, what is interesting, and worthy of further research, is the connection between women with these characteristics and suicide.

**Recommendations**

*Standardized Forms and Incident Review Processes*

It is important that more work is done to improve data collection policies and practices on suicide completions. In this regard, it is recommended that standardized reports after a death by suicide be designed and implemented across the province of Manitoba. Given the complexity of this task, it is recommended that a tool be developed and piloted in Point Douglas as well as a northern community, since the current mortality review has identified these areas as having higher than average rates of suicide.

It is also important that 'incident review' processes are created within mental health and addiction services in order to conduct in-depth analyses of suicide deaths. One suggestion would be to explore the possibility of an ongoing role for mental health specialists to provide clinical expertise in order to assist the Chief Medical Examiner's office in suicide or incident reviews.

*Increased Focus on Primary Care*

It is also recommended that mental health and addiction screening become enhanced in primary care and social service settings. In particular, mental health

and addiction assessments should occur in all primary care and social service settings in order to facilitate early intervention across the life span.

*Targeted Suicide Prevention Strategies*

In terms of prevention, it is important that targeted prevention strategies are implemented, especially for high risk groups (i.e. young Aboriginal populations as well as middle-aged women with mental illness histories). In particular, prevention strategies should encourage help-seeking behaviour.   Another suggestion would be to use this study as a means of facilitating planning sessions with individual communities around suicide prevention as well as developing targeted strategies for at-risk populations.

*Research*

There are several recommendations in regards to research. First, there should be a concerted effort to invest in psychological autopsy processes, especially if the information derived is quite extensive, which would greatly enhance suicide prevention strategies. Second, it is recommended that future research explore risk factors in communities with high suicide rates in order to determine if there are any unique factors that may be contributing to greater suicidal behaviour. Third, future research would benefit from linking the Chief Medical Examiner's Office data with health care and addiction service-use data, including federally collected data on Aboriginal people, in order to examine suicide completions. Such linkages would allow for a more robust analysis, which would help contribute to meaningful prevention and intervention strategies.

# Full Report

| Introduction |
| --- |

Suicide and suicidal behaviour has long been regarded as a serious social problem. According to the World Health Organization (2000), globally there is one death by suicide every 40 seconds. In Canada, suicide is the second leading cause of unnatural deaths, accounting for 11.3 per 100,000 of accidental/adverse fatalities (Statistics Canada, 2006). Every year, approximately 3,750 people die by suicide. Put another way, in the past three decades, more than 100,000 Canadians have died by suicide (CASP, 2004). In Manitoba, the suicide rates over the last ten years (1994-2003) have remained relatively stable. The average number of deaths by suicide per year over this ten year period is 158. The average rate per 100,000 over the same ten-year period is 13.7 per 100,000 (Balachandra, 2003). Manitoba ranks close to the Canadian average compared to other Provinces in Canada. Alberta, Québec and New Brunswick rank higher than the Canadian average (Statistics Canada, 1996).

Although these statistics are important in order to identify base prevalence rates, which help signify suicide as a serious social problem worthy of serious attention, they tell us little about the impact of suicide. In this regard, the impact of suicide is profound, not only for the individual, but for his/her family, peers, and community. In addition to the personal impact, suicide mortality and morbidity are major costs to the health sectors and to society in general. Some of these costs, as identified by the Canadian Association for Suicide Prevention (CASP, 2004), include:

> ➢ Premature loss of life;
> ➢ The provision of medical, surgical, emergency, mental health, addiction and rehabilitative services to those making non-fatal attempts;
> ➢ Bereavement and other psychological and physical health effects on family and others closely involved with individuals making fatal and non-fatal suicide attempts; and
> ➢ Loss of productivity for those involved in suicidal behaviours as well as for those affected by it.

Cost approximations stemming from a death by suicide have historically been difficult to calculate, in large part because they would require long-term follow-up. Nevertheless, globally it is estimated that suicide completions and attempts cost billions of dollars annually. One study in New Brunswick, for instance, attempted to estimate the economic impact of suicide deaths occurring in 1996 (Clayton & Barcelo, 1999). For the 94 suicide deaths recorded, direct costs for health care services, autopsies, funerals, and police investigations were over a half million dollars. Indirect costs, which estimated lost productivity due to premature death, were valued to be nearly $80,000,000. The combined mean total cost per suicide

death was $849,878. These results are the first in Canada to highlight the overall cost of this public health issue.

In addition to its financial burden, suicide-related behaviours are a major cause of emotional and psychological stress on individuals, families, friends, communities, and healthcare systems. Given this breadth, it is important to remember that no part of society is immune. Suicide affects all of us (CASP, 2004).

Due to the impact of suicide, the current research examines past suicides recorded by the Chief Medical Examiner's office. The purpose of such an endeavour is to attempt to develop suicide profiles in Manitoba with specific attention to mental illness and substance use. The goal of such a proactive approach is to increase the quality of information available to service providers, which will assist in the facilitation of prevention and intervention strategies.

## Literature Review

Suicide is known to be associated with a complex interaction of biological, psychological, and social risk factors including: mental illness and/or addictions, histories of trauma, multiple personal problems, ill health, and personal loss. Despite this multifaceted interplay of risk factors, poor mental health and/or substance addictions are regarded as central correlates for suicidality (SIEC Alert #51, 2003). As such, the relationships between mental disorder, substance use, and co-occurring mental health and substance use disorder and suicidal behaviour will be discussed in turn.

*Mental Disorder*

In a recent meta-analysis, Arsenault-Lapierre and colleagues (2004) found that 87.3% of the 3,275 suicide victims had been diagnosed with a mental disorder prior to their death. Harris and Barraclough (1997) also conducted a meta-analysis in order to illustrate the strong association between mental disorders and suicide. In particular, they give estimations for the suicide risk of various mental disorders by using standardized mortality ratios (SMRs) for each disorder among primarily in-patient populations. Of the 44 disorders analyzed, 36 had a significantly raised SMR for suicide. The authors conclude that individuals suffering from the majority of the listed mental disorders had an increased risk of suicide.

*Substance Use Disorders*

In addition to mental health issues, research indicates that the risk of suicide for individuals who abuse alcohol is significantly higher compared to the general population of the same age and sex (Rossow, 2000). More specifically, the lifetime risk for suicide in the alcohol dependent population is 7%, compared to

0.7% for the non-alcohol dependent population (Inskip et al., 1998). Finally, in a synopsis of psychological autopsies by Murray (2000), it was estimated that alcoholism or other substance abuse was found in 20-50% of death by suicides.

*Co-Occurring Mental Health and Substance Use Disorders*

Independently, mental illness and substance disorder significantly increase suicide propensities. Together, however, the risk is even more profound. For instance, Dalton and colleagues (2003) calculated the lifetime risk for suicide attempt among clients who had been diagnosed with a bipolar disorder. They found that a lifetime co-morbid substance use disorder was a significant predictor of suicide attempts. In particular, bipolar patients with a co-morbid substance use disorder had a lifetime rate of suicide attempt of 39.5%, while those without had a rate of 23.8%.

Moreover, research from New Brunswick (Séguin et al., 2005, 2006) found that 55% of the 102 suicide deaths investigated involved individuals with co-occurring mental health and substance use disorders, thereby leaving the authors to emphasize the importance of being able to recognize substance and mood disorder co-morbidity.

Equally concerning, however, is that the incidence of mental illness and substance abuse is predicted, by the World Health Organization, to increase from its 1990 level of 10.5% of global disease to approximately 15% by 2020 which, given its strong correlation, will no doubt have a profound impact on suicide rates (Murray & Lopez, 1996). Among the study's results it was reported that depression was the fourth leading cause of disease-burden in 1990, but by 2020, it would be the single leading cause. Moreover, Murray and Lopez (1996) contend that the burden of psychiatric conditions has been underestimated. Specifically, they show that half of the leading causes of disability worldwide are from psychiatric conditions (i.e. depression, bipolar affective disorder, schizophrenia, and obsessive-compulsive disorder) and substance abuse.

## Research Context and Rationale

Although the above review of the literature helps illustrate the importance of examining mental disorder, substance addiction, and suicide mortality, four separate initiatives/projects were central in the organization of the current research project. Each will be discussed in turn.

*The Manitoba Co-Occurring Mental Health and Substance Use Disorders Initiative*

In the health care sector, individuals with co-occurring mental health and substance use disorders are often recognized as a population having

unacceptable outcomes in multiple clinical domains. For example, this population is characterized by high rates of emergency visits and hospital admissions, treatment failure, and mortality (Minkoff, 2000). Given this 'high need' and 'high risk' population, two expert consultants, Dr. K. Minkoff and Dr. C. Cline, were brought in to assist in the province-wide 'Co-Occurring Mental Health and Substance Use Disorders Initiative' (CODI). Both experts recommended early in the initiative that a system-wide suicide mortality review needed to be undertaken in order to support better risk assessment and coordinated response plans.

A similar strategy was carried out in the State of New Mexico where a review of patients already involved in mental health services revealed that 70% of client suicide deaths involved individuals with co-occurring mental health and substance use disorders (Cline & Minkoff, 2002). In the New Mexico mortality review, suicide risk profiles were created in order to help identify high-risk individuals. In addition, system-wide gaps and weaknesses were highlighted and specific interventions targeted.

Using the New Mexico experience as a guide, a Manitoba suicide mortality review was developed as a means to provide an evidence-based mortality risk profile of persons with co-occurring disorders. The hope was that these risk profiles could be used in clinical assessment processes in order to enhance the identification of high-risk clients as well as to improve the communication and coordination of care for individuals involved in the service sector.

*The New Brunswick Suicide Mortality Review Project*

The New Brunswick Suicide Research project (Séguin et al., 2005, 2006) was the second base for our local work because their report provided the background and information required in helping guide our 'auditor tool' instrument. In particular, by interviewing family members as well as by reviewing medical charts of individuals who died by suicide, the New Brunswick Suicide Research team found that the vast majority had a mental health disorder. More specifically, results reveal the following:

> ➤ Two-thirds (65%) had a mood disorder;
> ➤ Substance-related disorders was also significant at 59%;
> ➤ 42% had both a mood disorder and a substance-related disorder; and
> ➤ The lifetime prevalence of substance-related disorders was 66%, followed by personality disorders at 52%, and mood disorders at 50%.

*Manitoba Centre for Health Policy Project*

Local research through the Manitoba Centre for Health Policy (MCHP) on the 'Patterns of Regional Mental Illness Disorder Diagnoses and Service Use in Manitoba' (2004) outlined a provincial picture of suicide. Highlights of this research are included below.

- The age and sex-adjusted suicide rate was 1.3 per 10,000 Manitobans per year, with the male rate three times higher than the female rate (2.01 per 10,000 and 0.63 per 10,000, respectively).
- The most common method of suicide for men was hanging (37.4%), whereas women were more like to use poisoning (50.9%) as a method of suicide.
- The 'Potential Years of Life Lost' (PYLL) due to suicide was 44.3 years lost per 10,000 residents in Manitoba. More specifically, the geographic regions of North Eastman and Burntwood had higher PYLLs, signifying that suicide accounts for a greater loss of young people.
- When various risk factors were entered simultaneously into a multi-variate regression analysis, key correlates predicting suicide were: being male, having a mental illness diagnosis in the previous year, being young, and having poorer health. Region of residence and average household income were not statistically significant co-variates of suicide when other risk factors (such as having a mental health diagnosis or other health problems) were held constant.

*Winnipeg-Based Initiatives*

Finally, the Winnipeg Regional Health Authority (WRHA) completed a secondary analysis on the MCHP data (Penfold et al., 2007) and was able to generate additional Winnipeg-specific information, including broad community area profiling. Highlights of this research are listed below.

There was an important finding within areas of Winnipeg; namely,
- Point Douglas, Downtown, and River Heights all had similar suicide rates to the Burntwood, North Eastman, and Norman regions.
- For individuals who attempted or died by suicide, risk factors such as age, sex, and neighbourhood income were all important factors.
- Another highly correlated risk factor was having a mental illness diagnosis in the previous year. In other words, persons who died by suicide or attempting suicide are significantly more likely to have contacted a health care provider for mental health issues in the year prior to the suicide. This is a 'window of opportunity' for the health care system to intervene.

**Research Objectives**

The brief review of literature as well as the short synopsis of the research context provides an overview of adult suicide globally, nationally, and locally. Drawing on these studies/initiatives, the purpose of the current research is to generate local evidence in order to develop 'suicide profiles' for the province of Manitoba. Specifically, this research investigates what factors may have contributed to death by suicide among adults in Manitoba. The desired outcome of the research

is to increase the ability of identifying people who are at a high risk for suicide 'before the fact.'

The following research questions guided this work:

> What are some possible factors that may contribute to suicide deaths among adults in Manitoba?
> Does the presence of a co-occurring mental health and substance use disorder characterize a significant risk factor for individuals who died by suicide in Manitoba?

## Data Collection and Methodology

In March 2006, the WRHA, with support from Manitoba Health & Healthy Living – Mental Health and Addictions Branch, entered into an agreement with the Government of Manitoba, Chief Medical Examiner's (CME) Office to access mortality files on adult suicide cases occurring in the province over a 3-year period (from January 2002 to December 2004).[1] The data were to be collected for the purpose of creating evidence-based suicide risk profiles that could be used to develop better risk assessment protocols.

A data collection team was put together, which included representation from the WRHA (Adult Mental Health as well as Aboriginal Health Services), Manitoba Health & Healthy Living – Mental Health and Addiction Branch, and the Addictions Foundation of Manitoba. In accordance to guidelines involving human research, ethical approval was sought from and granted by the University of Manitoba Bannatyne Campus Health Research Ethics Board.

The research design included a file review process in order to extract risk profile data from the CME's suicide case files. In order to achieve this goal, a data collection instrument was constructed, which was loosely based on the key risk factor indicators from the New Brunswick suicide study (Séguin et al., 2005, 2006).

The file auditor's data collection tool included the following data elements (see Appendix A).

> Sex
> Age
> Cultural Origin
> Relationship Status

---

[1] Even though the suicide data were collected on a provincial level, due to agreements with Manitoba Health, the other Regional Health Authorities were not involved in the formal research project. As such, this research reflects only the opinions of the WRHA, who lead this research endeavour.

- Living Situation
- Income Source
- Employment Status
- Health Status
- Precipitating Event
- Means of Death
- Medical Conditions
- Diagnostic Impression
- Risk Factors
- Interventions
- Mental Health or Addiction Services Involved
- Preventability of Death

The data included in this study are from deaths in Manitoba identified as suicides by the Office of the Chief Medical Examiners during the years of 2002 *and* 2004.[2] The end product was an audit of 257 adult files from the Office of the Chief Medical Examiner, Manitoba Department of Justice.

Five file auditors were selected based on their professional training and experience in mental health and addiction fields. In particular, the occupational backgrounds of the auditors included: social workers, a psychologist, and a nurse. Each auditor examined his or her randomly assigned case files in order to complete the data collection instrument. When information was unclear, the auditors would review the file together and would come to a consensus as to the best way to record the data. This was especially the case for diagnostic impression, when there was often no clear psychiatric or addiction diagnosis recorded.

After the data collection process was complete, a focus group was held with the file auditors to better understand the data collection process. In this regard, the principle objective of the focus group was to gather important information about the quantity and quality of the 'data' available in the CME files. Moreover, the focus group was an invaluable way to understand the process in which the file auditors interpreted the data collected. Additionally, the focus group provided the opportunity to make recommendations for future data collection through the Chief Medical Examiner's Office. Having a group interview enabled the researchers to learn from the file auditor's experiences and to seek input in regards to the research instrument as well as the process and outcome of the data collection procedures.

Once data were collected, both uni-variate and bi-variate analyses were conducted. Uni-variate analyses were necessary in order to get a general sense

---

[2] A preliminary analysis of the two full years of data was conducted and it was determined that there was enough information to establish adequate risk profiles. In addition, the file auditors felt that it was not necessary to collect any further data. As such, even though permission was granted, suicide data from the third year was not collected or analyzed.

of the data as well as to establish crude suicide rates for Manitoba regions and Winnipeg community areas. In terms of the bi-variate analyses, cross-tabulations with chi-square ($\chi^2$) estimations were programmed using Statistical Analysis Software (SAS).

The first objective of the bi-variate analyses was to examine the data by the Health Regions in order to identify differences across Manitoba. In order to simplify the analysis as well as to achieve meaningful results, the Health Regions were re-coded into the following three mutually exclusive and exhaustive categories: North (Burntwood, Norman, and Churchill), South (North Eastman, Parkland, Assiniboine, Brandon, Central, South Eastman, Interlake), and Winnipeg.
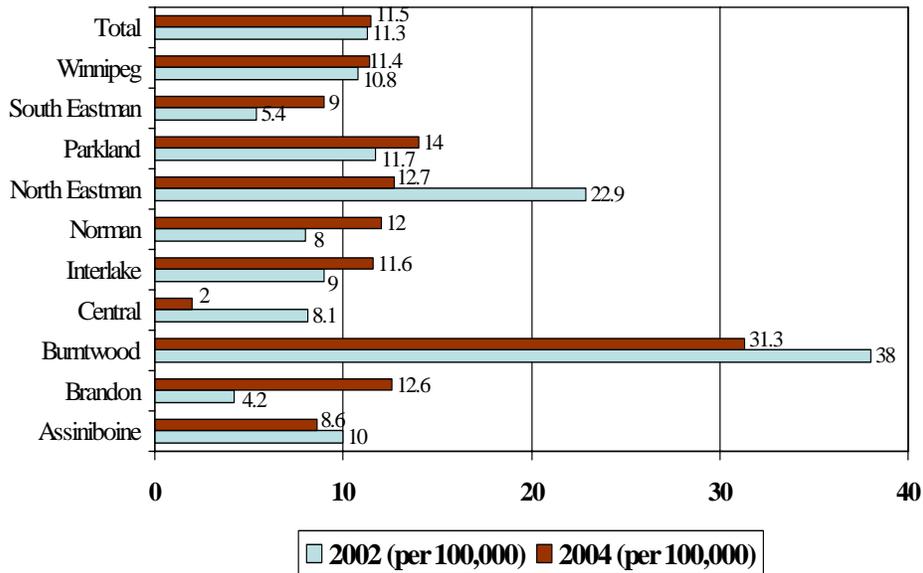
The second objective of the bi-variate analyses was to examine the data by diagnostic impressions. As mentioned earlier, diagnostic impressions were based on four groupings: 'Mental Health (MH) Only,' 'Substance Use (SU) Only,' 'Co-Occurring Mental Health and Substance Use Disorder' (COD MH & SU), and 'No Disorder.'

Finally, various Winnipeg communities were analyzed in order to identify key differences between these areas. Due to the relatively small number of suicides in many of the Winnipeg areas, communities were paired into the following groupings: Downtown/Point Douglas, Inkster/Seven Oaks, St. James/Assiniboine, Fort Garry/River Heights, St. Vital/St. Boniface, and River East/Transcona.

---

**Research Findings**

---

Results from Figure 1 show that, for both 2002 and 2004, the Burntwood region had the highest crude suicide rates in the province at 31.3 and 38 per 100,000, respectively). In the 2002 data, North Eastman had the second highest rate at 22.9 per 100,000, while Parkland had the second highest rate in 2004 (14 per 100,000). In 2002, Brandon had the lowest crude suicide rate (4.2 per 100,000), while the Central region had the lowest rate in 2004 (2 per 100,000). In general, results reveal that crude suicide rates tend to be higher in the north and lower in the south.

## Figure 1: RHA Crude Suicide Rates 2002 & 2004



Figure 1: RHA Crude Suicide Rates 2002 & 2004

| Region | 2002 (per 100,000) | 2004 (per 100,000) |
|---|---|---|
| Total | 11.3 | 11.5 |
| Winnipeg | 10.8 | 11.4 |
| South Eastman | 5.4 | 9 |
| Parkland | 11.7 | 14 |
| North Eastman | 22.9 | 12.7 |
| Norman | 8 | 12 |
| Interlake | 9 | 11.6 |
| Central | 8.1 | 2 |
| Burntwood | 38 | 31.3 |
| Brandon | 4.2 | 12.6 |
| Assiniboine | 10 | 8.6 |

**Analyses by Region**

Next, a series of bi-variate analyses were conducted in order to identify significant relationships between selected measures and region. Results are presented in the following figures.

*Sex*

Overall, men are significantly more likely to die by suicide compared to women ($x^2$ = 8.9; p=.012).  As shown in Figure 2, the distribution of sex is similar in the North and South regions, but the female suicide percentage is higher in Winnipeg (i.e. 19% and 18% for the North and South regions, compared to 36% for Winnipeg).

# Figure 2: Sex by Region
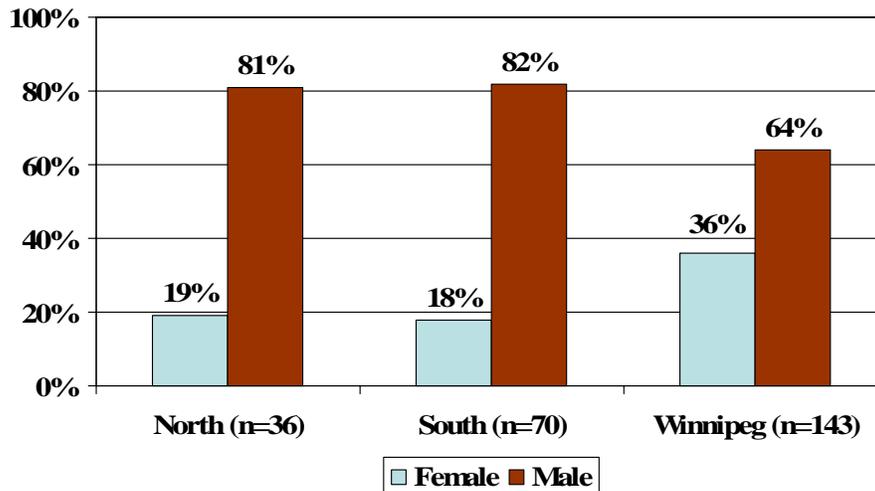
*Age*

The relationship between age and region is also statistically significant ($\chi^2$ = 17.4; p=.000). The distributions in the South and Winnipeg are similar with the highest age group of suicide completions being over 45 years at 49% and 48%, respectively, compared to only 11% in the North (see Figure 3). In contrast, the age distribution in the North region shows that the highest age grouping is between 18 and 24 years (47% versus 14% in the South and 10% in Winnipeg).

## Figure 3: Age by Region
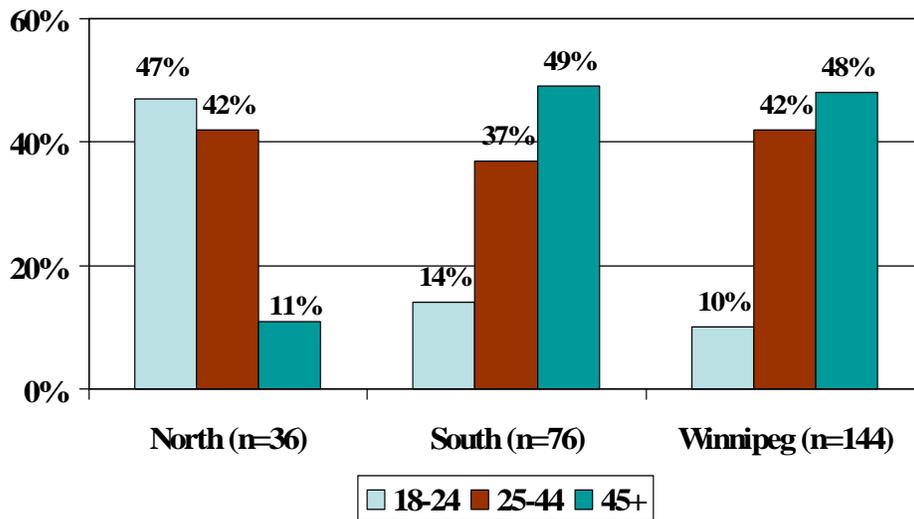
*Aboriginal Status*

Aboriginal status by region was also statistically significant ($\chi^2$ = 78.9; p=.000). As illustrated in Figure 4, data on Aboriginal status were compared to 2001 Statistics Canada Census population data in order to determine whether or not, geographically, Aboriginal peoples were being over-represented in suicide rates. Our data confirms this hypothesis because, in each region, there were a higher number of Aboriginal suicides compared to the total population of First Nations people living in that area. The largest difference was in the North where 77% of the population are Aboriginal, but represent 88% of the suicides.

**Figure 4: Aboriginal Status by Region**
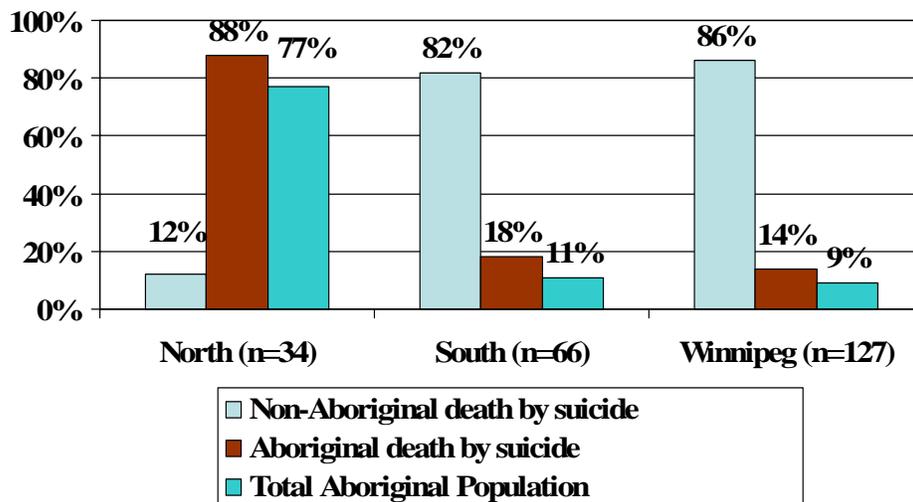
*Means of Death*

The results from the bi-variate relationship between means of death and region were statistically significant ($\chi^2$ = 54.8; p=.000). In the North, hanging was the most common method of suicide death (83%), while all other means were too small to ethically report (See Figure 5). Even though hanging (35%) was the most common means of death in the southern regions, the use of firearms (29%) was disproportionally higher compared to the North (<5 cases) and Winnipeg (5%). Finally, drug and alcohol overdose in Winnipeg was disproportionally higher in this region (27%, compared to 16% in the South and less than 5 cases in the North).

**Figure 5: Means of Death by Region**
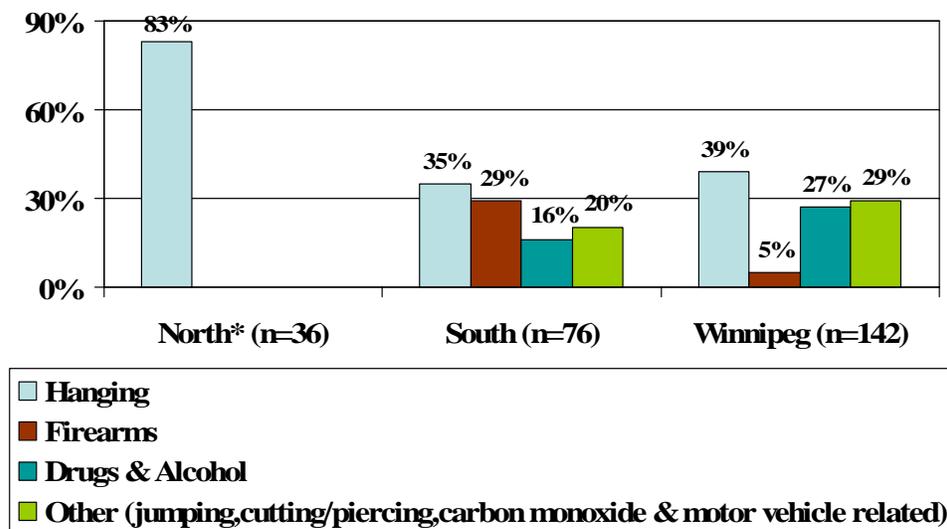


* Cells counts too small to report

*Services Used in the Past Year*

There was a significant relationship between the use of services in the past year and region ($\chi^2$ = 14.6; p=.006). Given the high concentration of agencies in the Winnipeg region, it is not surprising that service use was the most common here (46% used at least one service in the past year and 19% used two or more). In this regard, the further north one goes, the less likely services are to be used. On one hand, the results for the North, as shown in Figure 6, may reflect the difficulty there is in gathering accurate information on service usage in this region. On the other hand, the higher rate of no services used may be due to the shortage of services available as well as the lack of help seeking behaviour among northern populations.

**Figure 6: Known Services Used in Past Year by Region**
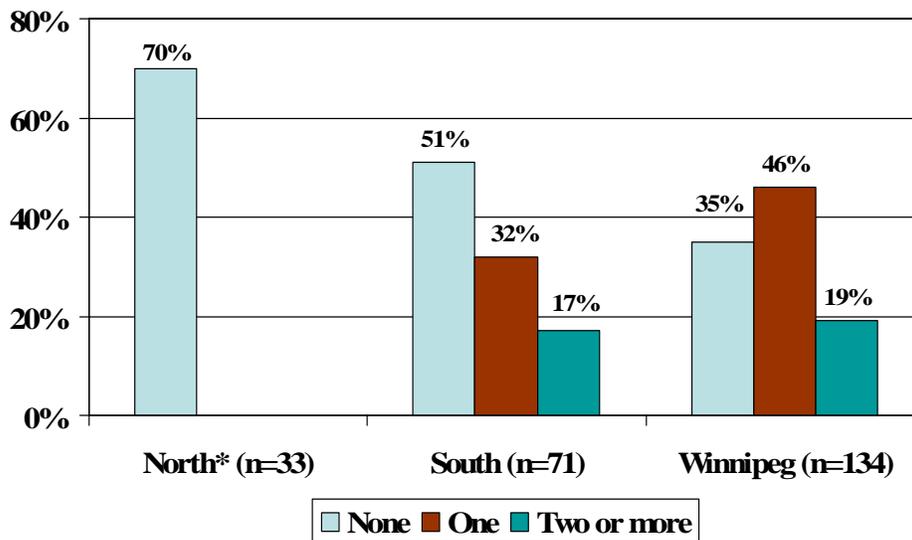


* Cells counts too small to report

*Diagnostic Impression*

Profiles of diagnostic impression in Winnipeg and the South are very similar in that 'Mental Health Only' was the most common grouping (44% and 39%, respectively). As illustrated in Figure 7, the classification of a 'Co-Occurring Diagnosis of a Mental Health or Substance Use (COD MH & SU)' problem was substantially higher in Winnipeg (31%) compared to the South (18%) and the North (17%). Finally, a 'Substance Use Only' diagnostic impression was the highest in the North (42%), compared to the South (17%) and Winnipeg (11%). These results are statistically significant ($\chi^2$ = 40; p=.000).

## Figure 7: Diagnostic Impression by Region
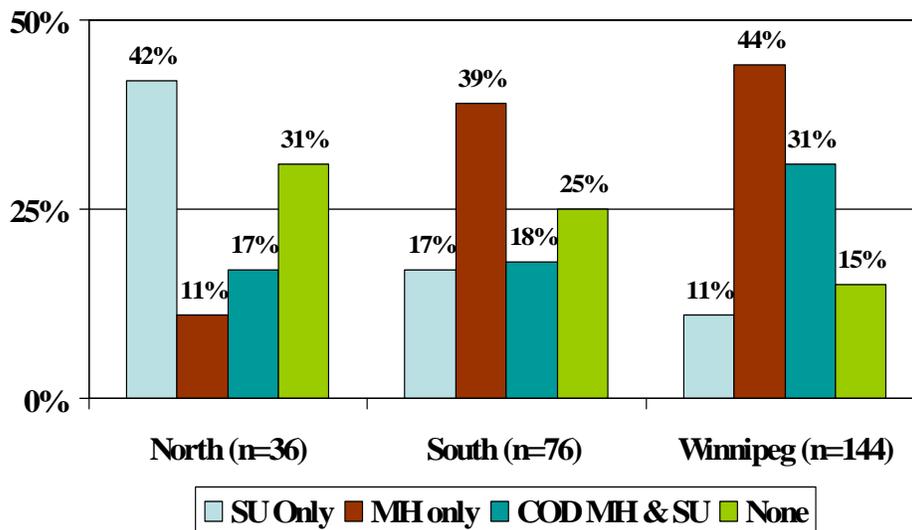


A further analysis by diagnostic impression occurs in the following figures.

*Sex*

Several key co-variates were next analyzed with diagnostic impression. The first was sex (see Figure 8). Results show that even though women, categorized as having mental health problems, were more likely to die by suicide (46% vs. 34%), there is no significant difference in regards to sex and diagnostic impression ($\chi^2 = 6.2$; p=.103).

**Figure 8: Sex by Diagnostic Impression**
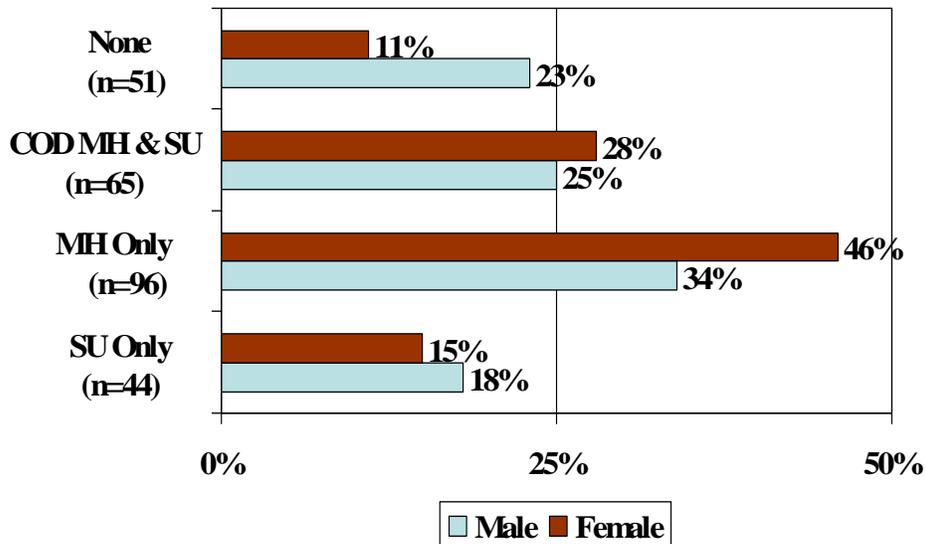
*Age*

Results reveal a significant association between age and diagnostic impression ($\chi^2$ = 18.12; p=.006). As shown in Figure 9, young people between 18 and 24 were more likely to have a 'no mental health or substance use' diagnostic impression (33%, compared to 16% for aged 25-44 and 18% for 45 plus). Moreover, nearly half (49%) who were in the 45 plus age range had a 'mental health only' diagnostic impression (compared to 31% for 25-44 and 26% for 18-24).

**Figure 9: Age by Diagnostic Impression**
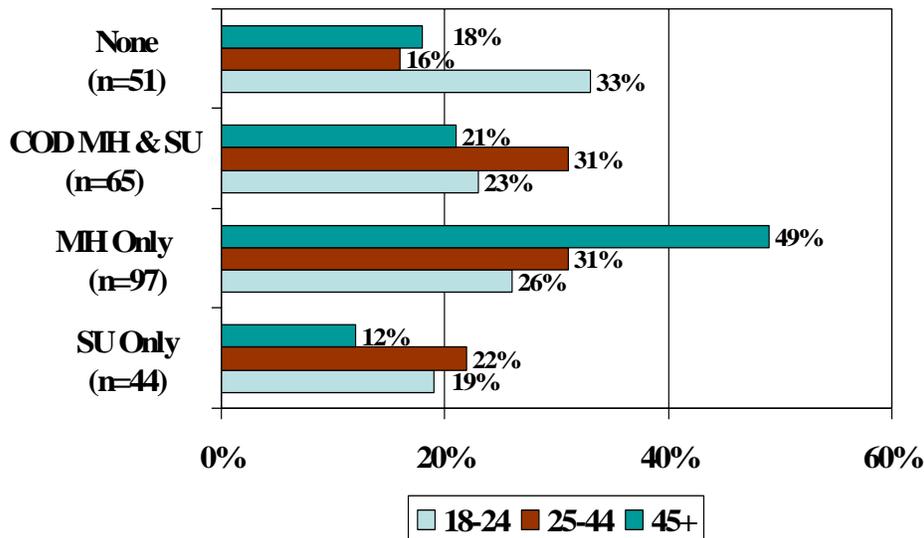
A tri-variate analysis was further tabulated in order to examine the relationship between age and diagnostic impression while controlling for sex (see Figure 10). Results show that females over the age of 45 were more likely to have a 'mental health only' diagnostic impression compared to males in the same age group (68% vs. 43%), which was a statistically significant difference ($\chi^2$ = 8.46; p=.037).

**Figure 10: Age Controlling for Sex by 'Mental Health Only'**
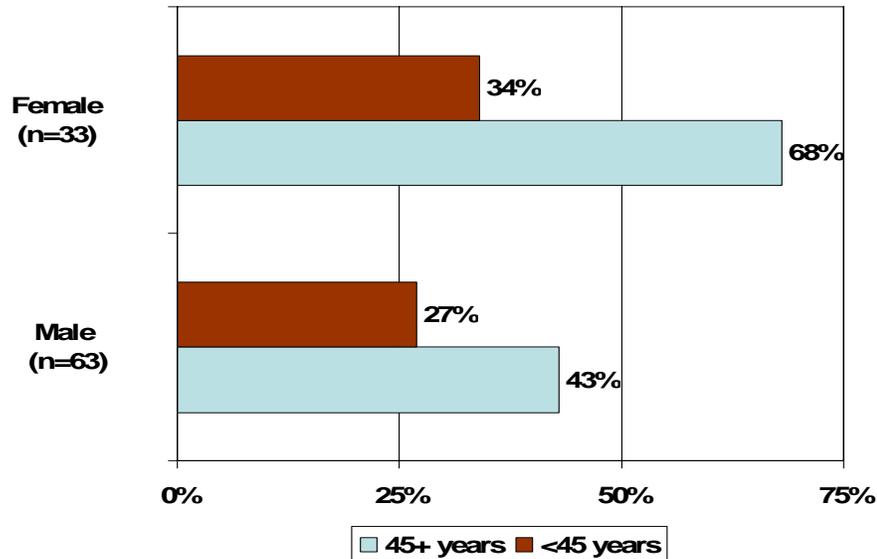
*Aboriginal Status*

Figure 11 illustrates the significant relationship between Aboriginal status and diagnostic impression ($\chi^2$ = 38.5; p=.001). Even though there was little difference between 'no diagnostic impression' (25% and 18%) and 'COD MH & SU' (27% and 26%) among Aboriginals and non-Aboriginals, 37% of Aboriginal compared to 8% of non-Aboriginal deaths by suicide were categorized as having a 'substance use only' diagnostic impression. Further, 48% of the non-Aboriginal deaths by suicide had a 'mental health only' diagnostic impression compared to only 12% of the Aboriginal group.

**Figure 11: Aboriginal Status by Diagnostic Impression**
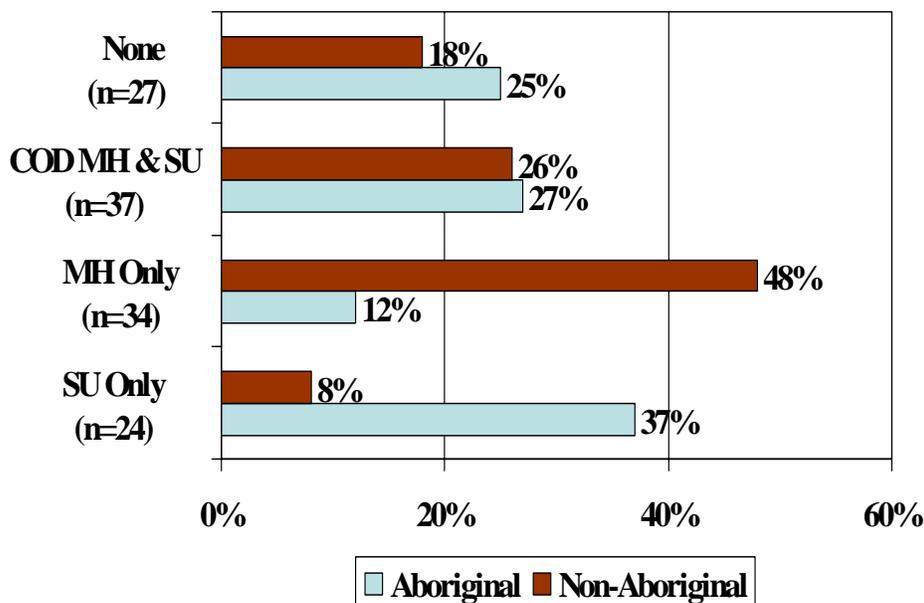
*Means of Death*

Means of death by diagnostic impression showed that over three-fifths (61%) of individuals who used 'other' methods of death (i.e. jumping, cutting/piercing, carbon monoxide, and motor vehicle related) were in the 'mental health only' diagnostic category (see Figure 12). Moreover, 55% of hangings occurred with individuals who either had a 'substance use only' (27%) or a 'COD MH & SU' (28%) diagnostic impression. The bi-variate association between means of death and diagnostic impression was statistically significant ($\chi^2$ = 42.1; p=.001).

**Figure 12: Means of Death by Diagnostic Impression**



Other (Jumping, cutting/ piercing, carbon monoxide & motor vehicle related)*
Hanging
Firearms*
Drugs & Alcohol

* Cells counts too small to report
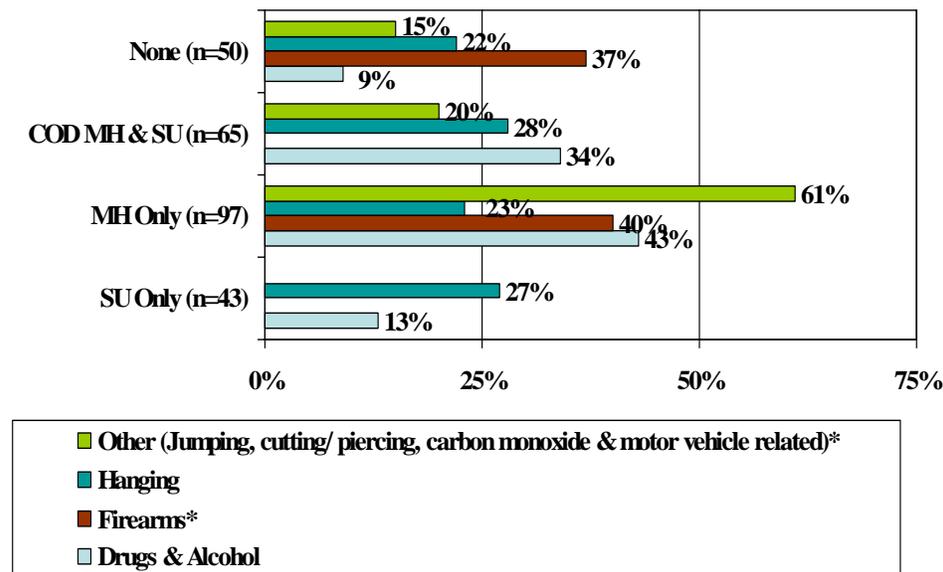
*Service Use*

As illustrated in Figure 13, known service use by diagnostic impression showed that 'mental health only' and 'COD MH & SU' labelled individuals were significantly more likely to use services in their last year of life ($\chi^2$ = 44.1; p=.001). It is important to note that persons with 'substance use only' deaths by suicide were receiving the same amount of services as the 'no diagnostic impression' group (15% and 13%, respectively).

**Figure 13: Known Services Used in Past Year by Diagnostic Impression**



* Cells counts too small to report
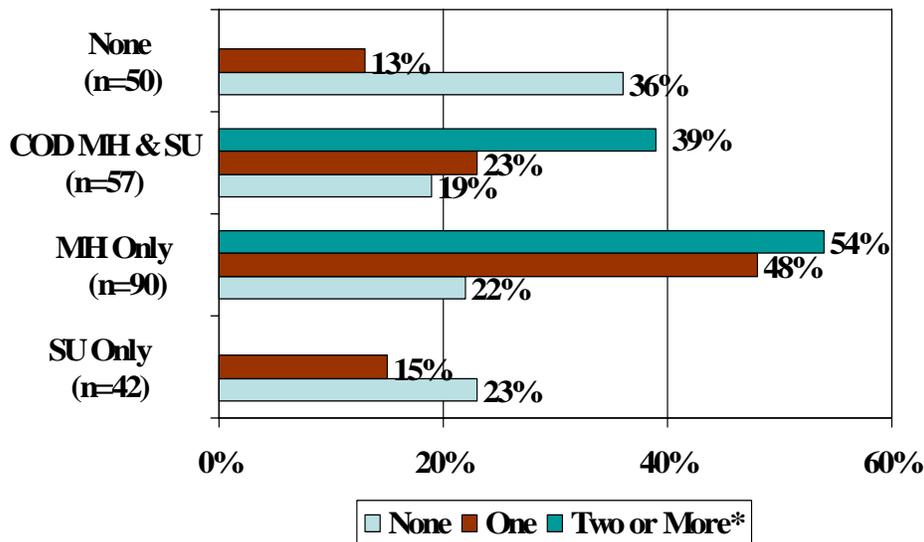
An illustration comparing known high risk behaviour (i.e. past suicidal behaviour, poly substance abuse, unmanaged symptoms of psychosis, violent outbursts or impulsive behaviours, etc.) and intervention (i.e. psychiatric medications, assessment and treatment for mental health or addictions issues, medical follow up, crisis intervention, etc.) is shown in Figure 14.  Results reveal that individuals with a 'substance use only' diagnostic impression had more risk (39%), but received less intervention (28%), compared to 'mental health only' where the risk/intervention ratio was 12% and 77% and 'COD MH & SU' where the ratio was 48% and 63%.

## Figure 14: Intervention vs. Risk by Disorder*
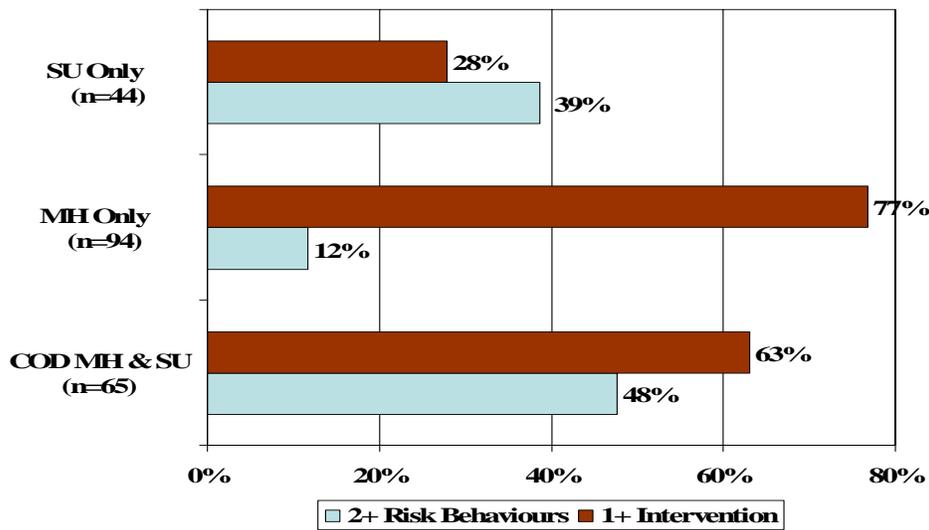


* The 'No disorder' category was excluded due to small cell counts

34

## Analyses by the Winnipeg Region

The final analysis of the data looked at Winnipeg regional profiles in order to examine geographical differences within the city. According to the crude data, the Downtown/Point Douglas area had the most suicides in both 2002 (14.3 per 100,000) and 2004 (20.5 per 100,000). Both rates were well above the overall city rate of 10.8 per 100,000 in 2002 and 11.4 per 100,000 in 2004 (see Figure 15). Figures comparing community area profiles can be found in Appendix D. Each of the community area profiles will be discussed in turn.

**Figure 15: Winnipeg Crude Rates 2002 & 2004**



| Region | Crude Rate for 2002 (per 100,000) | Crude Rate for 2004 (per 100,000) |
|---|---|---|
| Overall Total | 10.8 | 11.4 |
| Downtown /Point Douglas | 14.3 | 20.5 |
| Inkster /Seven Oaks | 11.2 | 7.8 |
| St. James /Assiniboine South | 7.3 | 7.3 |
| Fort Garry / River Heights | 6.7 | 11 |
| St. Vital /St. Boniface | 12.9 | 8.3 |
| River East /Transcona | 12.2 | 12.2 |

Legend: ☐ Crude Rate for 2004 (per 100,000)  ■ **Crude Rate for 2002 (per 100,000)**
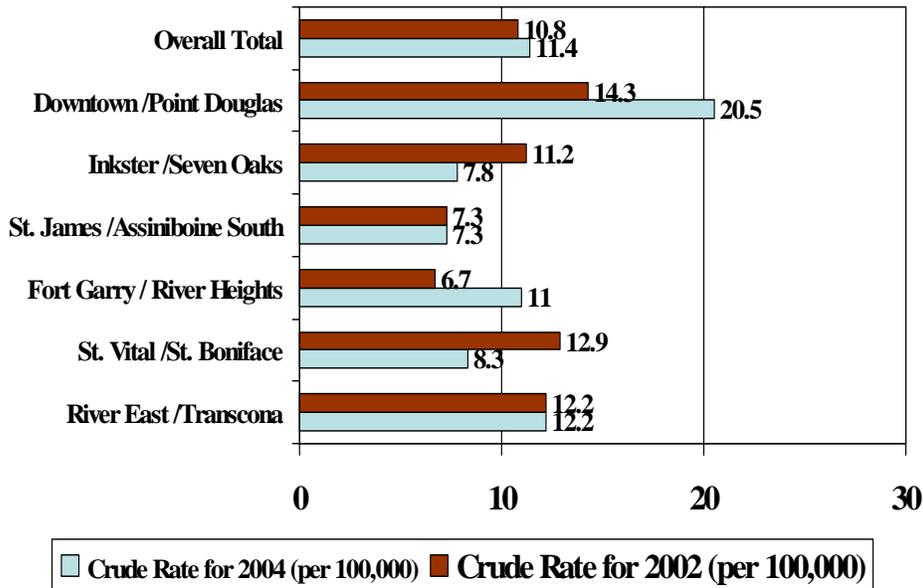
*Downtown/Point Douglas*

In the Downtown/Point Douglas area, 'COD MH & SU' was the most likely diagnostic impression (44%). Two-thirds (67%) were male. This community region also had the youngest population of death by suicide with 72% under the age of 45. Further, nearly two-thirds (63%) died by 'hanging,' which was substantially higher than the other community regions. While the majority (73%) of individuals were non-Aboriginal, there was an over-representation of Aboriginal deaths by suicide. Specifically, 27% of deaths were by Aboriginal people, but they only represent 20% of the Census population in the Downtown/Point Douglas area. Finally, service use was fairly consistent with the other community areas as 65% had at least one type of service use in their last year of life.

*Inkster/Seven Oaks*

Two-thirds (65%) of those who died by suicide were male. In terms of age, 47% were under the age of 45. The largest over-representation gap of Aboriginal suicides was also in the Inkster/Sever Oaks community area. Specifically, Aboriginal people make up 9% of the community population, but represented 23% of the suicide deaths. Moreover, two-fifths (41%) of those who died by suicide had a 'mental health only' diagnostic impression, followed by 'COD MH & SU' at 29%, and 'no disorder' at 23%. Like the Downtown/Point Douglas area, 'hanging' was the most common means of death at 50% of all suicides in the Inkster/Seven Oaks community region. Finally, 69% used at least one type of service in the last year of their life, meaning 31% have no known service use.

*St. James/Assiniboine*

Like the other areas, males were more likely to die by suicide (57%), but the St. James/Assiniboine community had the highest rate of female suicides (43%). Age was split evenly for those who were under 45 and for those who were over 45. Everyone who died by suicide in the St. James/Assiniboine community area in 2002 and 2004 was non-Aboriginal. 'Mental health only' was the most common diagnostic impression (50%). Further, half of the individuals in this community used 'drugs or alcohol' as a means of death. Finally, 64% had at least one type of service use in their last year of life.

*Fort Garry/River Heights*

Two-thirds (67%) of those who died by suicide were male. Most (62%) were over the age of 45 years. The vast majority (93%) were non-Aboriginal. 'Mental health only' was the most common diagnostic impression (57%), followed by 'COD MH & SU' at 33%. Over half (57%) died by 'other means' followed by 'drugs or alcohol' at 29%. Nearly four in five (79%) had at least one type of service use in the last year, while 21% had no known service use. Fort Garry/River Heights had the highest level of service use compared to all the other community areas.

*St. Vital /St. Boniface*

Nearly two-thirds (64%) of those who died by suicide were male. Some 57% were over the age of 45 years old. The vast majority of individuals were non-Aboriginal (89%). In terms of diagnostic impression, 57% were categorized as having a 'mental health only' label, followed by 22% with 'no disorder.' 'Other means' (39%) was the most common method of suicide, followed by 'hanging' (35%), and 'drugs or alcohol' (22%). The St. Vital/St. Boniface community area had the lowest level of service use in the last year of life at 55%, meaning that 45% of individuals who died by suicide had no known service use.

*River East/Transcona*

Similar to the other community areas, men were most likely to have died by suicide (63%). Over half (53%) were over the age of 45 years old. Almost all (92%) were of a non-Aboriginal. Half of those who died by suicide were labelled as having a 'mental health only' diagnostic impression, followed by 'COD MH & SU' (27%), and 'no disorder' at 17%. 'Other means' was the most common method of death (43%), followed by 'hanging' (33%), and 'drugs or alcohol' (17%). Three in five (61%) had some type of service use in their last year of life.

**Discussion**

*Regional or Community Area Differences*

In Manitoba, there has been some research that has looked at the overall data on suicide deaths among adults. For instance, the Manitoba Centre for Health Policy (MCHP) report (2004) found high rates of suicide in the Burntwood and Norman regions of Manitoba. The data in this research is consistent with the provincial report. The data is also consistent with the Penfold et al (2007) report on Patterns of Mental Illness Disorder Diagnoses & Service Use: A Population-Based Study of Winnipeg, that identified striking findings in Point Douglas, Downtown and River Heights noting that along with high treatment prevalence, factors associated with suicide might include poverty, social economic factors, ethnicity and substance abuse.  What is unique about the current mortality review is the profiles of adults with deaths by suicide especially as it relates to community areas in Winnipeg.

In particular, analysis of the Winnipeg region reveals several important differences in the paired community areas. For instance, in the Downtown/Point Douglas community area there are higher rates of 'substance use only' and 'COD MH & SU,' compared to the rest of Winnipeg. In fact, findings from Downtown/Point Douglas mirror the suicide rate as well as the profile (i.e. young males, often Aboriginals, who die by hanging) of northern Manitoba. Conversely, in the St. Boniface/St. Vital community area the profile reflects a higher number of women, an older population (i.e. over 45), who are accessing few services. Given these community differences further research is needed in all the Winnipeg areas in order to understand why there are these unique patterns as well as to determine the best strategy to target at-risk populations.

The research also shows that there are several key findings when the data are compared by areas in Manitoba (North, South, and Winnipeg). For example, the sex breakdown of death by suicide is over 80% male in the North and the South; however, the rate in Winnipeg is significantly lower (64%). Moreover, results reveal that suicide deaths occur in younger populations in the North as well as some Winnipeg community areas, while the southern regions and much of Winnipeg reveal higher rates among the 45-plus group. Given these disparities, suicide prevention strategies need to be designed to reflect regional differences with targeted intervention activities. In addition, more research is needed to investigate these demographic differences.

*Aboriginal Status*

Given the regional differences by Aboriginal status, prevention strategies could be mindful of the higher than proportional rates of Aboriginal suicides throughout Manitoba, but especially in the northern regions. Using the 2001 Census data on the overall Aboriginal population in each of the regions.  It was  found that in the

North, nearly 90% of all suicide deaths were by Aboriginal peoples, yet the overall population for aboriginal people was approximately 80%. Further, the Aboriginal population in southern Manitoba and Winnipeg is approximately 10%, but the suicide rate is between 15-20%. Given these differences, any suicide prevention strategy would be remiss not to include a specific Aboriginal focus in its framework.

*Means of Death*

A significant difference by Manitoba region and means of death was found. In particular, hanging was the predominant method of death in the North, while there was a high rate of suicide using firearms in the South. In Winnipeg, there were proportionally higher rates of suicide for drugs and alcohol as well as for 'other means' (i.e. cutting, jumping, carbon monoxide, and motor vehicle deaths). While the differences in all the regions require more exploration, the significance of hanging over other methods in the North as well as some areas of Winnipeg, warrants further research, especially in relation to the large Aboriginal population in these jurisdictions. Questions that require more consideration include whether there is a 'culture of hanging' that is predominant in the North among Aboriginal peoples and whether there is a 'contagion effect' of hanging where younger populations are modelling familiar suicidal behaviours.

*Diagnostic Impression*

Several important results were found when specific diagnostic impressions were analyzed. One important finding is the significance of substance use problems (both 'COD MH & SU' and 'substance use only'), especially in the Downtown/Point Douglas community area that accounted for 67% of all suicide deaths in Winnipeg. This result is similar to what was identified in the New Brunswick psychological autopsy that, at the time, was the highest rate ever reported in a study of its type. Our Manitoba study supports (at least in some regions) the New Brunswick report, thereby making substance use a significant risk factor.

Equally concerning is the finding that individuals with a 'COD MH & SU' as well as a 'substance use only' diagnostic impression are less involved in receiving interventions, despite having a large number of risks, and thus may lack the necessary support services required to keep them safe. Conversely, individuals with a 'mental health only' diagnostic impression were significantly more likely to receive some type of intervention. Future research needs to explore why 'COD MH and SU' and 'substance use only' groups are less engaged with service systems and what part is due to help seeking behaviours verses what part is due to barriers to seeking services or within the capacities of services to adequately address the needs.

*Diagnostic Comparisons and Key Demographics*

In terms of demographic comparisons by diagnostic impression, there are some noteworthy findings. Although differences between males and females were not statistically significant by diagnostic impression, age was significant. Specifically, individuals with a 'mental health only' diagnostic impression die by suicide at a greater rate in the 45 plus age grouping (49%), while a third of the age group of 18 to 24 were in the 'no diagnosis' category. Of particular interest, however, is when we analyze the tri-variate relationship between sex, age, and diagnostic impression. Therefore, when we examine the issue of sex *and* age, it is found that females over 45 years of age are significantly more likely to have a 'mental health only' diagnostic impression. Certainly, the high number of women over 45 years old with a mental illness is not a surprising finding. However, what is interesting, and worthy of further research, is the connection between women with these characteristics and suicide.

## Strengths and Limitations

There were several strengths stemming from the current research.  One strength is the utilization of the Chief Medical Examiner's data, which provides a better representation of suicides compared to other data sources (for example, Vital Statistics). In Manitoba this research provided the first opportunity to look at detailed information at a regional and community area level from the Chief Medical Examiner's office.

An additional strength has been the collaborative component of this research which has provided an opportunity for the mental health program to work with academics and develop capacity as well as make positive movement toward knowledge translation, Together, the program and the academic partners were able to appraise the new knowledge, contextualize the evidence and assisting in identifying ways the information can be utilized.

Despite these strengths, this research is not without its limitations. There are several methodological and structural limitations, which will be discussed in turn. First, this study does not include children due to the additional complexity regarding accessing child data.

Second, with an overall total of 257 death by suicide during the two-year period, the numbers are not large enough to make definitive conclusions, especially considering the sub-samples required for the bi-variate analyses. It is important to point out, however, that statistically these lower numbers may affect the robustness of the results in terms of statistical power, but compared to several other studies on psychological autopsies (for example, Lesage et al., 1994; Séguin et al., 2005), this sample  is quite large.
Third, there was a lack of information in many of the case files. Overall, there was an adequate amount of information on the suicide event, but often there was

little information on the individual who died by suicide. In general, the auditors found that the further north the suicide occurred, the less likely it would be that in-depth information would be available in the case file. Often, in the northern files, the only source of information was a brief summary report that was sent to the Chief Medical Examiner's office. Upon completion of the data collection process, it was learned that the medical examiner's from the northern regions are allowed to retain their detailed documentation locally, thus leaving less information in the provincial files that were used to infer diagnostic impressions and risk factors.

Fourth, the determination of 'diagnostic impression' (i.e. 'mental health only,' 'substance use only,' 'COD MH & SU,' and 'no disorder') was based on single or group auditors inferences rather than utilizing a more rigorous inter-rater reliability process. Despite this limitation, it is important to point out that the single auditor review process used in this research was similar to other studies (e.g. the New Brunswick report; see Séguin, 2005).

Fifth, data on Aboriginal status was collected when specifically identified as Aboriginal status or by the community and / or postal code (i.e. to determine if the suicide occurred on an Aboriginal reserve) or visual identifiers (i.e. from a picture inserted in the file). As such, the validity of Aboriginal status is uncertain and, thus, results should be interpreted with caution.

Sixth, no information was recorded on the socio-economic status (i.e. income, educational background, and employment status) of individuals who died by suicide because it was not available in the case files. As a result, this potentially important information was not available for consideration in the research.

These limitations may suggest an underestimation of suicide and a misinterpretation of mortality trends in Manitoba, especially due to the lack of information collected in some regions. For instance, we do not know if the lower numbers of a diagnostic impression in some regions are due to the lack of services available in that area or due to a lack of identification of diagnosis on the Chief Medical Examiner's forms. In light of these limitations, the findings from this report need to be interpreted with caution. In particular, it is recommended that this data be used as a starting point for future research rather than a source for identification of definitive conclusions.

## Recommendations

There are several recommendations that stem from the current research, which will be discussed in turn.

*Standardized Forms and Incident Review Processes*

It is important that more work is done to improve data collection policies and practices on suicide completions. In this regard, it is recommended that

standardized reports after a death by suicide be designed and implemented across the province of Manitoba. Included in these reports should be information on known physical, mental health and addictions diagnoses, along with any known service use.  Data should include ethnicity and socio-economic status of the deceased individual.  Given the complexity of this task, it is recommended that a tool be developed and piloted in Point Douglas as well as a northern community, since the current mortality review has identified these areas as having higher than average rates of suicide.

It is also important that 'incident review' processes are created within mental health and addiction services in order to conduct in-depth analyses of suicide deaths. If done, it would be better suited to explore service use (or non-use) as well as investigate structural gaps in the health care system. One suggestion would be to explore the possibility of an ongoing role for mental health specialists to provide clinical expertise in order to assist the Chief Medical Examiner's office in suicide or incident reviews.

*Increased Focus on Primary Care*

It is also recommended that mental health and addiction screening become enhanced in primary care and social service settings. In particular, mental health and addiction assessments should occur in all primary care and social service settings in order to facilitate early intervention across the life span. In this regard, it is important that all mental health and addiction services be culturally sensitive, competent, and relevant for Aboriginal people. Without a specific Aboriginal focus, especially in the North and in Downtown/Point Douglas, any intervention strategies will be less effective. It is also important that primary care and social services recognize that women, over the age of 45, with mental illness histories are at an increased risk for suicide. Given the significant finding of this demographic in our research, it is important that clinicians are asking appropriate questions pertaining to suicidal behaviour to these women.

*Targeted Suicide Prevention Strategies*

In terms of prevention, it is important that targeted prevention strategies are implemented, especially for high risk groups (i.e. young Aboriginal populations as well as middle-aged women with mental illness histories). In particular, prevention strategies should encourage help-seeking behaviour.

Another suggestion would be to use this study as a means of facilitating planning sessions with individual communities around suicide prevention as well as developing targeted strategies for at-risk populations. Given the diversity between Manitoba regions and community areas, it is important that suicide prevention strategies are flexible enough to accommodate these differences.

*Research*

There are several recommendations in regards to research. First, there should be a concerted effort to invest in psychological autopsy processes, especially if the information derived is quite extensive, which would greatly enhance suicide prevention strategies. To this end, a further examination into suicides in Manitoba should gather more detailed information from family members as well as service providers, an approach used in the New Brunswick project (see Séguin, 2005).

Second, it is recommended that future research explore risk factors in communities with high suicide rates in order to determine if there are any unique factors that may be contributing to greater suicidal behaviour. In particular, there needs to be an exploration of the prevalence of treatment utilization as well as other help-seeking behaviour because they are critical in shaping accurate diagnostic impressions. Such research would also be helpful in determining whether there are differences in service-provider practice in various regions. As such, it is hoped that this research will contribute to increasing the identification, and, in turn, the responsiveness to high-risk individuals with mental health and substance use disorders, including co-occurring disorders. If this is accomplished, risk factors could be integrated into assessment and treatment planning guidelines.

Third, future research would benefit from linking the Chief Medical Examiner's Office data with health care and addiction service-use data, including federally collected data on Aboriginal people, in order to examine suicide completions. Such linkages would allow for a more robust analysis, which would help contribute to meaningful prevention and intervention strategies.

There are several benefits to implementing the above recommendations. First, any investment in primary prevention programs would address the root causes and risk factors associated with suicide, addiction, and other forms of mental health distress. Second, creating targeted interventions centered on improving the social and psychological determinants of mental health and well-being would increase protective factors that could strengthen the resiliency of vulnerable individuals when faced with inevitable adversity.  Third, any investment in suicide prevention activities should, over time, strengthen communities as well as individual's overall health and well-being. Fourth, the enhancement of early screening and identification of mental health and addiction problems, followed by timely, culturally appropriate, and adequate treatment, could significantly reduce suicide deaths.

## References

Alberta Mental Health Board (2007). *"What's in a Word? The language of Suicide"*. Retrieved from http://www.amhb.ab.ca/Initiatives/suicidePrevention/Pages/WhatsinaWord TheLanguageofSuicide.aspx

Arsenault-Lapierre, G.; Kim, C.; & Turecki, G. (2004). Psychiatric Diagnoses in 3,275 Suicides: A Meta-Analysis. *BMC Psychiatry*, 4, pp. 37-47.

Balachandra, A. (2003). Office of the Chief Medical Examiner: Annual Review. Manitoba Justice, Winnipeg, Manitoba.

Banerjee, S., Clancy, C. & Crome, I. (2002). Co-existing Problems of Mental Disorder and Substance Misuse (Dual Diagnosis): An Information Manual. Final Report to the Department of Health. London: Royal College of Psychiatrists' Research Unit.

CASP (2004). The CASP Blueprint for a Canadian National Suicide Prevention Strategy. Edmonton: The Canadian Association for Suicide Prevention.

Clayton, Dale and Barcelo, Alberto (1999). The Cost of Suicide Mortality in New Brunswick. *Chronic Diseases in Canada*, 20 (2), pp. 89-95.

Cline, Christie and Minkoff, Kenneth (2002). A Strength-based Systems Approach to Creating Integrated Services for Individuals with Co-occurring Psychiatric and Substance Use Disorders. The New Mexico Department of Health. New Mexico Department of Health, Behavioral Health Services Division.

Dalton, E. J.; Cate-Carter, T. D.; Mundo, E.; Parikh, S. V.; & Kennedy, J. L. (2003). Suicide Risk in Bipolar Patients: The Role of Co-Morbid Substance Use Disorders. *Bipolar Disorders*, 5 (1), pp. 58-61.

Harris, E. C. & Barraclough, B. (1997). Suicide as an Outcome for Mental Disorders: A Meta-Analysis. *British Journal of Psychiatry*, 170 (3), pp. 205-228.

Health Canada (2001). Best Practices in Concurrent Mental Health and Substance Use Disorders.

Inskip, H.M.; Harris, E.C.; & Barraclough, B. (1998). Lifetime Risk of Suicide for Affective Disorder, Alcoholism and Schizophrenia. *British Journal of Psychiatry*, 172 (1), pp. 35-37.

Lasage, A. D.; Boyer, R.; Grunberg, F.; Vanier, C.; Morissette, R.; Menard-Buteau, C.; Loyer, M. (1994). Suicide and Mental Disorders: A Case-Control Study of Young Men. *The American Journal of Psychiatry*, 151 (7), pp. 1063-1068.

MCHP (2004). Patterns of Regional Mental Illness Disorder Diagnoses and Service Use in Manitoba. Winnipeg, Manitoba Centre for Health Policy.

Minkoff, K. (2000). An Integrated Model for the Management of Co-Occurring Psychiatric and Substance Disorders in Managed Care Systems. *Disability Management and Health Outcomes*, 8 (5), pp. 251-257.

Murray, C.J.L. & Lopez, A.D. (1996). The Global Burden of Disease: A Comprehensive Assessment of Mortality and Disability from Diseases, Injuries, and Risk Factors in 1990 and Projected to 2020. Cambridge, MA: Harvard University Press.

Murray, G. E. (2000). Psychiatric Aspects of Suicidal Behaviour: Substance Abuse. In: Hawton, K.; van Heeringen, K., eds. *The International Handbook of Suicide and Attempted Suicide*. Chichester: Wiley.

Penfold, Robert; Crisostomo, Lesley; Enns, Murray; Chipperfield, Susan; Strutt, Carolyn; Bowen, Sarah; Fransoo, Randy; Martens, Patricia (2007). Patterns of Mental Illness Disorder Diagnoses & Service Use: A Population-Based Study of Winnipeg. Winnipeg: Manitoba Centre for Health Policy.

Rossow, Ingeborg (2000). Suicide, Violence and Child Abuse: A Review of the Impact of Alcohol Consumption on Social Problems. *Contemporary Drug Problems*, 27, pp. 397-434.

Séguin, Monique, et al (2005). Research Project on Deaths by Suicide in New Brunswick: April 2002- May 2003. Douglas Hospital Research Centre, Government of New Brunswick.

Séguin, Monique; Lesage, Alain; Chawky, Nadia; Guy, Andree; Daigle, France; Girard, Gina; and Turecki, Gustovo (2006). Suicide Case in New Brunswick From April 2002 to May 2003: The Importance of Better Recognizing Substance and Mood Disorder Comirbidity. *Canadian Journal of Psychaitry*, 51 (9), pp 581–586.

SIEC Alert #51 (2003). Substance Abuse in Combination with Other Mental Illnesses: Do They Increase Suicide Risk? Calgary: Centre for Suicide Prevention.

Statistics Canada (2006). Mortality, Summary List of Causes, 2003. Cat. No.
84F0209XWF. Ottawa: Industry Canada.

Statistics Canada (1996).  Suicide data: 1996 retrieved from
http://www.statcan.ca/.

Winnipeg Regional Health Authority (2006). A Framework for Suicide Prevention
Planning in Manitoba. Unpublished report.

Winnipeg Regional Health Authority (2003). Continuity of Care Feasibility Study.
Unpublished report.

World Health Organization (2000). Preventing Suicide: A Resource Guide for
Primary Health Care Workers. Geneva: Mental and Behavioural
Disorders, Department of Mental Health, World Health Organization.

**Suicide Mortality Review Audit Tool**

**FILE CODE:**

1. **Sex:**
   ☐ Male
   ☐ Female
   ☐ Other: _____

2. **Age:**
   ☐ Under 18
   ☐ 18 to 24
   ☐ 25-44
   ☐ 45-64
   ☐ 65-74
   ☐ 75+
   ☐ Unknown/ Not Identified

3. **Cultural/Racial Origins**
   ☐ Caucasian
   ☐ Aboriginal
   ☐ Other (specify): _____
   ☐ Unknown/ Not Identified

4. **Relationship Status**
   ☐ Never married
   ☐ Married
   ☐ Common-law
   ☐ Separated
   ☐ Divorced
   ☐ Widowed
   ☐ Other (specify): _____
   ☐ Unknown/ Not Identified

5. **Axis I & II Disorders (Check or list all that apply)**
   ☐ Depression
   ☐ Anxiety Disorder
   ☐ Personality Disorder
   ☐ Adjustment Disorder
   ☐ Bipolar Disorder
   ☐ Schizophrenia
   ☐ Acquired Brain Injury
   ☐ Post Traumatic Stress (PTSD)

- ☐ Substance Abuse & /or Dependency
- ☐ Eating Disorder
- ☐ Panic Disorder
- ☐ Attention Deficit (ADHD/ADD)
- ☐ Somatoform Disorder
- ☐ Fetal Alcohol (FAS/FAE)
- ☐ Obsessive Compulsive (OCD)
- ☐ Pervasive Developmental
- ☐ Neurodevelopmental Disorders
- ☐ Autism Spectrum Disorders including Aspergers
- ☐ Mental Retardation
- ☐ Sexual Disorders
- ☐ Conduct Disorders
- ☐ Intermittent Explosive Disorder,
- ☐ Opposition Defiant Disorder,
- ☐ Tourettes,
- ☐ No disorder specified
- ☐ Other (specify): _____

**6. Co-occurrence of disorders (Check one only)**
- ☐ No Disorder
- ☐ MH Disorder(s) only
- ☐ SU Disorder(s) only
- ☐ COD MH & SU
- ☐ Unknown/ Not Identified

**7. Community Area of last known residence at time of death**
- ☐ WRHA Assiniboine South
- ☐ WRHA Downtown
- ☐ WRHA Fort Garry
- ☐ WRHA Inkster
- ☐ WRHA Point Douglas
- ☐ WRHA River East
- ☐ WRHA River Heights
- ☐ WRHA Seven Oaks
- ☐ WRHA St Boniface
- ☐ WRHA St James
- ☐ WRHA St. Vital
- ☐ WRHA Transcona
- ☐ Brandon RHA
- ☐ Burntwood RHA
- ☐ Cental RHA
- ☐ Parkland RHA
- ☐ South Eastman RHA
- ☐ Interlake RHA
- ☐ NOR- MAN RHA

- ☐ North Eastman  RHA
- ☐ Assiniboine RHA
- ☐ Churchill RHA
- ☐ Other (specify): _____
- ☐ Unknown/ Not Identified

8. **Current Living Situation**
- ☐ Independent
- ☐ Approved Group Home (1-3 beds) – (Formerly Approved Facility)
- ☐ Licensed Group Home (4+ beds) – (Formerly Licensed Facility)
- ☐ Assisted/Supported Living – Excludes Approved and Licensed Group Homes.
- ☐ Supervised Non-facility – Excludes Approved and Licensed Group Homes.
- ☐ Supervised Facility – Excludes approved or licensed group homes.
- ☐ Personal Care Home
- ☐ Treatment Institution
- ☐ Correctional Facility
- ☐ Shelter
- ☐ No Fixed Address
- ☐ Other (specify): _____
- ☐ Unknown/ Not Identified

9. **Source of Income**
- ☐ Employment Income
- ☐ Employment & Income Assistance (EIA)
- ☐ Employment Insurance (EI)
- ☐ Pension
- ☐ Disability (Private)
- ☐ Other (specify): _____
- ☐ Unknown/ Not Identified

10. **Highest level of education attained:**
- ☐ Never attended high school
- ☐ Partial high school
- ☐ High school diploma or GED
- ☐ Some college or technical training
- ☐ College or technical diploma
- ☐ Some University
- ☐ Bachelors Degree
- ☐ Graduate Degree
- ☐ Other: specify
- ☐ Unknown/ Not Identified

## 11. Employment Status
- ☐ Own business
- ☐ Employed
- ☐ Unemployed
- ☐ Retired
- ☐ Other (specify): _____
- ☐ Unknown/ Not Identified

## 12. Impression of Physical Health Status
- ☐ Excellent: client never speaks of health concerns
- ☐ Good: client is generally healthy & discusses few physical issues
- ☐ Fair:  client frequently identifies physical issues that impact on day to day living
- ☐ Poor: client has ongoing medical conditions that negatively impact on day to day living
- ☐ Life Threatening Condition (specify): _____
- ☐ Unknown/ Not Identified

## 13. Known Medical conditions (Check or list all that apply))
- ☐ Diabetes
- ☐ Cardiovascular Disease
- ☐ Arthritis
- ☐ Fibromylagia
- ☐ HIV
- ☐ Other (specify): _____
- ☐ Unknown/ Non Identified

## 14. Known High Risk Behaviours (Check or list all the apply)
- ☐ Verbal Aggression to others
- ☐ Physical Aggression to others
- ☐ Impulsive Behaviours & or Violent Outbursts
- ☐ Self harm
- ☐ Suicidal behaviours
- ☐ Unmanaged symptoms of Psychosis
- ☐ Vulnerable to harm from others
- ☐ Inadequate self management with risk for increased physical or mental deterioration
- ☐ Unstable housing or homelessness
- ☐ Arson
- ☐ Sexual offenses,
- ☐ Theft,
- ☐ Fire Setting,
- ☐ Sexually Inappropriate Behaviour
- ☐ Substance Abuse
- ☐ Gambling

- ☐ Lack of adequate precautions for behaviours likely to acquiring an HIV infection
- ☐ Other behaviours resulting in contact with the criminal justice system
- ☐ Other (specify): _____
- ☐ Unknown/ Not Identified

**15. Involvement in other Public Service Systems: (Check or list all that apply)**
- ☐ Community Living
- ☐ Justice / Corrections
- ☐ Youth Transition Services
- ☐ Child Welfare involvement for parenting of children
- ☐ Home Care
- ☐ Other (specify): _____
- ☐ Unknown/ Not Identified

**16. Death Preventable:**
(Select one only)
- ☐ Totally unforeseen
- ☐ No reasonable way to counter the existing risk factor
- ☐ Death may have been prevented, but was difficult to anticipate
- ☐ Death was possibly preventable if measures had been taken to reduce known risks
- ☐ ~~Death was easily preventable because there are effective interventions that would likely have modified the predisposing condition~~ (remove 06/19/06)
- ☐ Unknown/ Not Identified

**17. Means of death**
- ☐ Hanging
- ☐ Drugs & Alcohol
- ☐ Firearms
- ☐ Drowning
- ☐ Carbon Monoxide Poisoning
- ☐ Cutting/ Piecing
- ☐ Motor Vehicle accident related
- ☐ Other (specify): _____
- ☐ Unknown/ Not Identified

**18. Precipitating Event (Check or list all that apply)**
- ☐ Worsening mental health or addictions problems
- ☐ Break ups
- ☐ Couples (relationship) conflict
- ☐ Losses
- ☐ School, work or financial problems
- ☐ Other types of events (specify) _____
- ☐ No event identified

**19. Utilization of Services**

Check most recent known use for each category.
Leave blank if no use indicated or if unknown.

| Known service use | In last month | In last year | In lifetime |
|---|---|---|---|
| Primary Care / Medical Services | | | |
| Hospital Emergency Department | | | |
| Front line health and social service practitioner (Nurse, SW, school professional, police, etc) | | | |
| Private or public Mental Health specialized services | | | |
| Private or public Addiction specialized services | | | |
| Volunteer Services or paraprofessional services (e.g. hotlines, clergy, self help) | | | |
| Other (specify): _____ | | | |

**20. Services Used in Past year**

(Choose one only)
- ☐ No service use identified for past year
- ☐ One type of service only used in past year
- ☐ Two types of services used in past year
- ☐ Three or more types of services used in past year

**21. Interventions received in last year (Check or list all that apply)**
- ☐ Psychiatric Medication
- ☐ Assessment for mental health problems or substance use
- ☐ Residential treatment
- ☐ Personal Care Home
- ☐ Psychiatric hospitalization
- ☐ Medical hospitalization
- ☐ Substance use detox
- ☐ Medical follow up of physical condition
- ☐ Case Worker follow up
- ☐ Referral for Service
- ☐ Psychotherapy
- ☐ Crisis Intervention
- ☐ Peer Counselling
- ☐ Day Programs
- ☐ Other (specify) _____
- ☐ Unknown/ Not Identified

**22. Needs identified but not addressed: (Check all that apply)**
- ☐ Depression & suicide risk assessment
- ☐ Continuity of care and follow up services
- ☐ Case coordination across providers for multiple problems
- ☐ Proactive outreach to engage
- ☐ Intensive MH follow up in community
- ☐ Outreach for addictions interventions and follow up
- ☐ Treatment protocols for integrated solutions to multiple problems (e.g. COD)
- ☐ Other (Specify) _____
- ☐ No unmet needs identified

**23. Patient safety was compromised by a system issues (Check or list all that apply)**
- ☐ Under recognition of service need
- ☐ Lack of access to mental health services
- ☐ Lack of access to addiction services
- ☐ Ineffective engagement and retention
- ☐ Lack of integrated care
- ☐ Poor service coordination
- ☐ Inappropriate treatment matching for stage of change or phase of recovery
- ☐ Inadequate discharge planning and follow up services.
- ☐ Other (specify): _____
- ☐ No compromising system issues identified

Manitoba Regional Health Authorities

**North** includes: Burntwood, Norman, and Churchill
**South** includes: North Eastman, Parkland, Assiniboine, Brandon, Central, South Eastman, and Interlake
**Winnipeg**
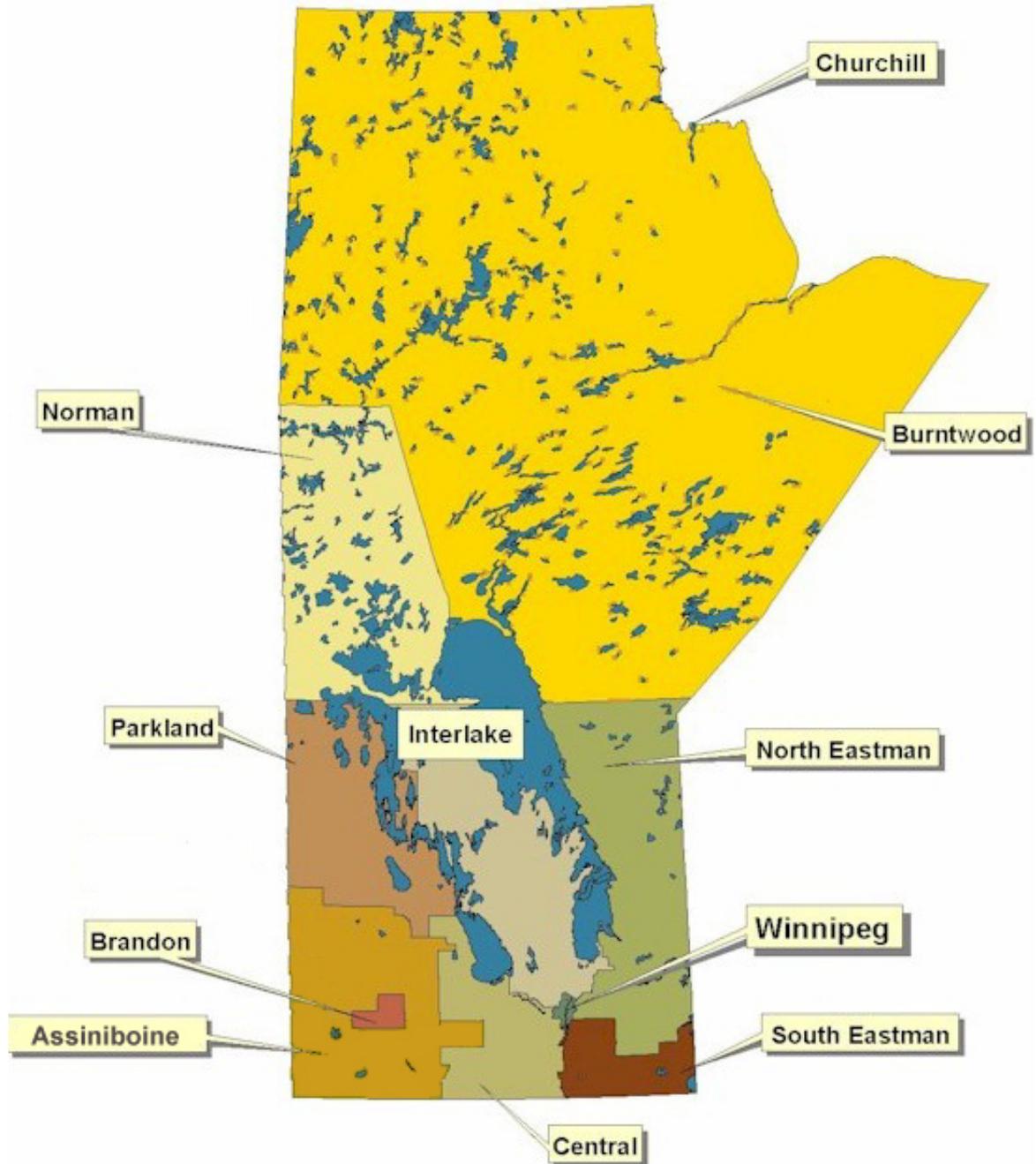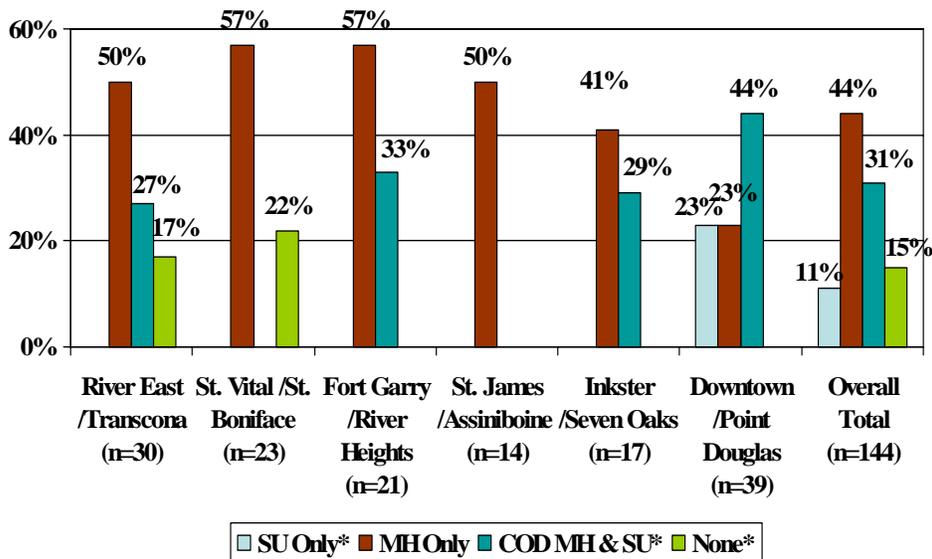
# Appendix C

## WINNIPEG HEALTH REGION NEIGHBOURHOODS
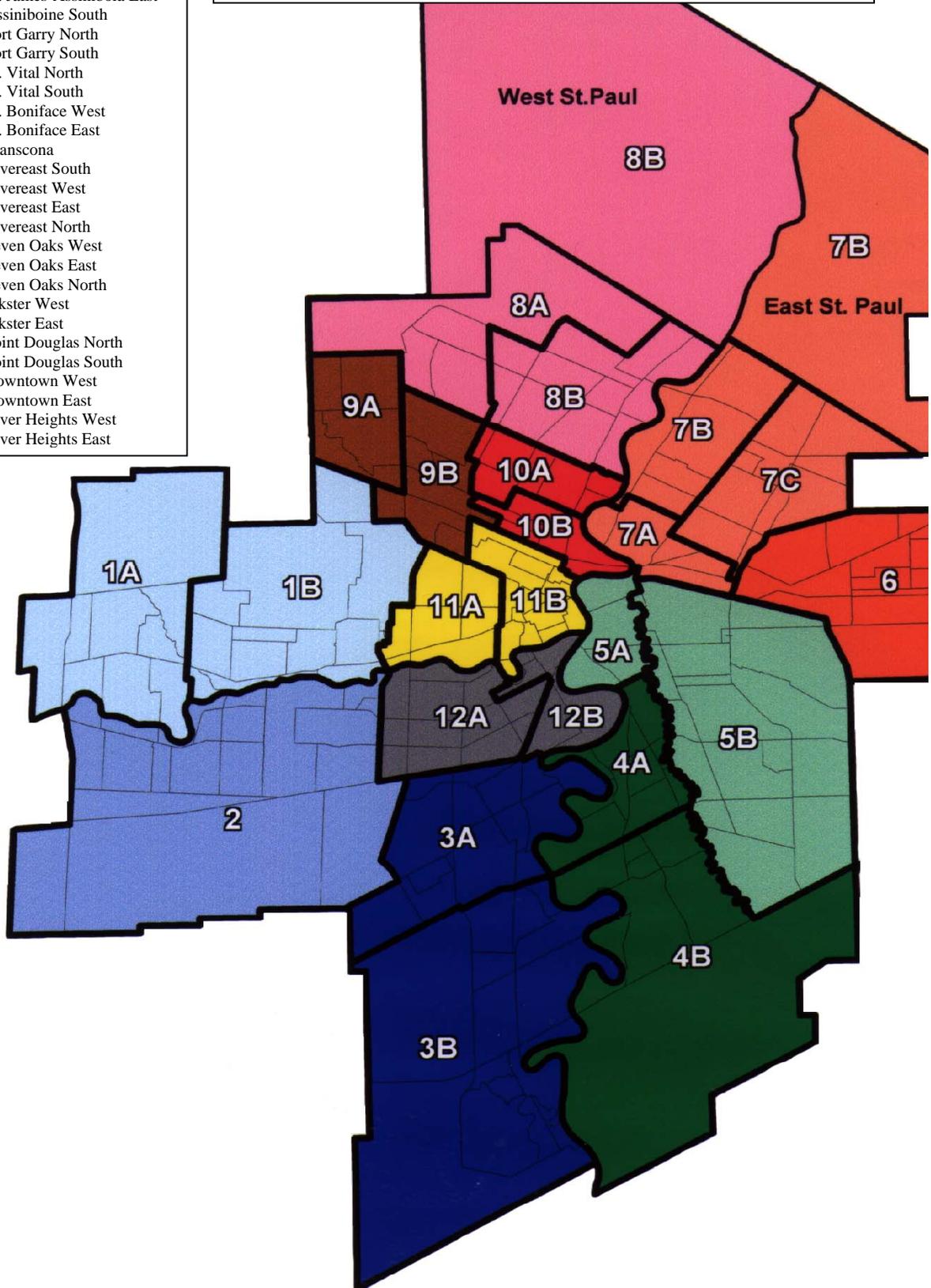
# Figures of the Paired Community Areas within the City of Winnipeg

**Figure 16: Winnipeg Community Area by Diagnostic Impression\***



* Cells counts too small to report
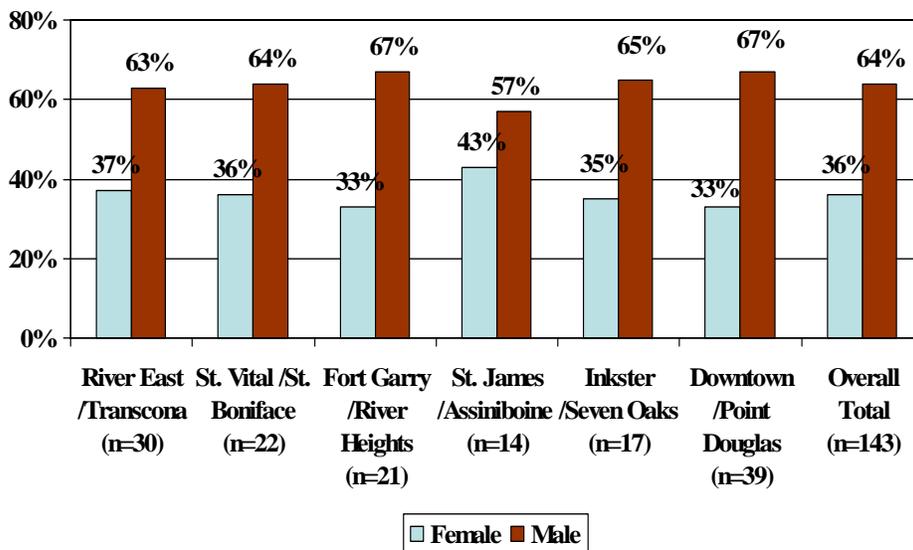
**Figure 17: Winnipeg Community Area by Sex**

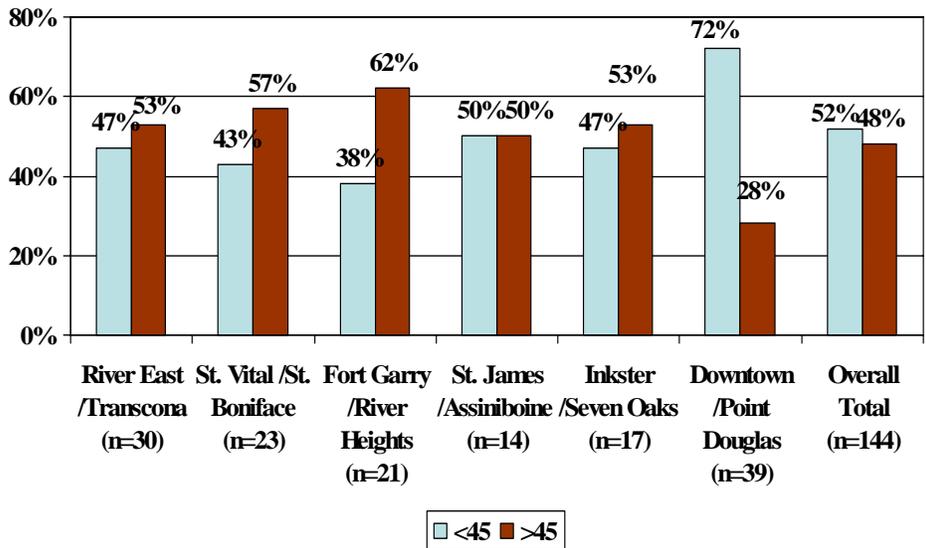**Figure 18: Winnipeg Community Area by Age**



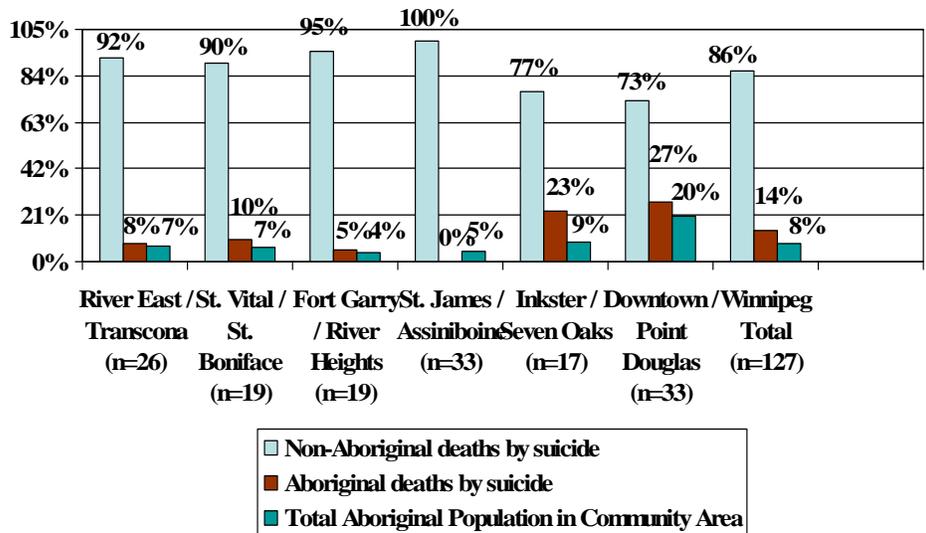Legend: □ <45  ■ >45

**Figure 19: Winnipeg Community Area by Aboriginal Status**



Legend:
□ Non-Aboriginal deaths by suicide
■ Aboriginal deaths by suicide
■ Total Aboriginal Population in Community Area

**Figure 20: Winnipeg Community Area by Means of Death\***



Legend: Drugs or Alcohol | Firearms* | Hanging* | Other*
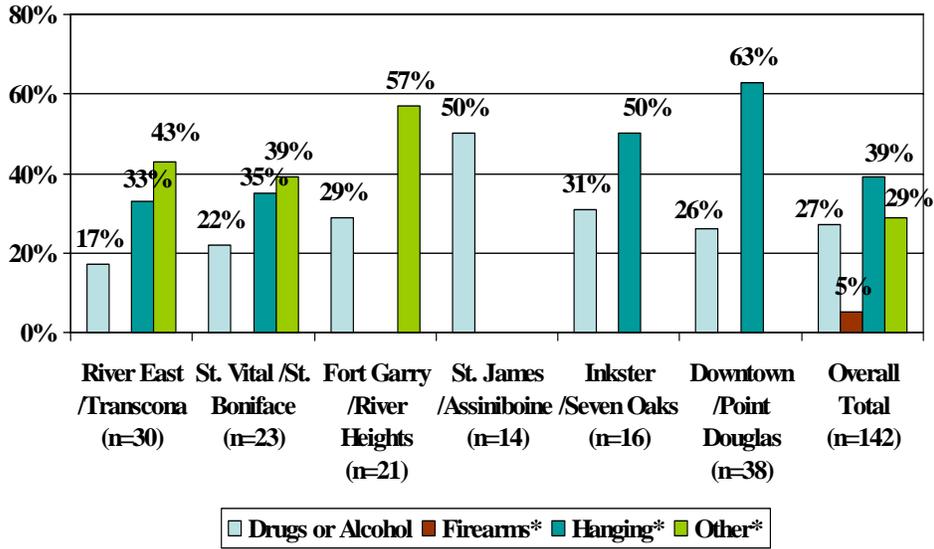
\* Cells counts too small to report

**Figure 21: Winnipeg Community Area by Service Use**



Legend: No | Yes