



Rural Dementia Action Research (RaDAR) Team  
and  
Health Quality Council



2015

A Multi-Method Investigation  
of Dementia and Related Services  
in Saskatchewan  
FINAL REPORT AND RECOMMENDATIONS

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### Abbreviations used throughout the report:

AD = Alzheimer's disease  
ADI = Alzheimer's Disease International  
ADRD = Alzheimer's disease and related dementias  
AM Care = Morning care  
ASOS = Alzheimer Society of Saskatchewan  
CM = Case Manager  
HC = Home Care  
HQC = Health Quality Council  
HS Care = Bedtime care  
LTC = Long-term Care  
MMSE = Mini Mental State Examination  
MoCA = Montreal Cognitive Assessment  
PAR = Population at risk  
PCH = Private Care Home  
PRN = When necessary  
PT/OT = Physical Therapy/Occupational Therapy  
RaDAR Team = Rural Dementia Action Research Team  
RN = Registered Nurse  
SW = Social Worker  
WHO = World Health Organization

This study was conducted, in part, with data provided by the Saskatchewan Ministry of Health to the Health Quality Council. The interpretations and conclusions herein do not necessarily represent those of the Saskatchewan Ministry of Health or Government of Saskatchewan.



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# Executive Summary

## Background

Worldwide, it is estimated that there is one new (incident) case of dementia every 4 seconds, or 7.7 million incident cases each year (WHO and ADI 2012). The most recent estimates show that 44 million people now live with dementia (prevalence), projected to increase to 135 million by 2050 (Prince et al. 2013a). Among individuals aged 60 years and over in 2010, dementia prevalence was between 5-7% worldwide; dementia onset before the age of 65 (i.e., early onset dementia) was estimated to account for 6-9% of all prevalent cases (WHO and ADI 2012). International recognition of the association between population aging and the growing numbers of individuals with chronic and degenerative diseases has resulted in greater attention on dementia as a significant global health challenge (WHO and ADI 2012).

In 2011, a planning session hosted by the Rural Dementia Action Research (RaDAR) Team and attended by key stakeholders highlighted some stark deficiencies in our knowledge about the epidemiology of dementia in the province of Saskatchewan and the nature of related services available to individuals and their families. To date, little research has been carried out to examine the scope of dementia and dementia care across the province. Although published *estimates* of dementia incidence and prevalence for Saskatchewan do exist, the most recent estimates are based on a combination of 1991 data from the Canadian Study of Health and Aging and 2005 data from a review of European Union studies (Smetanin et al. 2009).

Epidemiological data that is as current as possible, and that combines both community-based and long-term data, can inform policy decisions that affect individuals with dementia and their families living in every corner of the province. To this end, this study provides an up-to-date comprehensive picture of the epidemiology of dementia in the province of Saskatchewan - based on physician, hospital, prescription drug, and long-term care data - as well as an overall scan of the availability and quality of local services for individuals with dementia in the province.

## Objectives

In partnership with the **Saskatchewan Health Quality Council**, this report involves a comparison of actual to best practices in dementia care, with three components:

- 1) A review of best practices across the care continuum of health and social services for individuals with dementia and their families
- 2) An analysis of administrative health data to determine the 12-month incidence and prevalence of dementia among individuals aged 45 and older in the province of Saskatchewan by database of identification, demographic characteristics (age group, sex, and rural/urban residence), and health region
- 3) An environmental scan of dementia-related services and resources across the continuum of care, specifically service availability and primary health care orientation of such services, provincially and by health region

## Methods

For the **best practice review**, 12 national dementia plans were identified from the Alzheimer Disease International website; nine plans were evaluated with a qualitative narrative approach to identify the common themes in best practices in each country's plan. For the **administrative data analysis**, data were extracted from

10 provincial health databases linked by a unique health services number. The cohort included individuals aged 45 years and older at their first-ever recorded identification of dementia in one of four administrative health databases (Hospital Discharge Abstracts, Physician Service Claims, Prescription Drug, and RAI-MDS, i.e., Long-term Care). The numbers of incident (new) and prevalent (existing) dementia cases were calculated for the 12-month period from April 1, 2012 to March 31, 2013. The environmental scan data were collected June to December, 2013 using a cross-sectional survey of Home Care Assessors serving communities in Saskatchewan. We evaluated the availability of services across the care continuum (health promotion, primary health care, post-diagnostic care, home care, and long-term care) and the orientation of dementia-related services toward key dimensions of primary health care, in communities served by the Assessors.

## Key Findings

The main findings for each of the three components of this study are reviewed below.

### Best Practice Review

Nine national dementia plans were included in the review of best practices: Australia, England, Finland, France, Norway, Scotland, Northern Ireland, United States, and Wales. The 6 best practice themes identified in the nine national dementia plans were as follows:

- **Expanding Dementia Research** involves an increased emphasis on growing the dementia research field
- **Quality improvement in Care Services** encompasses improved access, availability, and coordination of current and future services throughout the disease stages along the continuum of care
- **Raising Public Awareness** includes recommendations to assist with the recognition of symptoms and reduction of stigma
- **Early/Timely Diagnosis and Treatment** emphasizes disseminating information to the public and health care professionals, to improve early diagnosis and encourage help seeking in early stage
- **Staff Training** involves increasing resources to improve awareness, knowledge, and training among health care professionals responsible for providing care to individuals with dementia
- **Family Support** emphasizes the need to improve the availability and appropriateness of community support and respite options to caregivers and families of individuals with dementia

### Administrative Data Analysis

The administrative data analysis employed linked administrative databases in the province of Saskatchewan to determine the 12-month incidence and prevalence of dementia among individuals aged 45 and older in the province of Saskatchewan by database of identification, demographic characteristics (age group, sex, and rural/urban residence), and health region. Key findings regarding the incidence and prevalence of dementia as identified in the administrative data analysis are reviewed below.

#### Incidence of dementia (2012/2013) - Province of Saskatchewan\*

- A total of 3,270 incident (new) cases of dementia were identified among adults 45 years and older in Saskatchewan during the 12-month period of 2012/13. The unadjusted incidence rate of dementia was 7.28 per 1,000 population at risk (PAR).
- There were 1,887 incident cases among females and 1,383 incident cases among males aged 45 years and older. The unadjusted incidence rate was 31% higher among females than males (8.25 vs. 6.28 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

- Within every health region, similar to the province overall, the unadjusted incidence rate of dementia was higher among females than males. In 6 health regions, these differences were statistically significant ( $p < 0.05$ ).
- **Adults 45 to 64 years of age contributed 8% of incident cases (247/3,270), those aged 65 to 84 contributed 41% (1,343/3,270), and 51% (1,680/3,270) were contributed by adults aged 85 years and older.** The unadjusted incidence rate increased 152 times between the group aged 45 to 54 and those aged 85 years and older (0.46 vs. 69.73 per 1,000 PAR).
- The greatest proportion of all 12-month incident cases in 2012/13 was first identified in long-term care (34.98%), followed closely by a diagnosis in physician services claims (29.94%), and a diagnosis in hospital (28.53%). Of note, 6.54% of all incident cases were first identified as a result of a cholinesterase inhibitor prescription.
- Of the incident cases that were *first identified in long-term care* in 2012/13, 79.72% (912/1,144) were identified at the point of admission. The remaining 20.28% (232/1,144) were admitted to long-term care prior to April 1, 2012 (in some cases by many years) and were not identified as having dementia until 2012/13. Therefore, of *all* incident cases of dementia, **27.89% (912/3,270) were first identified with dementia at the point of admission to long-term care.**
- There were 1,133 incident cases among rural residents and 2,105 incident cases among urban residents. Among those aged 85 years and older, the unadjusted incidence rate was 14% higher among rural than urban residents (a statistically significant difference  $p < 0.05$ ). Within all other age groups, the differences in unadjusted incidence rates between rural and urban residents were not statistically significant.
- The incidence (and population at risk) was highest in Saskatoon Health Region, where a total of 880 new cases were identified for the 2012/13 12-month period. The incidence (and population at risk) was lowest in the Northern Health Regions, where a total of 32 cases were identified for the same 12-month period.
- The age- and sex-adjusted incidence rate was highest in Sun Country Health Region (8.77 per 1,000 PAR) and second highest in Heartland Health Region (8.63 per 1,000 PAR). These adjusted incidence rates were 15-17% higher than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). The difference between each of these adjusted rates and the adjusted rate for all health regions combined was statistically significant ( $p < 0.05$ ).
- The age- and sex-adjusted incidence rates were lowest in Prince Albert Parkland (6.59 per 1,000 PAR) and the Northern Health Regions (6.66 per 1,000 PAR). These rates were 13-14% lower than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). The difference between each of these adjusted rates and the adjusted rate for all health regions combined was not statistically significant.

### Prevalence of dementia (2012/2013) – Province of Saskatchewan\*

- A total of 13,012 prevalent (existing) cases of dementia were identified among adults 45 years and older in Saskatchewan during the 2012/13 12-month period; the unadjusted prevalence rate of dementia was 28.16 per 1,000 population at risk (PAR).
- Overall, the 12-month unadjusted prevalence rate among individuals aged 45 years and older was 3.9 times the unadjusted incidence rate (28.16 vs. 7.28 per 1,000 PAR).
- There were 8,099 prevalent cases among females and 4,913 prevalent cases among males aged 45 years and older. The unadjusted prevalence rate was 57% higher among females than males (34.19 vs. 21.82 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).
- Within every health region, similar to the province overall (34.49 vs. 22.09 per 1,000 PAR), the prevalence rate of dementia was higher among females than males. These sex differences were statistically significant in every

health region ( $p < 0.05$ ) except the Northern Health Regions, ranging from a difference of 73% in Kelsey Trail (41.46 vs. 23.96 per 1,000 PAR) to a difference of 29% in Prairie North (28.08 vs. 21.79 per 1,000 PAR).

- **Adults 45 to 64 years of age contributed 8% of prevalent cases (1,087/13,012), those aged 65 to 84 accounted for 39% (5,078/13,012), and adults aged 85 years and older accounted for 53% (6,847/13,012).** Overall, the unadjusted prevalence rate was 160 times higher among adults aged 85 and older than among those 45 to 54 years of age (221.30 vs. 1.38 per 1,000 PAR).
- The greatest proportion of all 12-month prevalent cases in 2012/13 was first identified by a diagnosis in physician services claims (40.16%). A further 24.72% were first identified in long-term care, 23.84% by a diagnosis in hospital, and 11.28% by a cholinesterase inhibitor prescription.
- Of the prevalent cases *that were first identified in long-term care* in 2012/13, 68.89% (2,216/3,217) were identified at the point of admission to long-term care, and 31.12% (1,001/3,217) were identified 30 days or longer after admission. Therefore, of *all* prevalent cases of dementia, 17.03% (2,216/13,012) were first identified with dementia at the point of admission to long-term care.
- Among all adults aged 45 years and older, there were 4,394 prevalent cases among rural residents and 8,497 prevalent cases among urban residents. Among those younger than 85 years, the unadjusted prevalence rates were higher among urban than rural residents; among those aged 85 years and older, the unadjusted prevalence rate was 13% higher among rural than urban residents. Among all age groups combined, the unadjusted prevalence rate was 6% higher among urban than rural residents. All rural vs. urban differences were statistically significant ( $p < 0.05$ ).
- Prevalence (number of existing cases) ranged from 126 to 3,286 across the health regions. The prevalence (and population at risk) was highest in Saskatoon Health Region, where a total of 3,286 existing cases were identified for the 2012/13 12-month period. Regina Qu'Appelle Health Region had the second highest prevalence at 3,041 cases. The prevalence (and population at risk) was lowest in the Northern Health Regions, where a total of 126 cases were identified for the same 12-month period.
- The age- and sex-adjusted prevalence rates ranged from 25.87 to 31.91 per 1,000 PAR across the health regions. The adjusted prevalence rate was highest in Prince Albert Parkland Health Region (31.91 per 1,000 PAR) and second highest in Sun Country Health Region (30.55 per 1,000 PAR). These adjusted prevalence rates were 8-13% higher than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). Two additional health regions also had adjusted prevalence rates that were statistically significantly higher ( $p < 0.05$ ) than all health regions combined: Sunrise at 29.40 and Regina Qu'Appelle at 28.75 per 1,000 PAR).
- The age- and sex-adjusted prevalence rate was lowest in the Northern Health Regions (25.87 per 1,000 PAR). This adjusted rate was 9% lower than the adjusted rate for all health regions combined (28.16 per 1,000 PAR), which was not a statistically significant difference. The adjusted prevalence rate in the Saskatoon Health Region (26.45 per 1,000 PAR) was 6% lower than the adjusted rate for all health regions combined; this difference was statistically significant ( $p < 0.05$ ).

\* Results are also presented by health region within the current report, as listed in the Table of Contents.

## Key conclusions

The incidence and prevalence of dementia found in the current study likely underestimate the true epidemiology of dementia, since previous studies have shown that between 31% and 69% of *primary care patients with dementia* do not receive a documented diagnosis (Boustani et al. 2003; Bradford et al. 2009; van den Dungen et al. 2012). Therefore the true number of incident cases over a 12-month period in Saskatchewan may vary between 4,700 and 10,500. As shown in Tables 105 and 106 (see Discussion section of this report), the *Rising Tide* report (Smetanin et al. 2009) projected 4,154 incident cases and 18,332 prevalent cases of dementia in

Saskatchewan in the year 2012, based on previous field studies of individuals living in the community and long-term care. When compared to these *Rising Tide* projections, our findings would suggest that only 79% of incident cases (3,270/4,154) and 71% of prevalent cases (13,012/18,332) were diagnosed or otherwise identified; 21% of incident cases and 29% of prevalent cases were not diagnosed or otherwise identified.

*Please refer to the Discussion section of this report (p. 135) for additional key conclusions regarding the administrative data analysis.*

## Environmental Scan

The purposes of the environmental scan were to determine, within each of the 13 health regions of the province of Saskatchewan and for the province as a whole: 1) the availability of dementia-related services and resources across the continuum of care, and 2) the orientation of dementia-related services toward key dimensions of primary health care. The key findings from the environmental scan are reviewed below.

### Availability of Dementia-related Services – Province of Saskatchewan\*

- **Health Promotion Programs** related to dementia care were reported to be widely unavailable according to more than half of respondents.
- **Primary Health Care** Multidisciplinary team assessment and Nurse Practitioners were unavailable in approximately half of the communities served by respondents.
- **Post-diagnosis Support** More than half of respondents reported that post-diagnostic support in the form of private caregiving, caregiver support groups, and counselling for diagnosed individuals was not available in their communities.
- **Home Care** services that were unavailable, according to the majority of respondents, were night respite, transportation to health care, and weekend respite.
- **Long-term Care** counselling for individuals with dementia and caregivers was reported to be widely unavailable. Long-term care housing that was more likely to be unavailable included assisted living options and special care units.

### Primary Health Care Orientation of Dementia-related Services – Province of Saskatchewan\*

- **Information and Education.** Overall, respondents perceived community-level dementia-related information and education to be inadequate.
- **Accessibility.** Overall, respondents held somewhat negative perceptions on the dimension of *Accessibility* of dementia-related services.
- **Population Orientation.** Respondents held somewhat negative views overall on *Population Orientation*, (i.e., community fit).
- **Coordinated Care.** Perceptions on overall *Coordinated Care* were in the neutral range.
- **Comprehensiveness of Care.** Of the 6 dimensions considered, *Comprehensiveness of Care* fared the most favorably with somewhat positive views overall.
- **Quality of Care.** *Quality of Care* overall was viewed neutrally.
- According to a **single summary item**, environmental scan respondents perceived the amount of supportive resources and services available in the community to be somewhat *inadequate* overall.

\* *Results are also presented by health region within the current report, as listed in the Table of Contents.*

*Please refer to the Discussion section of this report (p. 139) for key conclusions regarding the environmental scan.*

## Recommendations for Action

Recommendations for action to improve dementia care in Saskatchewan are offered below, based on the report findings. These recommendations are presented in full at the end of the report.

1. **Include dementia in the provincial Chronic Disease Management Quality Improvement Program**, thereby establishing a patient registry and decision support tools (standardized care) for health care professionals similar to other chronic conditions (e.g., Diabetes Mellitus, Chronic Obstructive Pulmonary Disease, Coronary Artery Disease, Congestive Heart Failure).
2. **Track quality indicators of dementia care provincially and by health region**, to ensure that individuals are properly assessed, diagnosed, and managed within the health care system.
3. **Improve and encourage access to a timely and accurate diagnosis.**
4. **Ensure that individuals with dementia and their families are adequately supported.**
5. **Review the *Provincial Strategy for Alzheimer Disease and Related Dementias in Saskatchewan* (released in 2004) and consider aligning with the proposed national strategy while reflecting the needs of individuals with dementia and their families living in Saskatchewan.**

*Please refer to the Recommendations for Action section of this report (p. 141) for additional recommendations arising from the report findings.*



# Introduction

## Background

Worldwide, it is estimated that there is one new (incident) case of dementia every 4 seconds, or 7.7 million incident cases each year (WHO and ADI 2012). The most recent estimates show that 44 million people now live with dementia (prevalence), projected to increase to 135 million by 2050 (Prince et al. 2013a). Historically low fertility rates and improved life expectancy are expected to be the main drivers of population aging (United Nations 2013), with the absolute number of older adults aged 65 years and older tripling worldwide from 524 million in 2010 to 1.5 billion in 2050 [WHO & US National Institute on Aging 2011]. Among individuals aged 60 years and over in 2010, dementia prevalence was between 5-7% worldwide; dementia onset before the age of 65 (i.e., early onset dementia) was estimated to account for 6-9% of all prevalent cases (WHO and ADI 2012). International recognition of the association between population aging and the growing numbers of individuals with chronic and degenerative diseases has resulted in greater attention on dementia as a significant global health challenge (WHO and ADI 2012).

Dementia accounts for 11.3 million disability-adjusted life years (DALYs) globally, ranking as the 12<sup>th</sup> leading cause of DALYs in North America (Murray et al. 2012), and the fourth leading cause of death in high income countries (WHO 2014a). As dementia contributes to substantial disability (Dudgeon 2010, WHO and ADI 2012, Murray et al. 2012), many individuals require assistance of some form, ranging from assistance with daily activities that can be provided in home, to 24-hour supervision in long-term care (Wimo et al. 2013). The total worldwide costs of informal care associated with dementia, plus direct medical and social care costs, have been estimated at \$604 billion (2010 figures) (Wimo et al. 2013). Just over 70% of these costs originate in North America and western Europe (Wimo et al. 2013). As a result of the first-ever G8 dementia summit held in 2013, a new Global Envoy for Dementia Innovation was appointed and an agreement was

reached to collaborate internationally on dementia research that included an investment in 'making timely diagnosis and early intervention feasible, affordable and cost effective' as one of five priorities (UK Dept of Health 2013). To spur improvements in dementia care and address increasing cost burdens, several G7 nations have either published national dementia strategies in the last decade or indicated commitments in this direction (United Kingdom, France, Japan, United States, Italy). Non-G7 nations have established national plans, including Australia, South Korea, Norway, and some European Union countries (Denmark, Finland, Netherlands, Northern Ireland) [ADI 2012a]. Along with Germany, *Canada is one of only two G7 countries currently without a national strategy in place*. Yet an estimated 500,000 Canadians were living with dementia in 2008, with over 100,000 incident cases each year (Dudgeon 2010). Furthermore, dementia prevalence among Canadians is expected to increase to 1.1 million by 2038, with the total economic burden rising by 10-fold from \$15 billion to \$153 billion (Dudgeon 2010). In the face of building pressure (CMA 2013), the Canadian government recently announced plans to develop a national dementia research and prevention plan (Government of Canada 2014).

One of the challenging issues in providing dementia care today is making a diagnosis. Between 31% and 69% of patients with dementia in primary care do not receive a formal, i.e., documented diagnosis; formal diagnosis is less likely among mild than moderate or severe cases (Boustani et al. 2003; Bradford et al. 2009; van den Dungen et al. 2012). Sternberg and colleagues (2000) found that two of every three community-dwelling Canadian seniors (64%) with dementia were undetected, defined as "never having seen a physician for memory problems". Key factors that have been identified as possible barriers to a formal diagnosis include *patient and caregiver issues* such as lack of symptom awareness, lack of support to seek help, and attitudes such as resistance to receiving a diagnosis

and perceived stigma; *health care professional factors* such as poor knowledge and adherence to clinical practice guidelines, diagnostic uncertainty and difficulties in diagnosis disclosure, and skepticism regarding the effectiveness of treatment [i.e., therapeutic nihilism (Iliffe et al. 2006)]; and *health system factors* such as limited time to conduct consultations and poor access to diagnostic information and resources (Bradford et al. 2009; Koch and Iliffe 2010; van den Dungen et al. 2012).

Some suggest that diagnosis should be made as early as possible (i.e., 'early diagnosis') and therefore support screening to detect possible cognitive impairment followed by diagnostic interviewing (Belmin et al. 2012; ADI 2011). Supporters of this strategy assert that early diagnosis allows patients and caregivers to draw upon the necessary support and services, plan for the future, address physical safety issues, and participate in research (ADI 2011; Villars et al. 2010; Fisk et al. 2007; Sternberg et al. 2000; Post 2004; Iliffe et al. 2003). Proponents further suggest that symptom progression may be slowed and quality of life for patients and caregivers may be improved when dementia is recognized and treated in its early stages (ADI 2011; Fisk et al. 2007; Sternberg et al. 2000; Post 2004). Others advocate for diagnosis 'at the right time for the particular person within their context', i.e., 'timely diagnosis' (Fox et al. 2013a). Supporters of timely diagnosis suggest that the harms and benefits of early diagnosis have not been adequately studied (Boustani et al. 2003; Fox et al. 2013b; Dhedhi et al. 2014), and that it is more important that health care professionals receive the support and training necessary to manage the lengthy and complex process of both diagnosis and management than it is to concentrate on early diagnosis.

An essential step in providing appropriate care for people with dementia is ascertaining the burden of the disease among the population as a whole - including the long-term care population - in specific jurisdictions. Findings from field studies (i.e., two-phase studies with screening followed by a structured clinical evaluation) contribute to current evidence in this regard. However, field studies of dementia epidemiology typically do not combine

community-dwelling and institutionalized populations (e.g., Herrera et al. 2002; Shaji et al. 2005; Rodriguez et al. 2008; Thies and Bleiler 2013), including one of the most comprehensive reports of global dementia epidemiology (WHO and ADI 2012). Some field studies have combined these populations (e.g., Berr et al. 2005; CSHA Working Group 2000). Registry studies (i.e., based on administrative health data), such as the current study, are useful for several reasons, foremost being the information upon which to base policy recommendations, public awareness activities, health promotion and prevention strategies, health resource planning, and research priorities (Danila et al. 2014). The current study included a lower age cut-off of 45 years in order to identify the incidence and prevalence of 'early onset dementia', that is dementia in individuals younger than age 65 years. This information is useful for planning the health and social care services necessary to address the unique needs of individuals with early onset dementia and their families (Ducharme et al. 2014). In addition to critical policy information, administrative health studies such as the current one offer: (1) increased awareness of the nature and availability of codes to record disease diagnoses; (2) improved understanding of the role of diagnosis codes in estimating disease incidence and prevalence; (3) opportunity for transparency in development of definitions to identify cases and potential for common agreement among researchers on such definitions; and (4) comparisons of rates and risk factors among regions with access to similar data (Myers et al. 2009; Danila et al. 2014).

## Objectives

In 2011, a planning session hosted by the Rural Dementia Action Research Team and attended by key stakeholders highlighted some stark deficiencies in our knowledge about the epidemiology of dementia in the province of Saskatchewan and the nature of related services available to individuals and their families. To date, little research has been

carried out to examine the scope of dementia and dementia care across the province. Although published *estimates* of dementia incidence and prevalence for Saskatchewan do exist, the most recent estimates are based on a combination of 1991 data from the Canadian Study of Health and Aging and 2005 data from a review of European Union studies (Smetanin et al. 2009).

Epidemiological data that is as current as possible, and that combines both community-based and long-term data, can inform future decisions that affect individuals with dementia and their families living in every corner of the province. To this end, this study provides an up-to-date comprehensive picture of the epidemiology of dementia in the province of Saskatchewan – based on physician, hospital, prescription drug, and long-term care data – as well as an overall scan of the availability and quality of local services for individuals with dementia in the province.

In partnership with the **Saskatchewan Health Quality Council (HQC)**, this report involves a comparison of actual to best practices in dementia care, with three components:

- 1) A review of best practices across the care continuum of health and social services for individuals with dementia and their families
- 2) An analysis of administrative health data to determine the 12-month incidence and prevalence of dementia among individuals aged 45 and older in the province of Saskatchewan by database of identification, demographic characteristics (age group, sex, and rural/urban residence), and health region
- 3) An environmental scan of dementia-related services and resources across the continuum of care, specifically service availability and primary health care orientation of such services, provincially and by health region

## RaDAR-HQC Steering Committee

This multi-method approach was guided by the Rural Dementia Action Research and Health Quality Council (RaDAR-HQC) Steering Committee comprised of researchers, leadership from the Alzheimer Society of Saskatchewan and health regions, and health care professionals (see page 144 for a list of Committee members).

## Report outline

- The **Executive Summary** includes an overview of the report background, methods, objectives, key findings, and recommendations.
- The **Introduction** section provides a brief overview of the current state of research into dementia care and the epidemiology of dementia. Study objectives are also included in this section.
- **Methods** provide an explanation of the methodology of the three components of the investigation (best practice review, administrative data analysis, and environmental scan).
- **Results** include the findings for each component of the multi-method investigation: the best practice review findings are presented first, followed by the administrative data analysis and environmental scan findings for Saskatchewan and each health region separately.
- **Key Findings** are presented for each component of the investigation (best practice review, administrative data analysis, and environmental scan).
- The implications of the key findings from all components of the study are reviewed in the **Discussion**.
- Based on the report findings, **Recommendations** for action are offered, endorsed by members of the RaDAR-HQC Steering Committee and the Knowledge Network in Rural and Remote Dementia Care.



# Methods

## Best Practice Review

The best practice review was guided by the questions:

- What are the current international best practices in dementia care in national plans?
- What best practice themes are represented across all national plans?

## Search strategy

A total of twelve national plans were identified from the Alzheimer Disease International website (n.d.).

## Inclusion criteria

A national plan was considered for inclusion in the present review if it met all of the following criteria:

- A national dementia plan listed on the “Government Alzheimer Plans” page on the Alzheimer’s Disease International webpage: <http://www.alz.co.uk/alzheimer-plans>
- Not a *sub-national* Alzheimer plan nor a *non-governmental* dementia strategy
- Available in English
- Published after January 1 2000
- Publically available online

## Data charting and extraction

One reviewer extracted the data from each national plan (KK). Common themes in best practices were identified across the plans by examining the specified priorities, objectives, pillars, strategies, challenges, recommendations, and goals, detailed in each country’s plan.

A total of 6 common best practice themes were identified across the national plans:

- 1) Expanding dementia research
- 2) Quality Improvement in care services
- 3) Raising public awareness
- 4) Early/timely diagnosis and treatment
- 5) Staff training
- 6) Family support

The aims that did not fit into one of the 6 common themes were classified as “other”.

A qualitative narrative approach was used to explore the main goals, targets, and key points for each national plan.

## Administrative Data Analysis

### Ethics approval

This administrative data analysis received ethics approval from the University of Saskatchewan Biomedical Research Ethics Board (Bio-REB #12-339).

### Study objectives

The objectives of the administrative data analysis were to use linked administrative databases to determine the 12-month incidence and prevalence of dementia among individuals aged 45 and older in the province of Saskatchewan by database of identification, demographic characteristics (age group, sex, and rural/urban residence), and health region. We chose an age cut-off of 45 years in order to identify the incidence and prevalence of ‘early onset dementia’, that is dementia in individuals younger than age 65 years. This information is useful for planning the health and social care services necessary to address the unique needs of individuals with early onset dementia and their families (Ducharme et al. 2014).

### Study Setting

The province of Saskatchewan (Canada) covers 651,000 km<sup>2</sup> and has a population of over 1.08 million (Saskatchewan Bureau of Statistics, 2014). In 2012, two cities in the province each had populations over 100,000 (census metropolitan areas [CMAs]) that together accounted for 46.6% of the population (Statistics Canada, 2014a); communities and areas outside of these CMAs contributed 53.4% of the population. Individuals aged 0 to 14 years accounted for 19.1% (204,436), those 15 to 44 years

of age made up 40.4% (439,041), individuals 45 to 64 years of age accounted for 26.4% (287,286), and those aged 65 years and older made up 14.4% (156,873) of the population (Saskatchewan Bureau of Statistics, 2014). The median age of the provincial population was 37.1 years in 2012 (Statistics Canada, 2014b).

In Canada's publicly funded system of universal health care, each of Canada's 10 provinces and 3 territories is responsible for the provision of 'medically necessary hospital and physician services' to its citizens (Health Canada, 2011). Determination of the services that are medically necessary, i.e., fully covered services, is the separate responsibility of each province and territory. In Saskatchewan, many services beyond inpatient and outpatient care provided by physicians are fully covered, including immunizations for children, physiotherapy in hospitals and special care homes, and mental health services (Saskatchewan Ministry of Health 2012b). All residents of Saskatchewan are eligible for health insurance to receive fully covered services with the exception of those covered by federal health insurance (e.g., federal prison inmates, members of the Canadian Forces and Royal Canadian Mounted Police) and individuals who do not meet the residency requirements of Saskatchewan (i.e., those who have lived in the province for a period of less than three months or have moved elsewhere for a period of more than three months) [Saskatchewan Ministry of Health 2012a]. In addition, the Prescription Drug Plan excludes the Registered Indian population and other residents whose costs are covered by another government body (Saskatchewan Ministry of Health 2010). Saskatchewan residents who receive health insurance benefits comprise the 'covered population'.

## Data sources

This analysis used data extracted from 10 provincial health databases linked by a unique personal health services number assigned to individuals eligible for health insurance benefits (Saskatchewan Ministry of Health 2010). Home Care data were not available for analysis. The databases were accessed, linked, and analysed by researchers at the Saskatchewan Health Quality Council (HQC)

through a formal data sharing agreement between HQC and the Saskatchewan Ministry of Health.

The *Hospital Discharge Abstract Database* includes patient information, most responsible diagnosis for hospitalization, other diagnoses, principal procedure, other procedures, accident code, and hospital discharge dates. Prior to April 1, 2002, four-digit ICD-9 codes were used to record a maximum of 16 diagnoses per record. Five-digit ICD-10-CA codes were introduced April 1, 2001, after which time approximately 30% of hospitals in Saskatchewan continued to use ICD-9 codes. By April 1, 2002, the transition to ICD-10-CA codes was complete and all hospitals were using this 5-digit coding system to record up to 25 diagnoses per record.

The *Physician Services Claims Database* includes information used by physicians to claim payment from the provincial government for services provided to patients. Patient information is included, as well as service information such as date, fee code, type of service, 3-digit ICD-9 diagnosis code associated with service (maximum of one diagnosis code per service claim), location of service, and payment information (Saskatchewan Ministry of Health, 2010). Physicians who are remunerated on a non-fee-for-service basis are also expected to submit similar 'shadow' or 'dummy' billing claims. Although approximately 16% of full-time equivalent physicians receive payment on a non-fee-for-service basis, the completeness of the shadow billing claims is unknown (Lix et al. 2012). The *Physician Mobility File* contains physicians' identification numbers and specialties. More than 70 specialty categories based on physician certification are available (Lix et al.).

The two Prescription Drug Databases (*ALLDIN* and *Historical Claims*) include information regarding the dispensing pharmacy as well as information about the drug dispensed such as classification of drug, drug identification number (DIN), type and class, generic and brand names, strength and dosage, date and quantity dispensed, and cost. Only those drugs listed in the Saskatchewan Formulary are eligible for coverage under the Saskatchewan Drug Plan. The prescription costs for the Registered Indian population are paid by the federal government and therefore prescriptions for these individuals are not included in the Prescription Drug Database

(Saskatchewan Ministry of Health, 2010). The Registered Indian population accounted for approximately 13% of the Saskatchewan population in 2012 (Aboriginal Affairs and Northern Development Canada, 2013).

The *Resident Assessment Instrument - Minimum Data Set (RAI-MDS)*, (i.e., Long-term Care Database), contains information gathered from the assessment of individuals at the time of admission to a residential care facility and at regular three-month intervals (Morris et al. 2010). Residents also receive an assessment if their clinical status changes significantly. Included in the data are: residents' identification and background information, disease diagnoses, health conditions, skin condition, medication list, as well as measures of mood and behaviour, vision, cognition, communication and hearing, accidents, physical functioning, clinical management, continence, oral and nutrition status, activity patterns, and psychosocial well-being. Admission and quarterly assessment data were included in the present study. These data have been used extensively for research and their validity for use in research has been confirmed in multiple studies (Poss et al. 2008, Wodchis et al. 2008, Hirdes et al. 2013).

The *Institutional Supportive Care Data Set* contains information on the facilities that house long-term residents. The *Person Health Registration System*, *Saskatchewan Resident Geography*, and *Vital Statistics* databases contain information regarding status and dates of insurance coverage, gender, dates of birth and death, rural/urban residence, and health region of residence.

## Cohort

A three-stage process was used to develop the case definition algorithm. The first stage consisted of conducting an overview of recent Canadian studies that employed administrative data to determine the dementia incidence or prevalence in the general population, to identify previous criteria used to define cases of dementia (see **Table A1** and **Table A2 in Appendix**). Canadian studies were chosen for comparison due to the similarity of features among administrative databases across the country, specifically the availability of physician services databases in 11 of 13 provinces, the similar

duration of data availability, and the use of similar ICD-9 diagnosis and procedure codes across provinces (Lix et al. 2012). The second stage involved separate reviews of the case definition criteria employed in the selected Canadian studies by: (1) the Rural and Remote Memory Clinic team consisting of the director (DM), neurologist (AK) and neuropsychologists (MC and MO), and (2) a Steering Committee that included researchers, leadership from the Alzheimer Society of Saskatchewan and health regions, and health care professionals. The final stage consisted of consolidating the reviews and reaching consensus among clinical team members (DM, AK, MC, and MO) on the diagnosis codes and other criteria that comprised the case definition algorithm.

### *Case definition criteria*

The cohort included individuals aged 45 years and older at their first-ever recorded identification of dementia (i.e., index date) between April 1, 2001 and March 31, 2013 based on case definitions met within any one of four administrative health databases (Hospital Discharge Abstracts, Physician Service Claims, Prescription Drug, and RAI-MDS, i.e., Long-term Care). Eligible individuals had continuous health insurance coverage from the start of their insurance until one of the following: March 31, 2013, the expiration of their insurance, or their death. Individuals with gaps of no more than 3 consecutive days in their coverage were considered to have continuous health insurance. The case definition algorithm employed in the current study is provided in **Table A1 (Appendix)** and identification of the study cohort is shown in **Figure A1**. The specific criteria applied to the four administrative health databases were as follows:

1. Hospital Discharge Abstracts (ICD-10-CA codes: F00, F01, F02, F03, F04, F05.1, F06.8, F06.9, F09, F10.6, F10.7, F18.6, F18.7, F19.6, F19.7, G30, G31.0, G31.1, G91, R54);
2. Physician Services Claims (ICD-9 codes: 290, 294, 331, 797);
3. Prescription Drug (Aricept DINs: 02232043, 02232044; Exelon DINs: 02242115-02242118, 02245240; Reminyl DINs: 02244298-02244300, 02266717, 02266725, 02266733);

4. Long-term Care, i.e., RAI-MDS (Cognitive Performance Scale (CPS) score of 2 and over, indicating mild to very severe impairment) [Morris et al. 1994] and/or a disease category of Alzheimer's disease *or* dementia other than Alzheimer's disease).

If individuals had the same index date in two or more databases, they were identified first in the physician database, then in the hospital, RAI-MDS, and lastly the drug database. If individuals had a CPS score of 2 or over recorded on the same index date as a disease category of Alzheimer's disease and/or dementia other than Alzheimer's disease, they were identified first by the CPS score, then by the disease category of Alzheimer's disease, and last by the disease category of dementia other than Alzheimer's disease.

As shown in **Table A1 (Appendix)**, all of the studies that employed administrative data to define dementia used physician data and most often, also used hospital data. The case definitions used in the majority of these studies required a minimum of one physician visit or one hospitalization. Also, the lower age cut-offs varied from no cut-off (i.e., all ages included) to 66 years.

Diagnosis codes and other criteria employed in the case definition algorithm for the current study were selected with a goal to achieve sensitivity over specificity, given substantial evidence that dementia underdiagnosis is a significant and global phenomenon (ADI, 2011; Boustani et al. 2003; Connolly et al. 2011). Certain neurologic conditions, such as Alzheimer's disease and Parkinson's disease, do not have a diagnostic test for confirmation purposes and it may be more challenging for physicians to assign a diagnosis code to these conditions compared to other neurologic conditions (St. Germaine-Smith et al. 2012). A recent systematic review of studies that validated the use of specific ICD-9 and ICD-10 codes in administrative health data found eight studies that tested a total of 21 case definitions of dementia against a reference standard (St. Germaine-Smith et al. 2012). On average, specificity was higher than 84% (range of 56.3% to 100%), while sensitivity ranged from 8% to 86.5%. While case definitions of dementia that employ numerous ICD-9 and ICD-10 diagnosis codes may be highly sensitive to identifying people who

actually have dementia, the challenge is that individuals without dementia may also be captured in these same case definitions. In the present study, inclusivity was pursued by employing a case definition algorithm that targeted individuals who may not have had a formal diagnosis in physician or hospital data, but who may have sufficiently satisfied other criteria to be included in the dementia cohort. These other criteria related to prescription drug and long-term care services, and are described in the case definition algorithm (**Table A1 and Table A2 in the Appendix**).

*Hospital data.* As shown in **Table A2 (Appendix)**, the ICD-9 codes used to identify dementia cases in hospital data during the 'washout period' (i.e., run-in period to ensure that cases identified after April 1, 2001 were in fact incident cases, and had not been previously identified) of 1996 to 2001 in the current study were identical to codes recommended by the Manitoba Centre for Health Policy (MCHP, 2014) and used by Chartier et al. (2012). Recent recommendations from MCHP exclude most diagnosis codes that refer to the involvement of alcohol or drugs. Therefore, the present study excluded most ICD-9 codes with elements of alcohol or drugs that did not also contain specific reference to a dementia (i.e., 291.3, 291.4, 291.5, 291.8, 291.9, 292.0, 292.1, 292.2, 292.9) in contrast to earlier studies (Martens et al. 2010; Fransoo et al. 2009).

Following MCHP recommendations, and in accordance with earlier studies (Fransoo et al. 2009; Martens et al. 2010), the present study included ICD-10-CA codes of mental and behavioural disorders due to use of: 'alcohol, residual and late-onset psychotic disorder' (F10.7), 'volatile solvents, residual and late-onset psychotic disorder' (F18.7), and 'multiple drug use and use of other psychoactive substances, residual and late-onset psychotic disorder' (F19.7). In contrast to MCHP recommendations but still in accordance with earlier studies (Fransoo et al. 2009; Martens et al. 2010), the present study included hospital ICD-10-CA codes (2001-2013) of mental and behavioural disorders due to use of: 'alcohol, amnesic syndrome' (F10.6), 'volatile solvents, amnesic syndrome' (F18.6), and 'multiple drug use and use of other psychoactive substances, amnesic syndrome' (F19.6).



*Physician data.* The present study followed MCHP recommendations regarding the inclusion of ICD-9 codes in physician data (2001-2013). Diagnoses of 'alcohol psychoses' (291) and 'drug psychoses' (292) used in earlier studies (Fransoo et al. 2009; Martens et al. 2010) were not used in the present study. The Saskatchewan physician data contains 3-digit ICD-9 codes, and specific dementia-related diagnoses that are specified in the 4<sup>th</sup> digit of ICD-9 that we would otherwise have included could not be included in the case definition (i.e., 291.1 'Korsakov's psychosis' and 291.2 'other alcoholic dementia').

*Prescription drug data.* Three cholinesterase inhibitors, Aricept, Exelon, and Reminyl, were included in the case definition algorithm for the present study. Aricept (donepezil), Reminyl (galantamine), and Exelon (rivastigmine) are the only three cholinesterase inhibitors currently prescribed in Canada (Lee et al. 2011). Cholinesterase inhibitors are considered first-line pharmacotherapy for the purpose of improving symptoms associated with dementia due to Alzheimer's disease [AD] (Birks 2012). While other medications may be used to treat AD (e.g., memantine) (Lee et al. 2011), these three cholinesterase inhibitors are the most common medications used and are typically prescribed only for the treatment of dementia.

*Long-term care data.* Individuals whose index date was within 30 days after their date of admission to long-term care were considered to be identified 'at admission' to account for the reality that some staff, particularly in smaller facilities, were not able to conduct a resident's assessment on the same day as admission. With respect to the use of RAI-MDS (long-term care) data in the case definition algorithm, a Cognitive Performance Scale score of 2 or higher was required, and/or a disease category of Alzheimer's disease or dementia other than Alzheimer's disease. The disease categories are based on transfer documentation, medical records, and information provided by the patient that has been verified by a physician (Morris, 2010). A CPS score of 2 or higher is equivalent to an average Mini Mental State Examination score of 19 or lower (Bartfay et al. 2013), indicating possible mild to very severe impairment (Morris et al. 1994) and dementia at the moderate to severe stage (Pernecky et al.

2006). Validated against physician diagnosed dementia in a sample of older hospitalized patients (Travers et al. 2013), a CPS score of 2 or higher had moderate sensitivity (0.68) and very good specificity (0.92). Validated against the Cambridge Examination for Mental Disorders of the Elderly-Revised (CAMDEX-R) in a sample of older nursing home residents, a CPS score of 2 or higher had good sensitivity (0.81) and specificity (0.80) for the detection of cognitive impairment (Paquay et al. 2007).

### *Measures*

Five independent variables were included in the analysis: sex, age, administrative health database, rural/urban, and health region. The age groupings were 45-54, 55-64, 65-74, 75-84, and 85 years and over. Hospital, physician, prescription drug, and long-term care represented the four administrative health databases. Based on postal code, residents of census metropolitan areas (100,000 or over, with a core population of 50,000 or over) and census agglomerations (core population of 10,000 or over) were considered urban; adjacent municipalities that were highly integrated with the core were included in the census metropolitan area or census agglomeration, as determined by commuting flows to work (Statistics Canada, 2011). Residents outside of these areas were considered rural. The 11 health region groups were: Northern (Keewatin Yatthe, Athabasca Health Authority, and Mamawetan Churchill River), Cypress, Five Hills, Heartland, Kelsey Trail, Prairie North, Prince Albert Parkland, Regina Qu'Appelle, Saskatoon, Sun Country, and Sunrise.

### **Statistical analysis**

The number of incident dementia cases was calculated for each 12-month period from March 31, 2001 to April 1, 2013. **Only the 12-month period of 2012-2013 is reported in this report.** New cases of dementia included individuals who met the case definition criteria and did not have a previous identification of dementia during the 'washout' period between April 1, 1996 and March 31, 2001 (i.e., run-in period to ensure that cases identified after April 1, 2001 were in fact incident cases, and had not been previously identified) in any of the following databases: (1) Hospital Discharge Abstracts

(ICD-9 codes: 290, 291.1, 291.2, 292.8, 294, 331, and 797); (2) Physician Services Claims Database (ICD-9 codes: 290, 294, 331, 797); and (3) Prescription Drug (Aricept, Exelon, or Reminyl).

The numerator for the 2012/2013 incidence rate per 1,000 population at risk (PAR) was the number of people who were alive on April 1, 2012 and who met the case definition of dementia between April 1, 2012 and March 31, 2013. The denominator consisted of the population at risk of incident dementia, which included all individuals in the covered population aged 45 years or older on April 1, 2012 with at least one day of health insurance coverage for the 12-month period, after removing individuals with prevalent dementia for the same period.

Dementia prevalence was calculated for each 12-month period from 2002 to 2013, April 1 to March 31 inclusive. Prevalent cases of dementia included individuals who met the case definition criteria for each 12-month period. **Only data for the 12-month period of 2012-2013 are presented in this report.** The numerator for the 2012/2013 prevalence rate per 1,000 PAR was the number of individuals who met the case definition criteria at any time prior to April 1, 2012 and were alive on April 1, 2012. The denominator was the number of individuals at risk for prevalent dementia, that is, all individuals in the covered population aged 45 years or older on April 1, 2012 with at least one day of health insurance coverage for the 12-month period.

**Health region and rural/urban residence data were not available for every individual. Therefore, numerators and denominators vary slightly for analyses that include stratification by health region and rural/urban residence.**

### ***Unadjusted (Crude) and Adjusted Rates***

Unadjusted (crude) incidence and prevalence describe the actual number of cases identified over the 2012/13 12-month period.

Where age- and sex-*adjusted* incidence and prevalence for health regions have been

*For example, the unadjusted incidence rate for the Northern Health Regions is 3.3 per 1,000 PAR (Table 7). If the region's demographic structure were closer to that of the province as a whole, the incidence rate would be 6.66 (i.e., the age- and sex-adjusted rate for this region).*

provided, these figures account for differences in age and sex distributions across the health regions. Specifically, these figures were adjusted to the age and sex distribution of the Saskatchewan population as a whole. The age- and sex-adjusted rates provide the most appropriate metrics for comparisons across health regions with different age and sex distributions.

### **Limitations**

Some limitations of the administrative data analysis should be noted. This study may have resulted in either an over- or an under-estimation of incidence and prevalence rates. First, given that dementia is significantly underdiagnosed in the health care system, studies based on available administrative data tend to underestimate the number of individuals with dementia, particularly among older age groups (Lambert et al. 2014). In comparison, field studies (i.e., two-phase studies with initial screening followed by a structured clinical evaluation) tend to have greater sensitivity for identifying cases and therefore generally report higher rates than studies based on administrative data (Lambert et al. 2014). Second, under-estimation may also have resulted from not including home care data in our analysis (as it was not available). Third, the case definition algorithm developed for this study required only one diagnosis or other criterion of dementia, which may have resulted in over-estimation. However, this algorithm is comparable to other Canadian studies of dementia epidemiology that also employed a minimum of one diagnosis in physician or hospital data. Fourth, over-estimation may have resulted from identifying individuals with incident dementia when they had fewer than five years of uninterrupted health insurance prior to their index date (i.e., gaps of no more than 3 consecutive days). Fifth, the Cognitive Performance Scale (CPS) score used in our algorithm, derived from the provincial RAI-MDS (long-term care) database, focuses primarily on cognitive function and therefore may overestimate incidence and prevalence of dementia (since a diagnosis requires both functional and cognitive impairment). Sixth, physician services claims allow a maximum of one diagnosis code per claim, which may hinder physicians from recording a dementia-related

diagnosis for patients with co-morbid conditions or conditions that are less challenging to diagnose and may in turn result in under-estimation. Finally, reluctance among individuals to seek help from health care professionals for issues related to cognitive function contributes to the likelihood that physician data underestimates the true incidence and prevalence of dementia.

## Environmental Scan

### Ethics approval

Ethics approval was granted by the Behavioural Research Ethics Board of the University of Saskatchewan (BEH #12-341) and Regina Qu'Appelle Health Region (REB #12-106), as well as by the ethics committees of those health regions that required regional-level approval for the conduct of research projects with health region staff.

### Study objectives

Within each of the 13 health regions of the province of Saskatchewan and the province as a whole, the purposes of the environmental scan were to determine: 1) the availability of dementia-related services and resources across the continuum of care, specifically with regard to health promotion, primary health care, post-diagnostic care, home care, and long-term care, and 2) the orientation of dementia-related services toward key dimensions of primary health care, specifically information and education, accessibility, community fit, co-ordinated care, comprehensive care, and quality of care.

### Study setting

The Saskatchewan health system has a regional model of governance (**Appendix Figure A2**), with each of the 13 health regions responsible for providing basic health services to the population it serves. These basic services include hospitals, emergency response services, health centres, supportive care (e.g., long-term care, respite, day programs), community health services (e.g., home care), public health (e.g., vaccinations), mental health, and rehabilitation services. The provincial Ministry of Health collaborates with the 13 regions concerning the coordination and delivery of health

services. Programs and services within each health region are overseen by a 12-member board drawn from local communities and appointed by the Ministry of Health. Although the Ministry of Health provides funding to the health regions, sets policies and standards, and monitors delivery of health services, each health region is ultimately responsible for managing its own resources while coordinating health service delivery to its population (Saskatchewan Ministry of Health, 2013).

### Sample and data collection

The study population consisted of all Home Care Assessors (Client Care Coordinators, Case Managers, and Team Managers) serving in Saskatchewan. Based on consultations with key stakeholders and the RaDAR-HQC Steering Committee, we determined that Home Care Assessors would have a good understanding of the range of care services available in their health regions.

To establish the number of Home Care Assessors in each health region, a query via email was sent to the Director of Home Care for each of the 13 health regions, in May, 2013. The email included a notice about the upcoming survey and a request for feedback regarding the number of Home Care Assessors serving each geographic area. **For the purposes of the present study, Assessors serving the cities of Saskatoon or Regina were considered 'urban' and Assessors serving the population residing outside of the cities of Saskatoon and Regina were considered 'rural'.** Based on responses from Home Care Directors representing 10 of the 13 health regions (3 did not respond), there were an estimated 145 rural and 76 urban Home Care Assessors serving 10 of the 13 health regions in 2013 (**Appendix Figure A3**).

Data collection took place between June and December, 2013. A second email with an attached survey package was sent to all Directors of Home Care in June, 2013. The survey package consisted of an invitation letter, consent form, and survey. The Directors were requested to forward the message in its entirety to all Home Care Assessors in their health regions. The survey packages were not sent directly to Assessors because the names and contact information of Home Care Assessors are not in the public domain. The invitation letter requested that

Assessors return their completed surveys to the project research coordinator by fax or email. Follow-up thank you and reminder emails were sent to Directors of Home Care at one week, two weeks, one month, two months, and four months after the initial contact, for a total of six contacts with Directors and potentially five contacts with Assessors.

## Development and description of the Environmental Scan

The survey consisted of two parts. Part A presented respondents with a list of 43 dementia-related services and resources that covered five areas along the continuum of care: health promotion programs, primary health care, post-diagnosis support, home care, and long-term care. Part B consisted of 30 items covering six dimensions of primary health care associated with dementia-related services, including information and education, accessibility, population orientation, coordination, comprehensiveness, and quality of care. Parts A and B were each followed by an open-ended section that allowed respondents to provide further details.

The development of the survey was an iterative process that involved expert review by the RaDAR-HQC Steering Committee and a pilot study with three rural Home Care Assessors in one health region. Expert review regarding the first iteration of the survey questionnaire took place May, 2013. Specifically, we sought feedback regarding the clarity of instructions and measures included in the survey, as well as whether any items needed to be added or removed. The second iteration of the survey was then piloted with three Assessors in one health region. After incorporating their feedback, the third iteration of the survey was tested one final time with the same pilot study respondents. The fourth and final iteration of the survey was the instrument employed in the present study.

***Availability of dementia-related services across the continuum of care (Part A).*** The lead researcher (D. Morgan) hosts an annual gathering of stakeholders known as the Summit of the Knowledge Network in Rural and Remote Dementia Care

(Morgan et al., in press). During the fifth Summit in 2012, we conducted five focus groups to brainstorm a list of ideal dementia-related services/goals at each point in the care continuum. To assist in the process, the focus groups were provided with a brief list of ideal services available along the continuum, as identified in national dementia plans and other literature (Cahill et al., 2012; Dudgeon, 2010; The Health Foundation, 2011; Department of Health 2009). Feedback from the focus groups was incorporated to create a list of 43 services, which became Part A of the survey.

Part A asked respondents to “indicate the availability of services in the majority of communities for which you are primarily responsible”. Since some Assessors served more than one community, including this instruction meant that Assessors would not be limited to only one community in their responses. This instruction prompted respondents to frame their responses in terms of average availability across multiple communities served.

Part A responses included ‘everyday’, ‘a few times a week’, ‘once a week’, ‘once a month’, ‘less often than once a month’, and ‘not available’. For this purposes of the present study, the responses were grouped into ‘at least weekly’, ‘less often than weekly’, and ‘not available’. Responses to the housing options (personal care home, special care home, assisted living, seniors housing, special care units) were grouped into ‘available’ or ‘not available.’

***Primary health care orientation of dementia-related services (Part B).*** ‘Primary health care’ encompasses delivery of “basic medical and curative care at the first level”, i.e., ‘primary care’, and activities related to health promotion, illness prevention, and determinants of health [Canadian Nurses Association, 2005]. Primary health care is a holistic approach that involves multiple disciplines focused on the numerous factors associated with health, whereas primary care focuses mainly on basic medical and health maintenance services (Saskatchewan Ministry of Health, 2002). The Canadian Institutes of Health Research employed the term ‘community-based primary health care’ to refer to a continuum from primary prevention and health promotion to home care and palliative care,

delivered in a range of locales (CIHR, 2013). Interprofessional and interdisciplinary in nature, community-based primary health care is coordinated across settings (e.g., schools, homes, clinics, workplaces) and health care professionals (e.g., nurses, pharmacists, social workers, physicians). This conceptualization of community-based primary health care guided scale development in Part B of the environmental scan.

Six 5-item scales were developed to measure the degree to which existing services and resources in the province were oriented to key dimensions of primary health care. The 6 scales were: *Information and Education*, *Accessibility*, *Population Orientation (Community Fit)*, *Coordinated Care*, *Comprehensiveness of Care*, and *Quality of Care*. The items in the *Information and Education* scale were based on the best practice of “raising public awareness”, which involves promoting understanding of the condition, reducing stigma, as well as educating the public, caregivers, and health care professionals about diagnosis and on-going management (Cahill et al 2012; Dudgeon 2010; Health Foundation 2011; Department of Health 2009). The remaining five scales [*Accessibility*, *Population Orientation (Community Fit)*, *Coordinated Care*, *Comprehensiveness of Care*, and *Quality of Care*] represented key dimensions of primary health care *as they pertain specifically to individuals with dementia and older adults living in rural communities*. The scale items were informed by definitions of primary health care dimensions provided by Levesque et al. (2011). For instance, we used the definition of coordinated care (coordination management continuity) provided by Levesque et al (p. 24) - “the delivery of services by different providers in a timely and complementary manner such that care is connected and coherent” - to operationalize coordinated care as it pertains to individuals with dementia living in rural communities as: the coordination of care by different health care professionals within and outside the community, where all health care professionals in the community have easy access to patients’ health histories, and where the transition from community to long-term care is seamless.

A single summary item directly followed the final scale, and asked whether “the amount of supportive

resources and services available in the community is adequate to allow individuals with dementia to remain at home for as long as possible.” The response categories for the single item were identical to the response categories for the scale items.

Respondents were asked to think of “‘community’ as the majority of communities for which you are primarily responsible in your health region”. Each of the six scales consisted of five items rated on a 5-point scale from 1 (‘no, not at all’) to 5 (‘yes, to a very great extent’), with total scale scores ranging from 5 to 25. **Higher scale scores indicated greater orientation of dementia-related services to key dimensions of primary health care.**

## Data analysis

All data were analyzed using SPSS 20.0. Descriptive statistics, including frequencies and proportions, were used to examine the availability of dementia-related services. Mean scores, standard deviations, and ranges were reported for each of the scale items as well as for each of the scales. The case mean was imputed where a participant’s scale was missing 25% or less often the items (i.e., one item) (El-Masri and Fox-Wasylyshyn, 2005). If more than 25% of the items (i.e., 2 or more) in a scale were missing for a participant, their score was not included in the overall mean for the scale.

## Response by health region

In the present report, we include only the results for health regions with 4 or more Home Care Assessors responding to the environmental scan survey. The exception to this rule is the Athabasca Health Authority, which had 1 respondent and was grouped with Keewatin Yatthe into the ‘Northern Health Regions’ when reporting environmental scan results. Four health regions had fewer than 4 respondents, and therefore are not included in the environmental scan results: Cypress (1), Mamawetan Churchill River (0), Prairie North (1), and Prince Albert Parkland (1).

An estimated 180 eligible respondents served the remaining nine health regions, from which we received 82 completed surveys (**Appendix Table A3**), for an estimated response rate 45.6% (82 of

180). Respondents include 68 rural and 14 urban Home Care Assessors (all urban assessors were from Regina Qu'Appelle Health Region). To encourage response, demographic information was not requested of respondents.

## **Limitations**

Some limitations of the environmental scan survey should be noted. We did not have direct contact with Home Care Assessors and therefore it is possible that not every eligible respondent actually received a survey package. It is also possible that our count of eligible participants is higher than the actual number, in which case the response rate may actually be higher than reported. Home Care Assessors are not necessarily representative of health care providers as a whole, therefore, their responses may be more favorable toward services provided by their group than services provided by other groups. Finally, the samples of some health regions are small and the findings for these regions should be interpreted with caution (Kelsey Trail, Saskatoon, and Northern Health Regions).

# Results

## Best Practice Review

Table 1

The Alzheimer Disease International website (n.d.) provided 12 national plans for review. Two national plans were excluded from the review due to lack of public availability online and one plan was excluded because it was not available in English.

**Nine (9) national plans were included in the present review, from the countries of Australia, England, Finland, France, Norway, Scotland, Northern Ireland, United States, and Wales.**

Each national dementia plan was presented in sections that identified the goals of each plan. Each country employed different terminology to refer to the goals: Australia and Wales (priorities), England and France (objectives), Finland (pillars), Norway (strategies), Scotland (challenges), Northern Ireland (recommendations), and United States (goals). For simplicity, these varying terms are referred to as 'aims' in the present report. The number of aims in each plan varied from four to seventeen.

Six common themes in best practices were identified across the aims outlined in the nine national plans (Table 1). The leading two themes supported by the national plans of all 9 countries were *quality improvement in care services* and *expanding dementia research*. Eight countries recommended *raising public awareness*, six recommended *early/timely diagnosis and treatment* and *staff training*, and five recommended *family support*. The majority of countries provided specific strategies to achieve the aims set out in their plans, such as implementation plans, timelines, budgets, and review processes (Table 2).

Table 1 summarizes the specific aims of each national plan (rows). These aims are organized by 6 common best practice themes (columns). Some aims did not fit into the 6 common themes identified and are classified as "other".

## Best Practice Themes

- 1) Expanding Dementia Research** *involves an increased emphasis on growing the dementia research field.* France's national dementia plan recommended establishing a foundation for scientific cooperation, supporting innovative research, long-term monitoring of large patient cohorts, and developing linkages between research and industry. Recommendations from national plans of other countries included: translating research findings into practice, setting national priorities for research, disseminating research findings, and notifying stakeholders of research priorities and funding sources (Australia); convening a summit of parties interested in dementia research (England); strengthening multidisciplinary research (Finland and Northern Ireland); creating centres for research and development, increasing research into dementia among ethnic minorities as well as challenging behaviors (Norway); encouraging involvement of individuals with dementia as research partners (Scotland); expanding research into Alzheimer's disease prevention and treatment, identifying pre-symptomatic stages of dementia, implementing research findings into practice and public health (United States); and offering research funding opportunities (Wales).
- 2) Quality Improvement in Care Services** *encompasses improved access, availability, and coordination of current and future services throughout the disease stages along the continuum of care.* Australia's national dementia plan called for improved access and availability of current and future care services including primary health, residential care, home care, hospital, intermediate, respite, and palliative care. Other national dementia plans

recommended: improving post-diagnosis access to care, and support with local dementia advisors, developing care pathways for hospital and palliative care settings, identifying senior staff members to lead quality improvement in hospitals and care homes, developing local peer support networks, and commissioning in-reach services for care homes (e.g., specialists, pharmacy, nutrition) (England); increasing home care resources (Finland); experimenting with new methods of remuneration for health professionals, creating an Alzheimer's disease information card for each diagnosed individual, developing new memory units and reinforcing existing memory units, establishing a coordinator role to link medical and social sectors, creating numerous specialist teams to provide home support, promoting effective drug treatment and clinical practice guidelines, and enhancing residential care to create special care units for patients with behavioural issues, particularly younger patients (France); ensuring all patients have care plans aligned with the North Ireland Single Assessment Tool, conducting an audit of all interventions available across care settings, developing care pathways for service access - particularly for younger individuals, and evaluating the cost effectiveness of assistive technologies (Northern Ireland); developing day programmes and respite care, increasing the number of nursing homes, improving medical services to individuals in nursing homes and processes for specialist referral, and enhancing specialist services (Norway); improving quality of post diagnostic access to legal and financial information as well as support to self-manage, increasing availability of community intermediate to general and specialist care, increasing identification of individuals diagnosed with dementia, offering more appropriate treatment for challenging behaviors and increasing awareness of support services (Scotland); supporting individuals upon diagnosis, identifying high quality dementia care guidelines across care settings, evaluating the effectiveness of new care models, supporting coordinated and integrated services, expanding culturally sensitive education and support, protecting the safety and rights of

diagnosed individuals, and examining housing patterns among diagnosed individuals (United States); and creating Dementia Supportive Communities with service coordination among health, social care, and other agencies, and improved access to information and support for diagnosed individuals and their carers (Wales).

**3) Raising Public Awareness** *includes recommendations to assist with the recognition of symptoms and reduction of stigma.* England's national strategy put forth recommendations to conduct a public awareness campaign to reduce stigma. The dementia plans of other nations set out to: create awareness by regularly sharing information, conduct a baseline dementia literacy survey to gauge public awareness (Australia); reduce stigma so as to encourage individuals to receive timely support and encourage brain health starting at an early age (Finland); raise awareness via a helpline with a single telephone number and information website, conduct an ongoing study to assess knowledge and attitudes among the general public and health professionals, promote an ethical approach to Alzheimer's disease, including the legal status of institutionalized patients and autonomy of individuals with Alzheimer's disease, and make Alzheimer's disease a European Union priority (France); offer an information package on local services to general practitioners, create protocol for referral to memory clinic (Northern Ireland); conduct an information and education campaign to promote awareness (Norway); carry out a national education and outreach campaign, collaborate with global community to improve awareness (United States); and include dementia in health campaigns and communications to health care professionals (Wales).

**4) Early/Timely Diagnosis and Treatment** *emphasizes disseminating information to the public and health care professionals, to improve early diagnosis and encourage help seeking in early stages.* Northern Ireland's national plan recommended: preparing a minimum range of services that memory clinics offer, and making



tertiary centres available for complex cases. Other national dementia plans put forth: ensuring good quality early diagnosis and intervention by increasing system capacity with more specialist services and local memory clinics (England); implementing a system to properly communicate the diagnosis to newly diagnosed individuals (France); promoting the benefits of early diagnosis to reduce delays in diagnosis seeking (Scotland); ensuring timely and accurate diagnosis by linking the public to services and disseminating appropriate assessment tools (United States); supporting early diagnosis and timely interventions (Wales).

**5) Staff Training** *involves increasing resources to improve awareness, knowledge, and training among health care professionals responsible for providing care to individuals with dementia.*

Norway's national dementia plan called for improved education and expertise among health care professionals, and training programmes with basic information about dementia. Other national dementia plans recommended: reviewing incentives and barriers to participating in dementia care, developing strategies for flexible professional development (Australia); creating an informed and effective workforce by specifying necessary dementia training and working with all bodies involved in training to adapt the curricula (England); preparing a career and skills development plan for Alzheimer's disease (France); improving staff skills and knowledge within a framework of expectations (Scotland); creating training packages for health care professionals (Wales).

**6) Family Support** *emphasizes the need to improve the availability and appropriateness of community support and respite options to caregivers and families of individuals with dementia.* England advocated implementing a Carers' Strategy to encourage the use of respite care. Other national plans set out to: increase support for carers by evaluating existing respite facilities and testing innovations in respite care, develop a 2-day training package for family

carers, and include health monitoring of family carers in continuing education of general practitioners (France); pair experienced carers with novice carers to provide support, and develop policy to involve carers in planning discharge (Northern Ireland); create schools for carers (Norway); develop a Carers' Strategy to provide support and protect the welfare of family members and people who care for individuals with dementia (Scotland).

## Best Practice Review

Table 1 Classification of best practice themes by country of national plan

Country	Best Practice Themes						
	Expanding Dementia Research	Quality Improvement in Care Services	Raising Public Awareness	Early/Timely Diagnosis and Treatment	Staff Training	Family Support	Other
Australia	Research	Care and support	Information and education		Workforce and training		Access and equity
England	Clear picture of research Needs	Enable easy access to care/ Improved community personal support/ Improve quality of care in general hospitals/ Improved intermediate care/ Live Well in care homes/ Improved end of life care/ A Joint Commission Strategy	Improve public and professional awareness	Good quality early diagnosis	An informed workforce	Implement the Carers' Strategy	Improved assessment and regulation of health services/ Effective national and regional support for implementation of Strategy
Finland	Promote comprehensive research	Good quality of life	Brain health promotion				Right attitudes
France	Research	Enable patient to choose support at home/ Improve residential care/ Strengthen coordination	General public awareness	Improve access to diagnosis	Develop training for professionals	Increase support for carers	Surveillance and follow up of program/ Ethical considerations/ Make dementia a European priority
Northern Ireland	Research	Support patients	Raise awareness of dementia	Promote early assessment and diagnosis		Support carers	Reduce risk and delay onset of dementia/ legislation
Norway	Quality development, research and planning	Active care/ Improve collaboration	Information and education campaign		Raising skills and knowledge	Partnerships with families	

<b>Country</b>	<b>Best Practice Themes</b>						
	<b>Expanding Dementia Research</b>	<b>Quality Improvement in Care Services</b>	<b>Raising Public Awareness</b>	<b>Early/Timely Diagnosis and Treatment</b>	<b>Staff Training</b>	<b>Family Support</b>	<b>Other</b>
Scotland	Support research	Increase intermediate care services		Improve understanding of the benefits of early diagnosis	Improve training	Develop Carers' Strategy	
United States	Prevent and treat dementia	Optimize care quality and efficiency/ expand supports	Enhance public awareness	Timely and accurate diagnosis			Track progress
Wales	Improve research	Improved service provision	Improved access to information and support with better awareness	Improved early diagnosis and intervention	Improved training		

Table 2 Components of national plans by country

Country	Components of National Plans				
	Implementation Plan	Timeline	Budget	Review Process	Party Responsible
Australia	Yes - actions within the document	No	No	Yes - within the document, however vague measures	Yes - within document
England	Yes - separate document: Implementation Plan	Yes - within Implementation Plan document	Yes - separate document: Economic Assessment Paper	Yes - within Implementation Plan and separate document: Quality Outcomes for People with Dementia	Yes - separate document: Good Practice Compendium
France	Yes - actions within the document	Yes - within the document	Yes - within the document	Yes - within the document	Yes - within the document
Northern Ireland	Yes - separate section at end of document: Action Plan	Yes - separate section at end of document: Action Plan	No	No	Yes - separate section at end of document: Action Plan
Norway	Yes - actions within the document	Yes, but all timelines within 4 years	No	Yes - within the document, however vague measures	No
Scotland	Yes - actions within the document	No	No	Yes- separate document: One Year On Report	No
United States	Yes - actions within the document and as a separate appendix and a separate website specific to implementation: <a href="http://napa.alz.org">http://napa.alz.org</a>	Yes - within Appendix 4	Yes - amount allocated to each goal, not broken down further	No	Yes - within Appendix
Wales	No	No	Yes - amount allocated to overall plan, not broken down further	No	No

Note. Due to challenges with translation, Finland's national plan was not assessed in this framework

*In the following sections*, findings from the administrative data analysis and environmental scan are presented first for the province as a whole, then for each of the health regions, beginning with the Northern Health Regions.

	<u>Pg</u>
<i>Saskatchewan</i>	22
<i>Northern Health Regions (Athabasca, Keewatin Yatthe, Mamawetan Churchill River)</i>	36
<i>Cypress Health Region</i>	44
<i>Five Hills Health Region</i>	51
<i>Heartland Health Region</i>	59
<i>Kelsey Trail Health Region</i>	67
<i>Prairie North Health Region</i>	75
<i>Prince Albert Parkland Health Region</i>	82
<i>Regina Qu'Appelle Health Region</i>	89
<i>Saskatoon Health Region</i>	102
<i>Sun Country Health Region</i>	110
<i>Sunrise Health Region</i>	119

## Administrative Data Analysis

### Incidence (2012/2013)

#### Incidence by Sex and Age Group

Table 3

- A total of 3,270 incident (new) cases of dementia were identified among adults 45 years and older in Saskatchewan during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted incidence rate of dementia was 7.28 per 1,000 population at risk (PAR).

#### Sex

- There were 1,887 incident cases among females and 1,383 incident cases among males aged 45 years and older.
- Within each age group, the differences in unadjusted incidence rates between females and males were not statistically significant, e.g., 1.25 vs. 1.32 among the 55 to 64 age group.
- Among all age groups combined, the unadjusted incidence rate was 31% higher among females than males (8.25 vs. 6.28 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years of age contributed 8% of incident cases (247/3,270), those aged 65 to 84 contributed 41% (1,343/3,270), and 51% (1,680/3,270) were contributed by adults aged 85 years and older.
- The unadjusted incidence rate increased 152 times between the group aged 45 to 54 and those aged 85 years and older (0.46 vs. 69.73 per 1,000 PAR). The sharpest escalation in the unadjusted incidence rate occurred at age 75 years, increasing by 5.1 times among the 75 to 84 age group compared to the 65 to 74 age group (20.03 vs. 3.95 per 1,000 PAR).

#### Incidence by Sex and Database

Table 4

- The greatest proportion of all 12-month incident cases in 2012/13 was first identified in long-term care (34.98%; 1,144/3,270), followed closely by a diagnosis in physician services claims (29.94%; 979/3,270), and a diagnosis in hospital (28.53%; 933/3,270). Of note, 6.54% (214/3,270) of all incident cases were first identified as a result of a cholinesterase inhibitor prescription.
- Data not shown in Table 4: Of the incident cases that were *first identified in long-term care* in 2012/13, 79.72% (912/1,144) were identified at the point of admission. The remaining 20.28% (232/1,144) were admitted to long-term care prior to April 1, 2012 (in some cases by many years) and were not identified as having dementia until 2012/13. Therefore, of *all* incident cases of dementia, 27.89% (912/3,270) were first identified with dementia at the point of admission to long-term care. On further examination, 63.38% (578/912) of those first identified at the point of admission were identified with impairment at the moderate to very severe level (CPS Scale Score  $\geq 3$ ) or a disease category of Alzheimer's disease/other dementia. The remaining 36.62% (334/912) of individuals first identified at the point of admission were identified with mild impairment (CPS Scale Score of 2).
- The higher rate of incidence among females than males overall (82.48 vs. 62.80 per 10,000 PAR) was reflected in the databases where cases of dementia were first identified. Among those first identified by a prescription drug, the unadjusted incidence rate was 58% higher among females than males (5.81 vs. 3.68 per 10,000 PAR); 29% higher among females than males in physician

services claims (24.52 vs. 18.98 per 10,000 PAR); 20% higher in hospital (22.60 vs. 18.89 per 10,000 PAR); and 6% higher in long-term care (22.60 vs. 21.25 per 10,000 PAR). These differences were statistically significant ( $p < 0.05$ ).

## Incidence by Rural and Urban Residence

Table 5

- Among all adults aged 45 years and older, there were 1,133 incident cases among rural residents and 2,105 incident cases among urban residents.
- Among those aged 85 years and older, the unadjusted incidence rate was 14% higher among rural than urban residents (76.24 vs. 67.14 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in unadjusted incidence rates between rural and urban residents were not statistically significant.
- Among all age groups combined, the 2% higher unadjusted incidence rate in urban compared to rural residents was not statistically significant (7.50 vs. 7.32 per 1,000 PAR).

## Incidence by Sex and Health Region (Unadjusted\* Rates)

Table 6

\* *Note that the numbers of individuals identified with incident dementia, by health region, are the same in Tables 6 and 7. However, the unadjusted (crude) and adjusted rates are different. The unadjusted rates in Table 6 may be used to compare the number of females and males with incident dementia. The adjusted rates in Table 7 (see next section) are more appropriate than the unadjusted rates for making comparisons across health regions.*

- Within every health region, similar to the province overall (8.25 vs. 6.28 per 1,000 PAR), the unadjusted incidence rate of dementia was higher among females than males. In 6 health regions, these differences were statistically significant ( $p < 0.05$ ) (Heartland, Kelsey Trail, Regina Qu'Appelle, Saskatoon, Sun Country, and Sunrise), ranging from a difference of 42% in Heartland (11.18 vs. 7.90 per 1,000 PAR) to a difference of 27% in Sunrise (11.25 vs. 8.89 per 1,000 PAR).

## Incidence by Health Region (Age- and Sex-adjusted rates)

Table 7

This table shows the age- and sex-adjusted total incidence of dementia (females and males combined), for each health region across the province.

- The incidence (number of new cases) ranged from 32 to 880 across the health regions. For 8 of the 11 regions, incidence ranged from 175 to 286.
- The incidence (and population at risk) was highest in Saskatoon Health Region, where a total of 880 new cases were identified for the 2012/13 12-month period. Regina Qu'Appelle Health Region had the second highest incidence at 712 cases.
- The incidence (and population at risk) was lowest in the Northern Health Regions, where a total of 32 cases were identified for the same 12-month period.
- The adjusted incidence rates ranged from 6.59 to 8.77 per 1,000 PAR across the health regions.
- The adjusted incidence rate was highest in Sun Country Health Region (8.77 per 1,000 PAR) and second highest in Heartland Health Region (8.63 per 1,000 PAR). These adjusted incidence rates were 15-17% higher than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). The difference between each of these adjusted rates and the adjusted rate for all health regions combined were statistically significant ( $p < 0.05$ ).
- The adjusted incidence rate was lowest in Prince Albert Parkland (6.59 per 1,000 PAR) and the Northern Health Regions (6.66 per 1,000 PAR). These rates were 13-14% lower than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). The difference between each of these adjusted rates and the adjusted rate for all health regions combined were not statistically significant.

*Note.* The use of large samples may result in 'statistically significant differences' that are not necessarily 'clinically significant'. For this reason, it is also important to consider the actual magnitude of the difference in question (e.g., 8.77 vs. 7.51 represents a difference of 1 person for every 1,000 PAR).

## Incidence

### Incidence by Sex and Age Group

Table 3 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and age group, Saskatchewan (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Rate per 1,000 PAR	n	PAR	Rate per 1,000 PAR	n	PAR	Rate per 1,000 PAR	
45-54	37	75,597	0.49	33	77,592	0.43	70	153,189	0.46	0.56
55-64	85	67,958	1.25	92	69,958	1.32	177	137,916	1.28	0.74
65-74	165	42,193	3.91	164	41,005	4.00	329	83,198	3.95	0.84
75-84	539	27,767	19.41	475	22,849	20.79	1,014	50,616	20.03	0.27
85+	1,061	15,267	69.50	619	8,826	70.13	1,680	24,093	69.73	0.85
All ages	1,887	228,782	<b>8.25</b>	1,383	220,230	<b>6.28</b>	3,270	449,012	7.28	<b>&lt;.0001</b>

<sup>a</sup> Chi-square test used to determine statistical significance

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

### Incidence by Sex and Database

Table 4 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and database, Saskatchewan (April 1, 2012 to March 31, 2013)

Database	Female			Male			Total			p-value (dementia cohort)	p-value <sup>a</sup> (PAR)
	n	Rate per 100 with incident dementia	Rate per 10,000 PAR	n	Rate per 100 with incident dementia	Rate per 10,000 PAR	n	Rate per 100 with incident dementia	Rate per 10,000 PAR		
Physician	561	29.73	<b>24.52</b>	418	30.22	<b>18.98</b>	979	29.94	21.80	0.24	<b>&lt;0.0001</b>
Hospital	517	27.40	<b>22.60</b>	416	30.08	<b>18.89</b>	933	28.53	20.78	0.76	<b>&lt;0.0001</b>
Prescription Drug	133	7.05	<b>5.81</b>	81	5.86	<b>3.68</b>	214	6.54	4.77	0.17	<b>0.001</b>
Long-term Care	676	35.82	<b>22.60</b>	468	33.84	<b>21.25</b>	1,144	34.98	25.48	0.09	<b>0.006</b>
Total	1,887	100.00	82.48	1,383	100.00	62.80	3,270	100.00	72.83		

<sup>a</sup> Chi-square test used to determine statistical significance

Note. Incident dementia Female  $N = 1,887$ ; Male  $N = 1,383$ ; Total  $N = 3,270$ ; Population at risk (PAR) Female  $N = 228,782$ ; Male  $N = 220,230$ ; Total  $N = 449,012$

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

### Incidence by Rural and Urban Residence

Table 5 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by rural and urban residence, Saskatchewan (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Rate per 1,000 PAR	n	PAR	Rate per 1,000 PAR	n	PAR	Rate per 1,000 PAR	
45-54	23	48,582	0.47	45	98,449	0.46	68	147,031	0.46	0.89
55-64	63	49,334	1.28	110	84,260	1.31	173	133,594	1.29	0.89
65-74	110	31,551	3.49	213	49,689	4.29	323	81,240	3.98	0.08
75-84	357	17,810	20.04	645	32,096	20.10	1,002	49,906	20.08	0.97
85+	580	7,608	<b>76.24</b>	1,092	16,264	<b>67.14</b>	1,672	23,872	70.04	<b>0.01</b>
All ages	1,133	154,885	7.32	2,105	280,758	7.50	3,238	435,643	7.43	0.5

<sup>a</sup> Chi-square test used to determine statistical significance

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).



### Incidence by Sex and Health Region (Unadjusted Rates)

Table 6 Unadjusted (crude) 12-month incidence of dementia among adults 45 years of age and older, by sex and health region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	Female			Male			Total			p-value <sup>b</sup>
	n	PAR	Rate per 1,000 PAR	n	PAR	Rate per 1,000 PAR	n	PAR	Rate per 1,000 PAR	
Northern <sup>a</sup>	17	4,610	3.69	15	5,073	2.96	32	9,683	3.30	0.53
Cypress	99	10,468	9.46	76	10,213	7.44	175	20,681	8.46	0.11
Five Hills	118	13,211	8.93	90	12,515	7.19	208	25,726	8.09	0.12
Heartland	114	10,200	<b>11.18</b>	81	10,250	<b>7.90</b>	195	20,450	9.54	<b>0.02</b>
Kelsey Trail	101	9,827	<b>10.28</b>	74	9,695	<b>7.63</b>	175	19,522	8.96	<b>&lt; 0.05</b>
Prairie North	101	13,637	7.41	78	13,602	5.73	179	27,239	6.57	0.09
Prince Albert Parkland	104	16,307	6.38	87	15,738	5.53	191	32,045	5.96	0.32
Regina Qu'Appelle	416	56,223	<b>7.40</b>	296	52,606	<b>5.63</b>	712	108,829	6.54	<b>&lt;.001</b>
Saskatoon	522	65,630	<b>7.95</b>	358	61,539	<b>5.82</b>	880	127,169	6.92	<b>&lt;.0001</b>
Sun Country	128	11,895	<b>10.76</b>	99	12,069	<b>8.20</b>	227	23,964	9.47	<b>0.04</b>
Sunrise	162	14,400	<b>11.25</b>	124	13,950	<b>8.89</b>	286	28,350	10.09	<b>&lt; 0.05</b>
All regions	1,882	226,408	<b>8.31</b>	1,378	217,250	<b>6.34</b>	3,260	443,658	7.35	<b>&lt;.0001</b>

<sup>a</sup> Northern health regions include Keewatin Yatthe, Athabasca Health Authority, and Mamawetan Churchill River

<sup>b</sup> Chi-square test used to determine statistical significance

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

### Incidence by Sex and Health Region (Age- and Sex-adjusted Rates)

Table 7 Age- and sex-adjusted 12-month incidence of dementia among adults 45 years of age and older, by health region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR	Crude Rate per 1,000 PAR	Risk Adjusted Rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds ratio	95% CI	p-value <sup>a</sup>
Northern <sup>a</sup>	32	9,683	3.30	6.66	4.6 - 9.4	0.90	0.6 - 1.3	ns
Cypress	175	20,681	8.46	7.58	6.5 - 8.8	1.02	0.9 - 1.2	ns
Five Hills	208	25,726	8.09	6.81	5.9 - 7.8	0.91	0.8 - 1.0	ns
Heartland	195	20,450	9.54	<b>8.63</b>	7.5 - 9.9	1.18	1.0 - 1.4	<b>&lt;.05</b>
Kelsey Trail	175	19,522	8.96	7.72	6.6 - 8.9	1.04	0.9 - 1.2	ns
Prairie North	179	27,239	6.57	8.08	6.9 - 9.4	1.10	0.9 - 1.3	ns
Prince Albert Parkland	191	32,045	5.96	6.59	5.7 - 7.6	0.87	0.8 - 1.0	ns
Regina Qu'Appelle	712	108,829	6.54	7.15	6.6 - 7.7	0.95	0.9 - 1.0	ns
Saskatoon	880	127,169	6.92	7.41	6.9 - 7.9	1.00	0.9 - 1.1	ns
Sun Country	227	23,964	9.47	<b>8.77</b>	7.7 - 10.0	1.20	1.0 - 1.4	<b>&lt;.05</b>
Sunrise	286	28,350	10.09	8.30	7.4 - 9.3	1.13	1.0 - 1.3	ns
Health region unavailable <sup>c</sup>	10	5,354	1.87	4.55	2.2 - 8.4	0.60	0.3 - 1.1	ns
All regions	3,270	449,012	7.28	<b>7.51</b>	7.3-7.8			

<sup>a</sup> Northern health regions include Keewatin Yatthe, Athabasca Health Authority, and Mamawetan Churchill River

<sup>b</sup> Chi-square test used to determine statistical significance

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

<sup>c</sup> For 10 individuals with incident dementia, health region information was unavailable.

Note. A map of age- and sex-adjusted incidence rates by health region is presented in Figure 1

## Prevalence (2012/2013)

### Prevalence by Sex and Age Group

Table 8

- A total of 13,012 prevalent (existing) cases of dementia were identified among adults 45 years and older in Saskatchewan during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted prevalence rate of dementia was 28.16 per 1,000 population at risk (PAR).
- Overall, the unadjusted 12-month prevalence rate among individuals aged 45 years and older was 3.9 times the incidence rate (28.16 vs. 7.28 per 1,000 PAR).

#### Sex

- There were 8,099 prevalent cases among females and 4,913 prevalent cases among males aged 45 years and older.
- Among those aged 85 years and older, the unadjusted prevalence rate was 28% higher among females than males (239.77 vs. 187.14 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in unadjusted prevalence rates between females and males were not statistically significant.
- Among all age groups combined, the unadjusted prevalence rate was 57% higher among females than males (34.19 vs. 21.82 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 8% of prevalent cases (1,087/13,012), those aged 65 to 84 accounted for 39% (5,078/13,012), and adults aged 85 years and older accounted for 53% (6,847/13,012).
- Overall, the unadjusted prevalence rate was 160 times higher among adults aged 85 and older than among those 45 to 54 years of age (221.30 vs. 1.38 per 1,000 PAR). The sharpest escalation in the unadjusted prevalence rate occurred at age 55 years, increasing by 4.6 times among the 55 to 64 age group compared to the 45 to 54 age group (6.31 vs. 1.38 per 1,000 PAR).

### Prevalence by Sex and Database

Table 9

- The greatest proportion of all 12-month prevalent cases in 2012/13 was first identified by a diagnosis in physician services claims (40.16%; 5,225/13,012). A further 24.72% (3,217/13,012) were first identified in long-term care, 23.84% (3,102/13,012) by a diagnosis in hospital, and 11.28% (1,468/13,012) by a cholinesterase inhibitor prescription.
- Data not shown in Table 9: Of the prevalent cases *that were first identified in long-term care* in 2012/13, 68.89% (2,216/3,217) were identified at the point of admission to long-term care, and 31.12% (1,001/3,217) were identified 30 days or longer after admission. Therefore, of *all* prevalent cases of dementia, 17.03% (2,216/13,012) were first identified with dementia at the point of admission to long-term care. Of all prevalent cases first identified at the point of admission to long-term care, 65.29% (1,447/2,216) were identified with impairment at the moderate to very severe level (CPS Scale Score  $\geq 3$ ) or a disease category of Alzheimer's disease/other dementia and 34.70% (769/2,216) were identified with mild impairment (CPS Scale Score of 2).
- The higher overall unadjusted prevalence rate among females than males overall (341.90 vs. 218.22 per 10,000 PAR) was evident in the databases where cases of dementia were first identified. Among those first identified in long-term care, the unadjusted prevalence rate was 97% higher among females than males (91.56 vs. 46.55 per 10,000 PAR); 50% higher among females than males in hospital (80.21 vs. 53.39 per 10,000 PAR); 49% higher by prescription drug (37.82 vs. 25.41 per 10,000 PAR); and 42% higher in physician services claims (132.30 vs. 92.87 per 10,000 PAR). These differences were statistically significant ( $p < 0.05$ ).

## Prevalence by Rural and Urban Residence

Table 10

- Among all adults aged 45 years and older, there were 4,394 prevalent cases among rural residents and 8,497 prevalent cases among urban residents.
- Among those younger than 85 years, the unadjusted prevalence rates were higher among urban than rural residents (1.58 to 69.95 vs. 1.09 to 64.60 per 1,000 PAR). Among those aged 85 years and older, the unadjusted prevalence rate was 13% higher among rural than urban residents (240.11 vs. 212.70 per 1,000 PAR). These rural vs. urban differences were statistically significant ( $p < 0.05$ ).
- Among all age groups combined, the unadjusted prevalence rate was 6% higher among urban than rural residents (29.38 vs. 27.59 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

## Prevalence by Sex and Health Region (Unadjusted\* Rates)

Table 11

\* *Note that the numbers of individuals identified with prevalent dementia, by health region, are the same in Tables 11 and 12. However, the unadjusted (crude) and adjusted rates are different. The unadjusted rates in Table 11 may be used to compare the number of females and males with prevalent dementia. The adjusted rates (see next section) are more appropriate than the unadjusted rates for making comparisons across health regions.*

- Within every health region, similar to the province overall (34.49 vs. 22.09 per 1,000 PAR), the unadjusted prevalence rate of dementia was higher among females than males. These sex differences were statistically significant in every health region ( $p < 0.05$ ) except the Northern Health Regions, ranging from a difference of 73% in Kelsey Trail (41.46 vs. 23.96 per 1,000 PAR) to a difference of 29% in Prairie North (28.08 vs. 21.79 per 1,000 PAR).

## Prevalence by Health Region (Age- and Sex-adjusted rates)

Table 12

This table shows the adjusted total prevalence of dementia (females and males combined), for every health region across the province.

- Prevalence (number of existing cases) ranged from 126 to 3,286 across the health regions. For 8 of the 11 regions, prevalence ranged from 663 to 1,107.
- The prevalence (and population at risk) was highest in Saskatoon Health Region, where a total of 3,286 existing cases were identified for the 2012/13 12-month period. Regina Qu'Appelle Health Region had the second highest prevalence at 3,041 cases.
- The prevalence (and population at risk) was lowest in the Northern Health Regions, where a total of 126 cases were identified for the same 12-month period.
- The adjusted prevalence rates ranged from 25.87 to 31.91 per 1,000 PAR across the health regions.
- The adjusted prevalence rate was highest in Prince Albert Parkland Health Region (31.91 per 1,000 PAR) and second highest in Sun Country Health Region (30.55 per 1,000 PAR). These adjusted prevalence rates were 8-13% higher than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). Two additional health regions also had prevalence rates that were statistically significantly higher ( $p < 0.05$ ) than all health regions combined: Sunrise at 29.40 and Regina Qu'Appelle at 28.75 per 1,000 PAR).
- The adjusted prevalence rate was lowest in the Northern Health Regions (25.87 per 1,000 PAR). This rate was 9% lower than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). This difference was not statistically significant. The adjusted prevalence rate in the Saskatoon Health Region (26.45 per 1,000 PAR) was 6% lower than the adjusted rate for all health regions combined; this difference was statistically significant ( $p < 0.05$ ).

*Note.* The use of large samples may result in 'statistically significant differences' that are not necessarily 'clinically significant'. For this reason, it is also important to consider the actual magnitude of the difference in question (e.g., 31.91 vs. 28.16 represents a difference of 3 to 4 people for every 1,000 PAR).

## Prevalence

### Prevalence by Sex and Age Group

Table 8 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and age group, Saskatchewan (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Rate per 1,000 PAR	n	PAR	Rate per 1,000 PAR	n	PAR	Rate per 1,000 PAR	
45-54	110	75,707	1.45	101	77,693	1.30	211	153,400	1.38	0.42
55-64	446	68,404	6.52	430	70,388	6.11	876	138,792	6.31	0.34
65-74	694	42,887	16.18	697	41,702	16.71	1,391	84,589	16.44	0.54
75-84	2,034	29,801	68.25	1,653	24,502	67.46	3,687	54,303	67.90	0.72
85+	4,815	20,082	<b>239.77</b>	2,032	10,858	<b>187.14</b>	6,847	30,940	221.30	<b>&lt;.0001</b>
All ages	8,099	236,881	<b>34.19</b>	4,913	225,143	<b>21.82</b>	13,012	462,024	28.16	<b>&lt;.0001</b>

<sup>a</sup> Chi-square test used to determine statistical significance

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

### Prevalence by Sex and Database

Table 9 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and database, Saskatchewan (April 1, 2012 to March 31, 2013)

Database	Female			Male			Total			p-value <sup>a</sup>
	n	Rate per 100 with incident dementia	Rate per 10,000 PAR	n	Rate per 100 with incident dementia	Rate per 10,000 PAR	n	Rate per 100 with incident dementia	Rate per 10,000 PAR	
Physician	3,134	38.70	<b>132.30</b>	2,091	42.56	<b>92.87</b>	5,225	40.16	113.09	<b>&lt;.0001</b>
Hospital	1,900	23.46	<b>80.21</b>	1,202	24.47	<b>53.39</b>	3,102	23.84	67.14	<b>&lt;.0001</b>
Prescription Drug	896	11.06	<b>37.82</b>	572	11.64	<b>25.41</b>	1,468	11.28	31.77	<b>&lt;.0001</b>
Long-term Care	2,169	26.78	<b>91.56</b>	1,048	21.33	<b>46.55</b>	3,217	24.72	69.63	<b>&lt;.0001</b>
Total	8,099	100.00	<b>341.90</b>	4,913	100.00	<b>218.22</b>	13,012	100.00	281.63	

<sup>a</sup> Chi-square test used to determine statistical significance

Note. Prevalent dementia Female  $N = 8,099$ ; Male  $N = 4,913$ ; Total  $N = 13,012$ ; Population at risk (PAR) Female  $N = 236,881$ ; Male  $N = 225,143$ ; Total  $N = 462,024$

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

### Prevalence by Rural and Urban Residence

Table 10 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by rural and urban residence, Saskatchewan (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Rate per 1,000 PAR	n	PAR	Rate per 1,000 PAR	n	PAR	Rate per 1,000 PAR	
45-54	53	48,635	<b>1.09</b>	156	98,605	<b>1.58</b>	209	147,240	1.42	<b>0.02</b>
55-64	241	49,575	<b>4.86</b>	619	84,879	<b>7.29</b>	860	134,454	6.40	<b>&lt;.0001</b>
65-74	466	32,017	<b>14.55</b>	914	50,603	<b>18.06</b>	1,380	82,620	16.70	<b>0.02</b>
75-84	1,230	19,040	<b>64.60</b>	2,414	34,510	<b>69.95</b>	3,644	53,550	68.05	<b>0.02</b>
85+	2,404	10,012	<b>240.11</b>	4,394	20,658	<b>212.70</b>	6,798	30,670	221.65	<b>&lt;.0001</b>
All ages	4,394	159,279	<b>27.59</b>	8,497	289,255	<b>29.38</b>	12,891	448,534	28.74	<b>0.0006</b>

<sup>a</sup> Chi-square test used to determine statistical significance

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ )

### Prevalence by Sex and Health Region (Unadjusted Rates)

Table 11 Unadjusted (crude) 12-month prevalence of dementia among adults 45 years of age and older, by sex and health region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	Female			Male			Total			p-value <sup>b</sup>
	n	PAR	Rate per 1,000 PAR	n	PAR	Rate per 1,000 PAR	n	PAR	Rate per 1,000 PAR	
Northern <sup>a</sup>	71	4,681	15.17	55	5,128	10.73	126	9,809	12.85	0.05
Cypress	423	10,891	<b>38.84</b>	265	10,478	<b>25.29</b>	688	21,369	32.20	<.0001
Five Hills	523	13,734	<b>38.08</b>	314	12,829	<b>24.48</b>	837	26,563	31.51	<.0001
Heartland	423	10,623	<b>39.82</b>	283	10,533	<b>26.87</b>	706	21,156	33.37	<.0001
Kelsey Trail	425	10,252	<b>41.46</b>	238	9,933	<b>23.96</b>	663	20,185	32.85	<.0001
Prairie North	394	14,031	<b>28.08</b>	303	13,905	<b>21.79</b>	697	27,936	24.95	0.01
Prince Albert Parkland	594	16,901	<b>35.15</b>	399	16,137	<b>24.73</b>	993	33,038	30.06	<.0001
Regina Qu'Appelle	1,924	58,147	<b>33.09</b>	1,117	53,723	<b>20.79</b>	3,041	111,870	27.18	<.0001
Saskatoon	2,067	67,697	<b>30.53</b>	1,219	62,758	<b>19.42</b>	3,286	130,455	25.19	<.0001
Sun Country	539	12,434	<b>43.35</b>	312	12,381	<b>25.20</b>	851	24,815	34.29	<.0001
Sunrise	704	15,104	<b>46.61</b>	403	14,353	<b>28.08</b>	1,107	29,457	37.58	<.0001
All regions	8,087	234,495	<b>34.49</b>	4,908	222,158	<b>22.09</b>	12,995	456,653	28.46	<.0001

<sup>a</sup> Northern health regions include Keewatin Yatthe, Athabasca Health Authority, and Mamawetan Churchill River

<sup>b</sup> Chi-square test used to determine statistical significance

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ).

### Prevalence by Sex and Health Region (Age- and Sex-adjusted Rates)

Table 12 Age- and sex-adjusted 12-month prevalence of dementia among adults 45 years of age and older, by health region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR	Crude Rate per 1,000 PAR	Risk Adjusted Rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds ratio	95% CI	p-value <sup>b</sup>
Northern <sup>b</sup>	126	9,809	12.85	25.87	21.6 - 30.8	0.92	0.77-1.11	ns
Cypress	688	21,369	32.20	28.04	26.0 - 30.2	1.01	0.93-1.10	ns
Five Hills	837	26,563	31.51	26.35	24.6 - 28.2	0.93	0.87-1.01	ns
Heartland	706	21,156	33.37	29.00	26.9 - 31.2	1.05	0.97-1.15	ns
Kelsey Trail	663	20,185	32.85	27.36	25.3 - 29.5	0.98	0.90-1.07	ns
Prairie North	697	27,936	24.95	29.57	27.4 - 31.8	1.08	0.99-1.17	ns
Prince Albert Parkland	993	33,038	30.06	<b>31.91</b>	30.0 - 33.9	1.19	1.10-1.28	<.05
Regina Qu'Appelle	3,041	111,870	27.18	<b>28.75</b>	27.7 - 29.8	1.05	1.01-1.10	<.05
Saskatoon	3,286	130,455	25.19	<b>26.45</b>	25.6 - 27.4	0.92	0.88-0.96	<.05
Sun Country	851	24,815	34.29	<b>30.55</b>	28.6 - 32.6	1.13	1.04-1.22	<.05
Sunrise	1,107	29,457	37.58	<b>29.40</b>	27.7 - 31.1	1.07	1.003-1.15	<.05
Health region unavailable <sup>c</sup>	17	5,371	3.17	8.15	4.7 - 13.0	0.26	0.16-0.42	<.05
All regions	13,012	462,024	28.16	<b>28.16</b>	27.7 - 28.6			

<sup>a</sup> Northern health regions include Keewatin Yatthe, Athabasca Health Authority, and Mamawetan Churchill River

<sup>b</sup> Chi-square test used to determine statistical significance

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

<sup>c</sup> For 17 individuals with prevalent dementia, health region information was unavailable.

Note. A map of age- and sex-adjusted prevalence rates by health region is presented in Figure 2

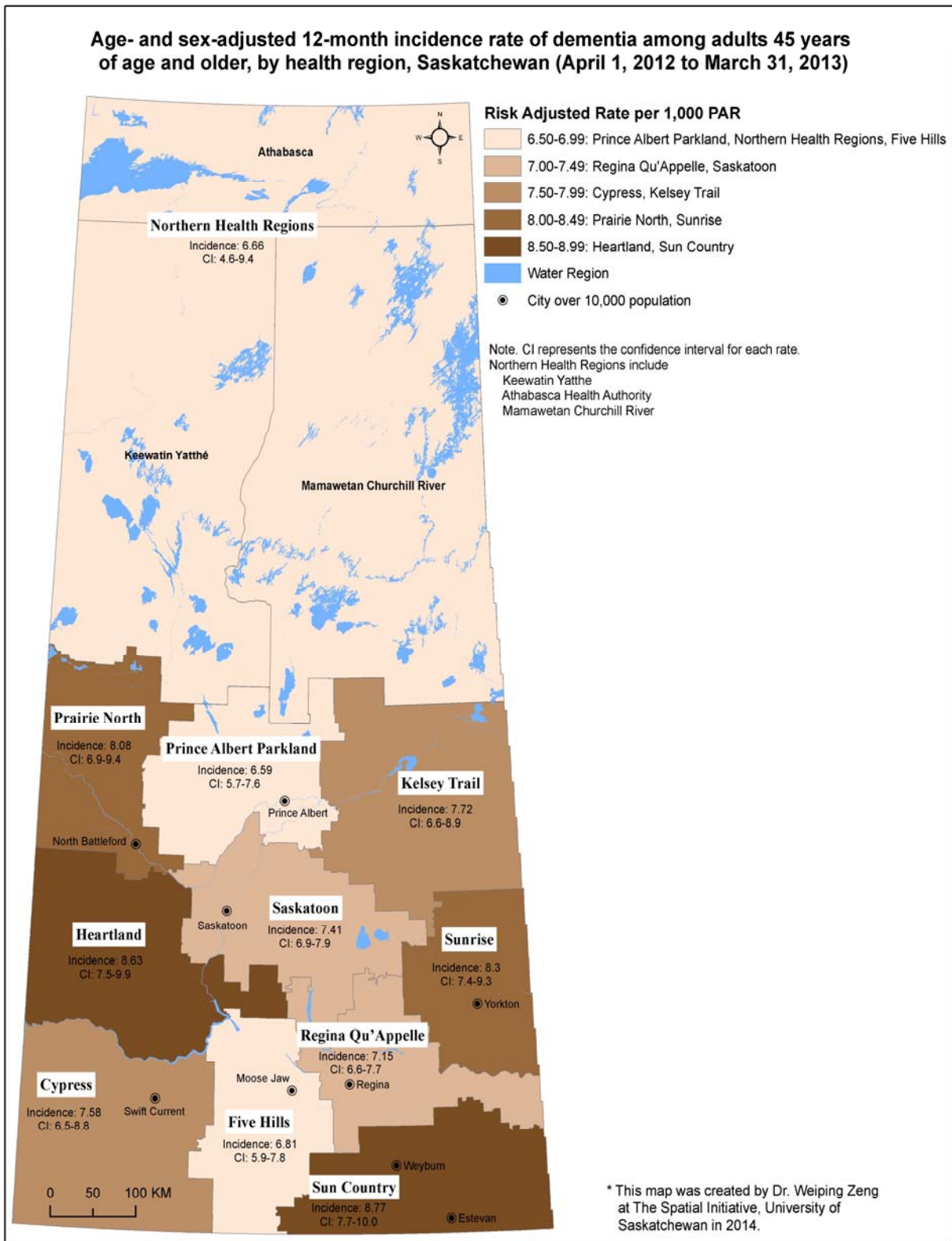


Figure 1 Age- and sex-adjusted 12-month incidence rate of dementia<sup>a</sup> per 1,000 PAR (population at risk) among adults 45 years of age and older, by health region, Saskatchewan (April 1, 2012 to March 31, 2013)

<sup>a</sup> CI represents the confidence interval for each rate. See Tables 7 and 12 for further details.

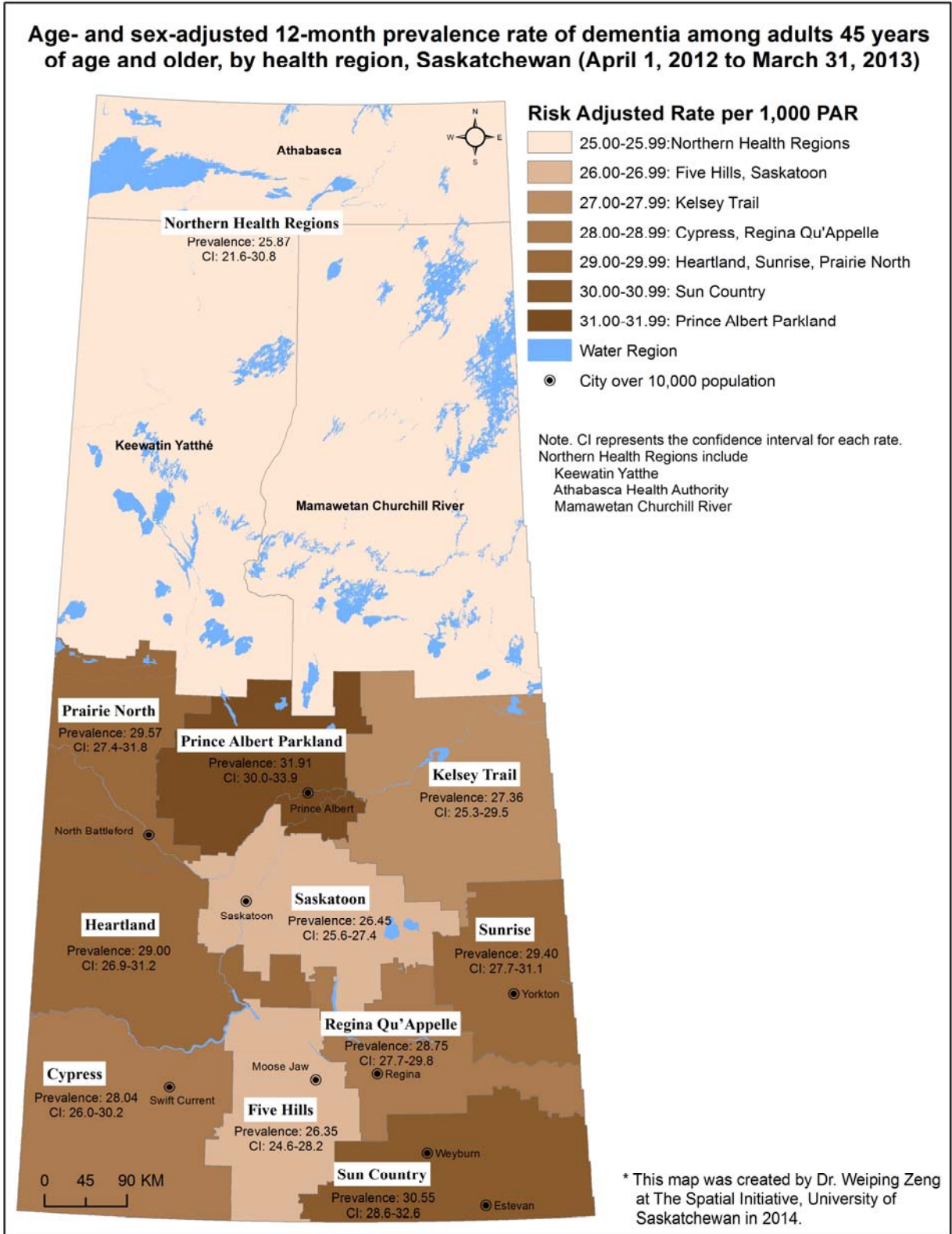


Figure 2 Age- and sex-adjusted 12-month prevalence rate of dementia<sup>a</sup> per 1,000 PAR (population at risk) among adults 45 years of age and older, by health region, Saskatchewan (April 1, 2012 to March 31, 2013)

<sup>a</sup> CI represents the confidence interval for each rate. See Tables 7 and 12 for further details.

# Environmental Scan

## Availability of Dementia-related Services

Table 13

Home Care Assessors were presented with a list of 43 services and asked to indicate the availability of these services “in the majority of communities for which you are primarily responsible in your health region”. Responses included ‘everyday’, ‘a few times a week’, ‘once a week’, ‘once a month’, ‘less often than once a month’, and ‘not available’. For this purposes of the present analysis, the responses were grouped into ‘at least weekly’, ‘less often than weekly’, and ‘not available’. For the housing options (seniors housing, special care home, personal care home, assisted living, special care units), services were categorized as ‘available’ or ‘not available’.

- *Health Promotion Programs* related to dementia care were reported to be widely unavailable according to more than 70% of respondents. The exception was recreational activities for older adults, which most respondents indicated were available at least weekly in their communities (84%;  $n = 68/81$ ).
- *Primary Health Care* services related to dementia care that were available at least weekly according to more than half of respondents, rank ordered, included pharmacists (88.8%), family physicians (82.5%), physical therapists (63.8%), and occupational therapists (56.1%). Nurse Practitioners were unavailable (47.5%) in nearly half of the communities served by respondents, as was the service of multidisciplinary team assessment (59.3%).
- *Post-diagnostic Support* services that most respondents indicated were available weekly included palliative care (90.1%), adult day programs (81.5%), case management (73.8%), and volunteer services/visitors (53.8%). More than half of respondents reported that other post-diagnostic support was not available in their communities, including private caregiving (57.3%), caregiver support groups (52.5%), and counselling for diagnosed individuals (51.3%).
- *Home Care* services were widely available weekly, including four types of personal care services (82.9% to 98.8%), meals on wheels and meal preparation (93.9% to 95.1%), homemaking (67.1%), and in-home respite (74.1%), and

planned respite (69.6%). Home care services that were unavailable in most communities, according to the majority of respondents, included night respite (75.3%), weekend respite (48.1%), and transportation to health care (56.8%).

- *Long-term Care* counselling for individuals with dementia (75.3%) and caregivers (66.2%) was reported to be widely unavailable. Long-term care housing\* available in the community, according to most respondents, included seniors housing (93.5%), special care homes (82.4%), and personal care homes (67.1%). Long-term housing that was more likely to be unavailable included assisted living options (46.1%) and special care units (48.6%).

\* See Table 13 bottom for these figures

## Primary Health Care (PHC) Orientation of Dementia-related Services\*

Table 14

Home Care Assessors responded to items in six scales: *Information and Education*, *Accessibility*, *Population Orientation (Community Fit)*, *Coordinated Care*, *Comprehensiveness of Care*, and *Quality of Care*. Respondents were asked to think of “‘community’ as the majority of communities for which you are primarily responsible in your health region” when responding to these items.

- *Information and Education*. Mean scores on individual items in the *Information and Education* scale ranged from strongly negative with respect to public education to reduce stigma (1.8, SD = 0.8) to somewhat positive with respect to dementia awareness among local health care professionals (3.5, SD = 1.2). Respondents’ views regarding the awareness about ‘what to do’ or ‘where to go’ (2.7, SD = 1.1) were somewhat negative, as were their views on information for caregivers (2.4, SD = 1.1). The overall scale mean of 13.0 (SD = 3.9, range = 6-23) demonstrated that respondents perceived community-level dementia-related information and education to be inadequate.



- *Accessibility*. Respondents also held somewhat negative perceptions on the dimension of *Accessibility* of dementia-related services, specifically with regard to the influence of geographic location on accessibility (2.2, SD = 1.2) and availability of subsidized/free transportation services (1.9, SD = 1.3). Respondents reported overall somewhat negative perceptions of *Accessibility*, with an average scale score of 12.4 (SD = 3.8, range = 5-22).
- *Population Orientation*. Similarly, *Population Orientation* (i.e., community fit) of dementia-related services was perceived as inappropriate on average, specifically with regard to level of caregiver support (2.0, SD = 0.9) and level of primary health care (PHC) services (2.2, SD = 1.0). Respondents reported overall somewhat negative perceptions of *Population Orientation*, with an average scale score of 11.9 (SD = 3.8, range = 5-21).
- *Coordinated Care*. The dimension of *Coordinated Care* fared more favorably than most dimensions considered, with perceptions being neutral (2.8, SD = 1.2) on transition from community to long-term care (LTC) as well as ease of access to patient health history, and somewhat positive on coordination of patient care and service delivery (3.3, SD = 1.0 to 3.4, SD = 1.0). The average *Coordinated Care* scale score was in the neutral range at 15.6 (SD = 3.6, range = 8-24).
- *Comprehensiveness of Care*. On average, respondents held neutral to somewhat positive views on the comprehensiveness of care for individuals with dementia in their communities. Perceptions ranged from neutral regarding timely referral to appropriate services (3.0, SD = 1.0) to somewhat positive with respect to one or more health care professional being able to provide ongoing management (3.8, SD = 0.9). Of the 6 dimensions considered, *Comprehensiveness of Care* fared the most favorably. The average *Comprehensiveness of Care* scale score of 17.1 (SD = 3.9, range = 7-25) reflected the overall somewhat positive position of respondents on this dimension.
- *Quality of Care*. Similarly, respondents held somewhat negative to somewhat positive views of *Quality of Care* with respect to timely diagnosis

(2.5, SD = 0.9) and effectiveness of screening tools (3.3, SD = 0.9). The average *Quality of Care* scale score of 14.3 (SD = 3.2, range = 8-21) reflected the overall neutral position of respondents on this dimension.

- A final single summary item asked whether “the amount of supportive resources and services available in the community is adequate to allow individuals with dementia to remain at home for as long as possible.” The response categories for the single item were identical to the response categories for the scale items described above. According to this single item, environmental scan respondents perceived the amount of supportive resources and services available in the community to be somewhat inadequate (2.4 (SD = 1.1, range = 1-4)).

### Environmental Scan Comments

Home Care Assessors were asked to provide written comments at three different points in the environmental scan survey. These comments are summarized in the following pages, grouped together according to the health region of the respondent.

## Environmental Scan

Table 13 Availability of dementia-related services, Saskatchewan (N = 82)

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion	77	7 (8.5)	13 (16.7)	57 (74.0)
Healthy lifestyle promotion related to dementia	78	10 (12.8)	13 (16.7)	55 (70.5)
Recreational activities for older adults	81	68 (84.0)	9 (11.1)	4 (4.9)
<b>Primary Health Care</b>				
Pharmacist	80	71 (88.8)	5 (6.3)	4 (5.0)
Family Physician	80	66 (82.5)	7 (8.8)	7 (8.8)
Nurse Practitioner	80	37 (46.3)	5 (6.3)	38 (47.5)
Physical Therapist	80	51 (63.8)	20 (20.5)	9 (11.3)
Occupational Therapist	82	46 (56.1)	34 (41.5)	2 (2.4)
Social Worker	81	39 (48.1)	22 (27.2)	20 (24.7)
Other health care professionals	78	39 (50.0)	16 (20.5)	23 (29.5)
Screening of older adults	80	25 (31.3)	20 (25.0)	35 (43.8)
Multidisciplinary team assessment	81	19 (23.5)	14 (17.3)	48 (59.3)
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals	80	59 (73.8)	10 (12.5)	11 (13.8)
Volunteer services/visitors	80	43 (53.8)	16 (20.0)	21 (26.3)
Counselling diagnosed individuals	80	21 (26.3)	18 (22.5)	41 (51.3)
Counselling caregivers	82	22 (26.8)	25 (30.5)	35 (42.7)
Caregiver support group	80	12 (15.0)	26 (32.5)	42 (52.5)
Other caregiver support services	81	29 (35.8)	24 (29.6)	28 (34.6)
Private caregiving	75	31 (41.3)	1 (1.3)	43 (57.3)
Adult day program	81	66 (81.5)	1 (1.2)	14 (17.3)
Palliative care	81	73 (90.1)	4 (4.9)	4 (4.9)
<b>Home Care</b>				
Meals on Wheels	82	77 (93.9)	0	5 (6.1)
Meal Prep	81	77 (95.1)	1 (1.2)	3 (3.7)
Personal care – AM Care	82	81 (98.8)	1 (1.2)	0
Personal care – HS Care	82	68 (82.9)	1 (1.2)	13 (15.9)
Personal care – Toileting	80	69 (86.3)	1 (1.3)	10 (12.5)
Personal care – Bath Assist	81	80 (98.8)	1 (1.2)	0
Homemaking	79	53 (67.1)	2 (2.5)	24 (30.4)
Transportation to health care	81	31 (38.3)	4 (4.9)	46 (56.8)
In-home respite and visiting	81	60 (74.1)	13 (16.0)	8 (9.9)
Planned respite care	79	55 (69.6)	23 (39.1)	1 (1.3)
Night respite	81	16 (19.8)	4 (4.9)	61 (75.3)
Weekend respite	77	28 (36.4)	12 (15.6)	37 (48.1)
Emergency respite	79	35 (44.3)	13 (16.5)	31 (39.2)
<b>Long Term Care*</b>				
Counselling for individuals with dementia	73	8 (11.0)	10 (13.7)	55 (75.3)
Counselling for caregivers	71	13 (18.3)	11 (15.5)	47 (66.2)

\*Other available long-term care services: seniors housing (n=72, 93.5%), special care home (n=61, 82.4%), personal care home (n=51, 67.1%), assisted living option (n=35, 46.1%), special care unit (n=36, 48.6%).

Table 14 Item statistics of Primary Health Care Orientation of Dementia-related Services, Saskatchewan (N = 83)

Attribute	N	Mean	SD (range)
<b>Information and Education</b>	81	13.0	3.9 (6-23)
Adequate awareness about 'what to do' or 'where to go'	81	2.7	1.1 (1-5)
Adequate information for caregivers	81	2.4	1.1 (1-4)
Adequate awareness of dementia among health care professionals in the community	81	3.5	1.2 (1-5)
Adequate dementia-specific continuing education for health care professionals	81	2.5	1.1 (1-5)
Adequate public education to reduce stigma of dementia	81	1.8	0.8 (1-4)
<b>Accessibility</b>	80	12.4	3.8 (5-22)
Appropriate frequency of services	81	2.4	1.1 (1-5)
Appropriate wait time for services	80	2.7	1.3 (1-5)
Available public transportation to services (for older adults)	81	3.1	1.5 (1-5)
Available subsidized/free transportation to services (for older adults)	81	1.9	1.3 (1-5)
Equally accessible services, regardless of geographic location	80	2.2	1.2 (1-5)
<b>Population Orientation</b>	81	11.9	3.8 (5-21)
Appropriate level of PHC services	81	2.2	1.0 (1-5)
Appropriate level of Home Care services	81	2.7	1.2 (1-5)
Appropriate number of LTC beds	81	2.3	1.3 (1-5)
Appropriate telehealth services	81	2.7	1.1 (1-5)
Appropriate level of support for caregivers	81	2.0	0.9 (1-4)
<b>Co-ordinated Care</b>	81	15.6	3.6 (8-24)
Service delivery by different health care professionals in the community is co-ordinated	81	3.3	1.1 (1-5)
All health care professionals in the community have easy access to patient health history	81	2.8	1.3 (1-5)
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]	81	3.4	1.0 (1-5)
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)	81	3.3	1.0 (1-5)
Seamless transition from community to LTC	81	2.8	1.2 (1-5)
<b>Comprehensiveness of Care</b>	81	17.1	3.9 (7-25)
One or more health care professional is able to diagnose	81	3.3	1.4 (1-5)
One or more health care professional is able to provide on-going management	81	3.8	0.9 (2-5)
There is timely referral to appropriate health and social services	81	3.0	1.0 (1-5)
Multidisciplinary care is available	81	3.6	1.1 (1-5)
Health care professionals consider dementia a chronic disease	81	3.4	1.1 (1-5)
<b>Quality of care</b>	81	14.3	3.2 (8-21)
Timely diagnosis occurs	81	2.5	0.9 (1-5)
Health care professionals use standardized diagnostic criteria	81	3.1	1.0 (1-5)
Current screening tools are effective	81	3.3	0.9 (1-5)
Care and management are guided by standardized care pathways	81	2.4	1.0 (1-5)
Health care professionals adequately monitor safety of individuals with dementia living at home	81	2.9	1.1 (1-5)
Adequate amount of supportive resources and services	80	2.4	1.1 (1-4)

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent

# Northern Health Regions

For the Administrative Data Analysis, the 3 Northern health regions included Keewatin Yatthe, Athabasca Health Authority, and Mamawetan Churchill River.

## Administrative Data Analysis

### Incidence (2012/2013)

#### Incidence by Sex and Age Group

Table 15

- A total of 32 incident (new) cases of dementia were identified among adults 45 years and older in the Northern Health Regions during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted incidence rate of dementia was 3.30 per 1,000 population at risk (PAR).

#### Sex

- There were 17 incident cases among females and 15 incident cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted incidence rate was 25% higher among females than males (3.69 vs. 2.96 per 1,000 PAR). This difference was not statistically significant.

#### Age

- Adults 45 to 64 years contributed 22% of incident cases (7/32), those aged 65 to 84 contributed 53% (17/32), and 25% (8/32) were contributed by adults aged 85 years and older.
- The unadjusted incidence rate increased 12 times between the group aged 65 to 74 and those aged 85 years and older (3.96 vs. 48.48 per 1,000 PAR).

#### Incidence by Health Region (Age- and Sex-adjusted rates)

Table 16

This table shows the unadjusted (crude) and adjusted total incidence of dementia (females and males combined), for the Northern Health Regions. *Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted incidence rate for the Northern Health Regions was among the lowest of all health regions (6.66 per 1,000 PAR), ranking 10 of 11 when the health region rates were ordered from highest to lowest. At 6.66 per 1,000 per PAR, the adjusted incidence rate in the Northern Health Regions was 13% lower than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). This difference was not statistically significant.

#### Incidence by Rural and Urban Residence

Table 17

- Among all adults aged 45 years and older, there were 23 incident cases among rural residents and 9 incident cases among urban residents.
- Among all age groups combined, the unadjusted incidence rate was 12% higher in urban compared to rural residents (3.58 vs. 3.21 per 1,000 PAR). This difference was not statistically significant.

## Incidence

Table 15 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and age group, Northern<sup>a</sup> Health Regions (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>b</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	2,125	*	<6	2,232	*	<6	4,357	*	1.00
55-64	<6	1,386	*	<6	1,615	*	<6	3,001	*	1.00
65-74	<6	706	*	<6	809	*	6	1,515	3.96	1.00
75-84	6+	303	*	<6	342	*	11	645	17.05	0.76
85+	<6	90	*	<6	75	*	8	165	48.48	0.73
All ages	17	4,610	3.69	15	5,073	2.96	32	9,683	3.30	0.53

<sup>a</sup> Northern health regions include Keewatin Yatthe, Athabasca Health Authority, and Mamawetan Churchill River

<sup>b</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 16 Age- and sex-adjusted 12-month incidence of dementia among adults 45 years of age and older, Northern<sup>a</sup> Health Regions, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>b</sup>
Northern Health Regions <sup>a</sup>	32	9,683	3.30	6.66	4.6 - 9.4	0.90	0.6 - 1.3	ns

<sup>a</sup> Northern health regions include Keewatin Yatthe, Athabasca Health Authority, and Mamawetan Churchill River

<sup>b</sup> Significance of difference between Northern Health Regions and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 17 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by rural and urban residence, Northern<sup>a</sup> Health Regions (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>b</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,321	*	<6	1,036	*	<6	4,357	*	1.00
55-64	<6	2,086	*	<6	915	*	<6	3,001	*	0.56
65-74	<6	1,124	*	<6	391	*	6	1,515	3.96	<b>0.04</b>
75-84	6+	514	*	<6	131	*	11	645	17.05	0.70
85+	<6	122	*	<6	43	*	8	165	48.48	0.43
All ages	23	7,167	3.21	9	2,516	3.58	32	9,683	3.30	0.78

<sup>a</sup> Northern health regions include Keewatin Yatthe, Athabasca Health Authority, and Mamawetan Churchill River

<sup>b</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Prevalence (2012/2013)

### Prevalence by Sex and Age Group

Table 18

- A total of 126 prevalent (existing) cases of dementia were identified among adults 45 years and older in the Northern Health Regions during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted prevalence rate of dementia was 12.85 per 1,000 population at risk (PAR).
- Overall, the 12-month unadjusted prevalence rate among individuals aged 45 years and older was 3.9 times the incidence rate (12.85 vs. 3.30 per 1,000 PAR).

#### Sex

- There were 71 prevalent cases among females and 55 prevalent cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted prevalence rate was 41% higher among females than males (15.17 vs. 10.73 per 1,000 PAR). This difference was not statistically significant.

#### Age

- Adults 45 to 64 years contributed 18% of prevalent cases (23/126), those aged 65 to 84 accounted for 53% (67/126), and adults aged 85 years and older accounted for 29% (36/126).
- Overall, the unadjusted prevalence rate was 129 times higher among adults aged 85 and older than among those 45 to 54 years of age (179.10 vs. 1.38 per 1,000 PAR). The sharpest escalation in the unadjusted prevalence rate occurred at age 55 years, increasing by 4.1 times among the 55 to 64 age group compared to the 45 to 54 age group (5.63 vs. 1.38 per 1,000 PAR).

### Prevalence by Health Region (Age- and Sex-adjusted rates)

Table 19

This table shows the unadjusted (crude) and adjusted total prevalence of dementia (females and males combined), for the three Northern Health Regions combined.

*Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted prevalence rate for the Northern Health Regions was the lowest of all health regions (25.87 per 1,000 PAR), ranking 11 of 11 when the health region rates were ordered from highest to lowest. This adjusted rate was 9% lower than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). This difference was not statistically significant.

### Prevalence by Rural and Urban Residence

Table 20

- Among all adults aged 45 years and older, there were 83 prevalent cases among rural residents and 43 prevalent cases among urban residents.
- Among all age groups with a sufficient number of cases to analyze, the unadjusted prevalence rate was higher among urban than rural residents. However, these rural vs. urban differences within each age group were not statistically significant.
- Among all age groups combined, the unadjusted prevalence rate was 47% higher among urban than rural residents (16.80 vs. 11.45 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

## Prevalence

Table 18 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and age group, Northern<sup>a</sup> Health Regions (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>b</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	2,127	*	<6	2,236	*	6	4,363	1.38	0.69
55-64	6+	1,397	*	6+	1,621	*	17	3,018	5.63	0.13
65-74	13	719	18.08	17	826	20.58	30	1,545	19.42	0.72
75-84	21	324	64.81	16	358	44.69	37	682	54.25	0.25
85+	24	114	210.53	12	87	137.93	36	201	179.10	0.18
All ages	71	4,681	15.17	55	5,128	10.73	126	9,809	12.85	0.05

<sup>a</sup> Northern health regions include Keewatin Yatthe, Athabasca Health Authority, and Mamawetan Churchill River

<sup>b</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 19 Age- and sex-adjusted 12-month prevalence of dementia among adults 45 years of age and older, Northern<sup>a</sup> Health Regions, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>b</sup>
Northern Health Regions	126	9809	12.85	25.87	21.6 - 30.8	0.92	0.77-1.11	ns

<sup>a</sup> Northern health regions include Keewatin Yatthe, Athabasca Health Authority, and Mamawetan Churchill River

<sup>b</sup> Significance of difference between Northern Health Regions and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 20 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by rural and urban residence, Northern<sup>a</sup> Health Regions, (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>b</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,324	*	<6	1,039	*	6	4,363	1.38	0.15
55-64	6+	2,096	*	6+	922	*	17	3,018	5.63	0.34
65-74	21	1,145	18.34	9	400	22.50	30	1,545	19.42	0.60
75-84	27	541	49.91	10	141	70.92	37	682	54.25	0.33
85+	22	144	152.78	14	57	245.61	36	201	179.10	0.12
All ages	83	7,250	<b>11.45</b>	43	2,559	<b>16.80</b>	126	9,809	12.85	<b>0.04</b>

<sup>a</sup> Northern health regions include Keewatin Yatthe, Athabasca Health Authority, and Mamawetan Churchill River

<sup>b</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Environmental Scan

For the Environmental Scan, the 2 Northern health regions included Keewatin Yatthe and Athabasca Health Authority. *Note that a total of 4 Home Care Assessors from the Northern Health Regions responded to the environmental scan survey (3 from Keewatin Yatthe and 1 from Athabasca Health Authority). Due to the small sample size, the following findings must be interpreted with caution.*

See 'Data Collection' under the Methods section of this report for a description of the measures below.

### Availability of Dementia-related Services

Table 21

- *Health Promotion Programs* related to dementia care were reported to be widely unavailable according to the majority of respondents. The exception was recreational activities for older adults, which most respondents indicated were available at least weekly in their communities.
- *Primary Health Care* services related to dementia care that were available at least weekly according to more than half of respondents included pharmacists, family physicians, Nurse Practitioners, physical and occupational therapists, and other health care professionals (aside from those listed), as well as screening of older adults. The services of social workers, screening of older adults, and multidisciplinary team assessment were unavailable in the majority of respondents' communities.
- *Post-diagnostic Support* services that were generally available at least weekly, according to most respondents, included case management, private caregiving, adult day programs and palliative care. The majority of respondents indicated that counselling for diagnosed individuals and caregivers were unavailable in their communities, and caregiver support groups and other caregiver support services were available less often than weekly.
- *Home Care* services were widely available weekly. Home care services that were unavailable in most communities, according to the majority of respondents, included homemaking and emergency respite.
- *Long-term Care* counselling for individuals with dementia and caregivers were reported to be unavailable by all respondents. Long-term care housing\* available in the community, according to most respondents, included seniors housing and special care homes. Long-term housing that was more likely to be unavailable included personal care homes, assisted living options, and special care units.  
\* See Table 21 bottom for these figures

### Primary Health Care (PHC) Orientation of Dementia-related Services

Table 22

- *Information and Education.* Mean scores on individual items in the *Information and Education* scale ranged from strongly negative with respect to public education to reduce stigma (1.5, SD = 0.6) to somewhat positive with respect to dementia awareness among local health care professionals (4.0, SD = 0). The overall scale mean of 13.3 (SD = 2.5, range = 10-16) demonstrated that respondents perceived community-level dementia-related information and education to be inadequate.
- *Accessibility.* Respondents held somewhat negative perceptions with regard to wait times for services (2.5, SD = 1.8) and availability of subsidized/free transportation services (2.5, SD = 1.9). Respondents reported overall neutral



perceptions of *Accessibility*, with an average scale score of 14.8 (SD = 5.9, range = 8-22).

- *Population Orientation*. *Population Orientation* (i.e., community fit) of dementia-related services was perceived as inappropriate on average, specifically with regard to the level of primary health care (PHC) services (2.0, SD = 0.8) and number of LTC beds (2.0, SD = 1.4). Respondents reported overall somewhat negative perceptions of *Population Orientation*, with an average scale score of 13.3 (SD = 2.6, range = 11-16).
- *Coordinated Care*. Perceptions ranged from somewhat negative regarding the coordination of service delivery (2.3, SD = 1.3) to somewhat positive with respect to coordination between health care professionals and community agencies (3.5, SD = 1.0). The average *Coordinated Care* scale score was in the neutral range at 14.8 (SD = 2.1, range = 12-17).
- *Comprehensiveness of Care*. On average, respondents held neutral to somewhat positive views on the comprehensiveness of care for individuals with dementia in their communities. Perceptions ranged from somewhat neutral regarding the availability of multidisciplinary care (2.8, SD = 1.5) to strongly positive with respect health care professionals considering dementia a chronic disease (4.3, SD = 1.0). Of the 6 dimensions considered, *Comprehensiveness of Care* fared the most favorably. The average *Comprehensiveness of Care* scale score of 17.8 (SD = 2.2, range = 15-20) reflected the overall somewhat positive position of respondents on this dimension.
- *Quality of Care*. Respondents held somewhat negative to somewhat positive views of *Quality of Care* with respect to the use of standardized diagnostic criteria among health care professionals (2.5, SD = 1.3) and effectiveness of screening tools (3.8, SD = 0.5). The average *Quality of Care* scale score of 15.5 (SD = 2.5, range = 12-18) reflected the overall neutral position of respondents on this dimension.
- A final single summary item asked whether “the amount of supportive resources and services available in the community is adequate to allow individuals with dementia to remain at home for as long as possible.” According to this single

item, Northern Health Regions respondents held somewhat neutral views regarding the adequacy of supportive resources and services available in the community (2.8 (SD = 1.5, range = 1-4)).

## Environmental Scan Comments

No comments were provided by respondents from the Northern Health Regions.

## Environmental Scan

Table 21 Availability of dementia-related services, Northern<sup>a</sup> Health Regions

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion	4	0	1	3
Healthy lifestyle promotion related to dementia	4	0	1	3
Recreational activities for older adults	4	2	2	0
<b>Primary Health Care</b>				
Pharmacist	4	2	1	1
Family Physician	4	3	0	1
Nurse Practitioner	4	3	0	1
Physical Therapist	4	1	2	1
Occupational Therapist	4	0	4	0
Social Worker	4	1	1	2
Other health care professionals	4	3	0	1
Screening of older adults	4	3	0	1
Multidisciplinary team assessment	4	0	1	3
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals	4	1	3	0
Volunteer services/visitors	4	0	1	3
Counselling diagnosed individuals	4	0	1	3
Counselling caregivers	4	0	2	2
Caregiver support group	4	0	0	4
Other caregiver support services	4	0	3	1
Private caregiving	4	0	0	4
Adult day program	4	0	0	4
Palliative care	4	3	1	0
<b>Home Care</b>				
Meals on Wheels	4	3	0	1
Meal Prep	4	3	1	0
Personal care - AM Care	4	3	1	0
Personal care - HS Care	4	2	1	1
Personal care – Toileting	4	3	1	0
Personal care – Bath Assist	4	3	1	0
Homemaking	4	4	0	0
Transportation to health care	4	3	0	1
In-home respite and visiting	4	3	1	0
Planned respite care	4	3	1	0
Night respite	4	1	0	3
Weekend respite	4	1	0	3
Emergency respite	4	1	1	2
<b>Long Term Care*</b>				
Counselling for individuals with dementia	4	0	0	4
Counselling for caregivers	4	0	0	4

<sup>a</sup> Northern health regions include Keewatin Yatthe (n=3) and Athabasca Health Authority (n=1)

\*Other available long-term care services: seniors housing (n=3), special care home (n=2), personal care home (n=0), assisted living options (n=0), special care unit (n=1).

Table 22 Item statistics of Primary Health Care Orientation of Dementia-related Services, Northern<sup>a</sup> Health Regions

Attribute	N	Mean	SD (range)
<b>Information and Education</b>	<b>4</b>	<b>13.3</b>	<b>2.5 (10-16)</b>
Adequate awareness about 'what to do' or 'where to go'	4	2.5	1.0 (2-4)
Adequate information for caregivers	4	3.0	1.2 (1-4)
Adequate awareness of dementia among health care professionals in the community	4	4.0	0 (1-5)
Adequate dementia-specific continuing education for health care professionals	4	2.3	1.5 (1-5)
Adequate public education to reduce stigma of dementia	4	1.5	0.6 (1-4)
<b>Accessibility</b>	<b>4</b>	<b>14.8</b>	<b>5.9 (8-22)</b>
Appropriate frequency of services	4	3.0	1.2 (1-5)
Appropriate wait time for services	4	2.5	1.8 (1-5)
Available public transportation to services (for older adults)	4	3.5	1.0 (1-5)
Available subsidized/free transportation to services (for older adults)	4	2.5	1.9 (1-5)
Equally accessible services, regardless of geographic location	4	3.3	1.3 (1-5)
<b>Population Orientation</b>	<b>4</b>	<b>13.3</b>	<b>2.6 (11-16)</b>
Appropriate level of PHC services	4	2.0	0.8 (1-5)
Appropriate level of Home Care services	4	3.8	0.5 (1-5)
Appropriate number of LTC beds	4	2.0	1.4 (1-5)
Appropriate telehealth services	4	3.0	1.4 (1-5)
Appropriate level of support for caregivers	4	2.5	1.0 (1-4)
<b>Co-ordinated Care</b>	<b>4</b>	<b>14.8</b>	<b>2.1 (12-17)</b>
Service delivery by different health care professionals in the community is co-ordinated	4	2.3	1.3 (1-5)
All health care professionals in the community have easy access to patient health history	4	3.0	1.4 (1-5)
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]	4	3.0	1.2 (1-5)
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)	4	3.5	1.0 (1-5)
Seamless transition from community to LTC	4	3.0	0.8 (1-5)
<b>Comprehensiveness of Care</b>	<b>4</b>	<b>17.8</b>	<b>2.2 (15-20)</b>
One or more health care professional is able to diagnose	4	4.0	0 (4-4)
One or more health care professional is able to provide on-going management	4	4.0	0.8 (2-5)
There is timely referral to appropriate health and social services	4	3.8	0.5 (3-4)
Multidisciplinary care is available	4	2.8	1.5 (1-4)
Health care professionals consider dementia a chronic disease	4	4.3	1.0 (3-5)
<b>Quality of care</b>	<b>4</b>	<b>15.5</b>	<b>2.5 (12-18)</b>
Timely diagnosis occurs	4	2.8	0.5 (2-3)
Health care professionals use standardized diagnostic criteria	4	2.5	1.3 (1-4)
Current screening tools are effective	4	3.8	0.5 (3-4)
Care and management are guided by standardized care pathways	4	3.3	1.0 (2-4)
Health care professionals adequately monitor safety of individuals with dementia living at home	4	3.3	1.0 (2-4)
<b>Adequate amount of supportive resources and services</b>	<b>4</b>	<b>2.8</b>	<b>1.5 (1-4)</b>

<sup>a</sup> Northern health regions include Keewatin Yatthe (n = 3) and Athabasca Health Authority (n = 1)

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent

# Cypress Health Region

## Administrative Data Analysis

### Incidence (2012/2013)

#### Incidence by Sex and Age Group

Table 23

- A total of 175 incident (new) cases of dementia were identified among adults 45 years and older in Cypress Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted incidence rate of dementia was 8.46 per 1,000 population at risk (PAR).

#### Sex

- There were 99 incident cases among females and 76 incident cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted incidence rate was 27% higher among females than males (9.46 vs. 7.44 per 1,000 PAR). This difference was not statistically significant.

#### Age

- Adults 55 to 64 years of age contributed 6% of incident cases (10/175), those aged 65 to 84 contributed 41% (72/175), and 53% (93/175) were contributed by adults aged 85 years and older. There were no incident cases among adults 45 to 54 years of age.
- The unadjusted incidence rate increased 44 times between the group aged 55 to 64 and those aged 85 years and older (1.59 vs. 70.51 per 1,000 PAR).

#### Incidence by Health Region (Age- and Sex-adjusted rates)

Table 24

This table shows the unadjusted (crude) and adjusted total incidence of dementia (females and males combined), for Cypress Health Region.

*Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted incidence rate for Cypress Health Region was 7.58 per 1,000 PAR, placing it in the middle of all health regions in terms of incidence rates. Cypress Health Region ranked 6 of 11 when the health region rates were ordered from highest to lowest. At 7.58 per 1,000 per PAR, the adjusted incidence rate for Cypress Health Region was 0.9% higher than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). This difference was not statistically significant.

#### Incidence by Rural and Urban Residence

Table 25

- Among all adults aged 45 years and older, there were 94 incident cases among rural residents and 79 incident cases among urban residents.
- Among those aged 85 years and older, the unadjusted incidence rate was higher among rural than urban residents (87.84 vs. 57.02 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in unadjusted incidence rates between rural and urban residents were not statistically significant.
- Among all age groups combined, the 8% higher unadjusted incidence rate in urban compared to rural residents was not statistically significant (8.91 vs. 8.26 per 1,000 PAR).

## Incidence

Table 23 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and age group, Cypress Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	.	3,160	.	.	3,179	.	.	6,339	.	.
55-64	6+	3,050	*	<6	3,246	*	10	6,296	1.59	<b>0.01</b>
65-74	6+	1,997	*	6+	2,025	*	22	4,022	5.47	0.09
75-84	29	1,448	20.03	21	1,257	16.71	50	2,705	18.48	0.52
85+	54	813	66.42	39	506	77.08	93	1,319	70.51	0.46
All ages	99	10,468	9.46	76	10,213	7.44	175	20,681	8.46	0.11

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 24 Age- and sex-adjusted 12-month incidence of dementia among adults 45 years of age and older, Cypress Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Cypress Health Region	175	20,681	8.46	7.58	6.5 - 8.8	1.02	0.9 - 1.2	ns

<sup>a</sup> Significance of difference between Cypress Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 25 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by rural and urban residence, Cypress Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	.	3,471	.	.	2,686	.	.	6,157	.	.
55-64	<6	3,687	*	<6	2,488	*	10	6,175	1.62	0.54
65-74	6+	2,243	*	6+	1,686	*	22	3,929	5.60	0.81
75-84	25	1,383	18.08	23	1,286	17.88	48	2,669	17.98	0.97
85+	52	592	<b>87.84</b>	41	719	<b>57.02</b>	93	1,311	70.94	<b>0.03</b>
All ages	94	11,376	8.26	79	8,865	8.91	173	20,241	8.55	0.62

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Prevalence (2012/2013)

### Prevalence by Sex and Age Group

Table 26

- A total of 688 prevalent (existing) cases of dementia were identified among adults 45 years and older in Cypress Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted prevalence rate of dementia was 32.20 per 1,000 population at risk (PAR).
- Overall, the unadjusted 12-month prevalence rate among individuals aged 45 years and older was 3.8 times the unadjusted incidence rate (32.20 vs. 8.46 per 1,000 PAR).

#### Sex

- There were 423 prevalent cases among females and 265 prevalent cases among males aged 45 years and older.
- Among those aged 85 years and older, the unadjusted prevalence rate was 37% higher among females than males (244.42 vs. 178.57 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in prevalence rates between females and males were not statistically significant.
- Among all age groups combined, the unadjusted prevalence rate was 54% higher among females than males (38.84 vs. 25.29 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 7% of prevalent cases (50/688), those aged 65 to 84 accounted for 39% (265/688), and adults aged 85 years and older accounted for 54% (373/688).
- Overall, the unadjusted prevalence rate was 137 times higher among adults aged 85 and older than among those 45 to 54 years of age (220.45 vs. 1.58 per 1,000 PAR). The sharpest escalation in the unadjusted prevalence rate occurred at age 75 years, increasing by 3.9 times among the 75 to 84 age group compared to the 65 to 74 age group (67.24 vs. 17.11 per 1,000 PAR).

### Prevalence by Health Region (Age- and Sex-adjusted rates)

Table 27

This table shows the unadjusted (crude) and adjusted total prevalence of dementia (females and males combined), for Cypress Health Region.

*Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted prevalence rate for Cypress Health Region was 28.04 per 1,000 PAR, ranking 7 of 11 when the health region rates were ordered from highest to lowest. This adjusted rate was 0.4% lower than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). This difference was not statistically significant.

### Prevalence by Rural and Urban Residence

Table 28

- Among all adults aged 45 years and older, there were 357 prevalent cases among rural residents and 326 prevalent cases among urban residents.
- Among those aged 85 years and older, the unadjusted prevalence rate was higher among rural than urban residents (243.93 vs. 202.0 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in unadjusted prevalence rates between rural and urban residents were not statistically significant.
- Among all age groups combined, the 17% higher unadjusted prevalence rate in urban compared to rural residents (35.47 vs. 30.43 per 1,000 PAR) was statistically significant ( $p < 0.05$ ).

## Prevalence

Table 26 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and age group, Cypress Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,165	*	<6	3,184	*	10	6,349	1.58	1.00
55-64	6+	3,069	*	6+	3,267	*	40	6,336	6.31	0.91
65-74	30	2,027	14.80	40	2,065	19.37	70	4,092	17.11	0.26
75-84	106	1,554	68.21	89	1,346	66.12	195	2,900	67.24	0.82
85+	263	1,076	<b>244.42</b>	110	616	<b>178.57</b>	373	1,692	220.45	<b>0.002</b>
All ages	423	10,891	<b>38.84</b>	265	10,478	<b>25.29</b>	688	21,369	32.20	<b>&lt;.0001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 27 Age- and sex-adjusted 12-month prevalence of dementia among adults 45 years of age and older, Cypress Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Cypress Health Region	688	21,369	32.20	28.04	26.0 - 30.2	1.01	0.93-1.10	ns

<sup>a</sup> Significance of difference between Cypress Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 28 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by rural and urban residence, Cypress Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	6+	3,477	*	<6	2,690	*	10	6,167	1.62	1.00
55-64	6+	3,706	*	6+	2,507	*	38	6,213	6.12	0.22
65-74	39	2,282	17.09	29	1,715	16.91	68	3,997	17.01	0.97
75-84	102	1,485	68.69	92	1,378	66.76	194	2,863	67.76	0.84
85+	191	783	<b>243.93</b>	182	901	<b>202.00</b>	373	1,684	221.50	<b>0.04</b>
All ages	357	11,733	<b>30.43</b>	326	9,191	<b>35.47</b>	683	20,924	32.64	<b>0.04</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Environmental Scan

### Tables 29 and 30

In the present report, we include only the results for the health regions with 4 or more Home Care Assessors responding to the environmental scan survey (the exception to this rule is the Athabasca Health Authority, which had 1 respondent and was grouped with Keewatin Yatthe into the 'Northern Health Regions' when reporting results from the environmental scan). Four health regions had fewer than 4 respondents, and therefore are not included in the environmental scan results: Cypress (1), Mamawetan Churchill River (0), Prairie North (1), and Prince Albert Parkland (1).



## Environmental Scan

Not available\*

Table 29 Availability of dementia-related services, Cypress Health Region

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion				
Healthy lifestyle promotion related to dementia				
Recreational activities for older adults				
<b>Primary Health Care</b>				
Pharmacist				
Family Physician				
Nurse Practitioner				
Physical Therapist				
Occupational Therapist				
Social Worker				
Other health care professionals				
Screening of older adults				
Multidisciplinary team assessment				
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals				
Volunteer services/visitors				
Counselling diagnosed individuals				
Counselling caregivers				
Caregiver support group				
Other caregiver support services				
Private caregiving				
Adult day program				
Palliative care				
<b>Home Care</b>				
Meals on Wheels				
Meal Prep				
Personal care - AM Care				
Personal care - HS Care				
Personal care – Toileting				
Personal care – Bath Assist				
Homemaking				
Transportation to health care				
In-home respite and visiting				
Planned respite care				
Night respite				
Weekend respite				
Emergency respite				
<b>Long Term Care*</b>				
Counselling for individuals with dementia				
Counselling for caregivers				

\*Other available long-term care services: seniors housing, special care home, personal care home, assisted living options, and special care unit

## Not available\*

Table 30 Item statistics of Primary Health Care Orientation of Dementia-related Services, Cypress Health Region

Attribute	N	Mean	SD (range)
<b>Information and Education</b>			
Adequate awareness about 'what to do' or 'where to go'			
Adequate information for caregivers			
Adequate awareness of dementia among health care professionals in the community			
Adequate dementia-specific continuing education for health care professionals			
Adequate public education to reduce stigma of dementia			
<b>Accessibility</b>			
Appropriate frequency of services			
Appropriate wait time for services			
Available public transportation to services (for older adults)			
Available subsidized/free transportation to services (for older adults)			
Equally accessible services, regardless of geographic location			
<b>Population Orientation</b>			
Appropriate level of PHC services			
Appropriate level of Home Care services			
Appropriate number of LTC beds			
Appropriate telehealth services			
Appropriate level of support for caregivers			
<b>Co-ordinated Care</b>			
Service delivery by different health care professionals in the community is co-ordinated			
All health care professionals in the community have easy access to patient health history			
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]			
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)			
Seamless transition from community to LTC			
<b>Comprehensiveness of Care</b>			
One or more health care professional is able to diagnose			
One or more health care professional is able to provide on-going management			
There is timely referral to appropriate health and social services			
Multidisciplinary care is available			
Health care professionals consider dementia a chronic disease			
<b>Quality of care</b>			
Timely diagnosis occurs			
Health care professionals use standardized diagnostic criteria			
Current screening tools are effective			
Care and management are guided by standardized care pathways			
Health care professionals adequately monitor safety of individuals with dementia living at home			
<b>Adequate amount of supportive resources and services</b>			

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent

# Five Hills Health Region

## Administrative Data Analysis

### Incidence (2012/2013)

#### Incidence by Sex and Age Group

Table 31

- A total of 208 incident (new) cases of dementia were identified among adults 45 years and older in Five Hills Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted incidence rate of dementia was 8.09 per 1,000 population at risk (PAR).

#### Sex

- There were 118 incident cases among females and 90 incident cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted incidence rate was 24% higher among females than males (8.93 vs. 7.19 per 1,000 PAR). This difference was not statistically significant.

#### Age

- Adults 45 to 64 years contributed 8% of incident cases (16/208), those aged 65 to 84 contributed 40% (83/208), and 52% (109/208) were contributed by adults aged 85 years and older.
- The unadjusted incidence rate increased 15 times between the group aged 65 to 74 and those aged 85 years and older (3.82 vs. 59.34 per 1,000 PAR).

#### Incidence by Health Region (Age- and Sex-adjusted rates)

Table 32

This table shows the unadjusted (crude) and adjusted total incidence of dementia (females and males combined), for Five Hills Health Region. *Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted incidence rate for Five Hills Health Region was 6.81 per 1,000 PAR, ranking 9 of 11 when the health region rates were ordered from highest to lowest. At 6.81 per 1,000 per PAR, the adjusted incidence rate for Five Hills Health Region was 10% lower than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). This difference was not statistically significant.

#### Incidence by Rural and Urban Residence

Table 33

- Among all adults aged 45 years and older, there were 56 incident cases among rural residents and 150 incident cases among urban residents.
- Among all age groups combined, the 33% higher unadjusted incidence rate in urban compared to rural residents was not statistically significant (8.80 vs. 6.63 per 1,000 PAR).

## Incidence

Table 31 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and age group, Five Hills Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,806	*	<6	3,849	*	<6	7,655	*	1.00
55-64	<6	3,933	*	6+	4,037	*	6+	7,970	*	0.77
65-74	11	2,532	4.34	8	2,443	3.27	19	4,975	3.82	0.54
75-84	35	1,775	19.72	29	1,514	19.15	64	3,289	19.46	0.91
85+	65	1,165	55.79	44	672	65.48	109	1,837	59.34	0.40
All ages	118	13,211	8.93	90	12,515	7.19	208	25,726	8.09	0.12

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 32 Age- and sex-adjusted 12-month incidence of dementia among adults 45 years of age and older, Five Hills Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Five Hills Health Region	208	25,726	8.09	6.81	5.9 - 7.8	0.91	0.8 - 1.0	ns

<sup>a</sup> Significance of difference between Five Hills Health Region and other health regions combined

Note. ns indicates a difference that is not significant

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 33 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by rural and urban residence, Five Hills Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	2,358	*	<6	5,208	*	<6	7,566	*	0.32
55-64	<6	2,929	*	6+	4,957	*	6+	7,886	*	1.00
65-74	7	1,751	4.00	11	3,184	3.45	18	4,935	3.65	0.76
75-84	13	964	13.49	51	2,315	22.03	64	3,279	19.52	0.11
85+	32	450	71.11	76	1,381	55.03	108	1,831	58.98	0.21
All ages	56	8,452	6.63	150	17,045	8.80	206	25,497	8.08	0.07

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Prevalence (2012/2013)

### Prevalence by Sex and Age Group

Table 34

- A total of 837 prevalent (existing) cases of dementia were identified among adults 45 years and older in Five Hills Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted prevalence rate of dementia was 31.51 per 1,000 population at risk (PAR).
- Overall, the unadjusted 12-month prevalence rate among individuals aged 45 years and older was 3.9 times the unadjusted incidence rate (31.51 vs. 8.09 per 1,000 PAR).

#### Sex

- There were 523 prevalent cases among females and 314 prevalent cases among males aged 45 years and older.
- Among those aged 85 years and older, the unadjusted prevalence rate was 25% higher among females than males (220.74 vs. 176.47 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in prevalence rates between females and males were not statistically significant.
- Among all age groups combined, the unadjusted prevalence rate was 56% higher among females than males (38.08 vs. 24.48 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 7% of prevalent cases (60/837), those aged 65 to 84 accounted for 36% (303/837), and adults aged 85 years and older accounted for 57% (474/837).
- Overall, the unadjusted prevalence rate was 143 times higher among adults aged 85 and older than among those 45 to 54 years of age (205.11 vs. 1.43 per 1,000 PAR). The sharpest escalation in the unadjusted prevalence rate occurred at age 55 years, increasing by 4.3 times among the 55 to 64 age group compared to the 45 to 54 age group (6.11 vs. 1.43 per 1,000 PAR).

### Prevalence by Health Region (Age- and Sex-adjusted rates)

Table 35

This table shows the unadjusted (crude) and adjusted total prevalence of dementia (females and males combined), for Five Hills Health Region.

*Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted prevalence rate for Five Hills Health Region was 26.35 per 1,000 PAR, ranking 10 of 11 when the health region rates were ordered from highest to lowest. This adjusted rate was 7% lower than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). This difference was not statistically significant.

### Prevalence by Rural and Urban Residence

Table 36

- Among all adults aged 45 years and older, there were 232 prevalent cases among rural residents and 602 prevalent cases among urban residents.
- Among all age groups combined, the 28% higher unadjusted prevalence rate in urban compared to rural residents (34.11 vs. 26.72 per 1,000 PAR) was statistically significant ( $p < 0.05$ ).

## Prevalence

Table 34 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and age group, Five Hills Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	6+	3,813	*	<6	3,853	*	11	7,666	1.43	0.38
55-64	6+	3,956	*	6+	4,063	*	49	8,019	6.11	0.74
65-74	43	2,575	16.70	45	2,488	18.09	88	5,063	17.38	0.71
75-84	120	1,895	63.32	95	1,609	59.04	215	3,504	61.36	0.60
85+	330	1,495	<b>220.74</b>	144	816	<b>176.47</b>	474	2,311	205.11	<b>0.01</b>
All ages	523	13,734	<b>38.08</b>	314	12,829	<b>24.48</b>	837	26,563	31.51	<b>&lt;.0001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 35 Age- and sex-adjusted 12-month prevalence of dementia among adults 45 years of age and older, Five Hills Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Five Hills Health Region	837	26,563	31.51	26.35	24.6 - 28.2	0.93	0.87-1.01	ns

<sup>a</sup> Significance of difference between Five Hills Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 36 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by rural and urban residence, Five Hills Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	2,360	*	6+	5,217	*	11	7,577	1.45	0.52
55-64	6+	2,941	*	6+	4,994	*	49	7,935	6.18	0.07
65-74	27	1,778	15.19	60	3,244	18.50	87	5,022	17.32	0.39
75-84	59	1,023	57.67	156	2,471	63.13	215	3,494	61.53	0.54
85+	132	582	226.80	340	1,721	197.56	472	2,303	204.95	0.13
All ages	232	8,684	<b>26.72</b>	602	17,647	<b>34.11</b>	834	26,331	31.67	<b>0.0013</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Environmental Scan

Note that a total of 8 Home Care Assessors from Five Hills Health Region responded to the environmental scan survey. Due to missing responses across items, the total sample for Five Hills (N) varied from 7 to 8.

See 'Data Collection' under the Methods section of this report for a description of the measures below.

### Availability of Dementia-related Services

Table 37

- *Health Promotion Programs* related to dementia care were reported to be widely unavailable according to the majority of respondents. The exception was recreational activities for older adults, which respondents indicated were available less often than weekly or at least weekly in their communities.
- *Primary Health Care* services related to dementia care that were available at least weekly according to more than half of respondents included family physicians, Nurse Practitioners, and other health care professionals (aside from those listed), as well as screening of older adults. The service of multidisciplinary team assessment was unavailable in the majority of respondents' communities.
- *Post-diagnostic Support* services were generally available less often than weekly or were unavailable. Palliative care was the single service that most respondents indicated was available weekly. All respondents indicated that caregiver support group, private caregiving, and adult day programs were unavailable in their communities.
- *Home Care* services were widely available weekly. Home care services that were unavailable in most communities, according to the majority of respondents, included homemaking and emergency respite.
- *Long-term Care* counselling for individuals with dementia and caregivers were reported to be unavailable by most respondents. Long-term care housing\* available in the community, according to most respondents, included seniors housing and special care homes, personal care homes, assisted living, and special care units.

\* See Table 37 bottom for these figures

### Primary Health Care (PHC) Orientation of Dementia-related Services\*

Table 38

- *Information and Education.* Mean scores on individual items in the *Information and Education* scale ranged from strongly negative with respect to public education to reduce stigma (1.3, SD = 0.5) to somewhat positive with respect to dementia awareness among local health care professionals (3.0, SD = 1.7). The overall scale mean of 10.8 (SD = 4.3, range = 6-17) demonstrated that respondents perceived community-level dementia-related information and education to be somewhat inadequate.
- *Accessibility.* Respondents held somewhat negative perceptions with regard to the frequency of services (1.8, SD = 0.5), availability of subsidized/free transportation services (1.8, SD = 1.0), and geographic accessibility of services (1.6, SD = 0.5). Respondents reported overall somewhat negative perceptions of accessibility, with an average scale score of 11.3 (SD = 2.6, range = 8-15).
- *Population Orientation.* *Population Orientation* (i.e., community fit) of dementia-related services was perceived as inappropriate on average, specifically with regard to the level of primary health care (PHC) services (1.6, SD = 0.5) and level of support for caregivers (2.0, SD = 0.9). Respondents reported overall somewhat negative perceptions of population orientation, with an average scale score of 12.3 (SD = 3.1, range = 8-14).
- *Coordinated Care.* Perceptions ranged from somewhat negative regarding the seamlessness of transitions from community to LTC (2.6, SD = 1.3) to somewhat positive with respect to coordination amongst health care professionals (4.0, SD = 0.5) and between health care

professionals and community agencies (3.9, SD = 0.6). Of the 6 dimensions considered, *Coordinated Care* fared the most favorably. The overall average *Coordinated Care* scale score was somewhat positive at 17.4 (SD = 3.3, range = 14-23).

- *Comprehensiveness of Care*. Perceptions regarding the comprehensiveness of care ranged from somewhat negative regarding the ability of one or more health care professionals to diagnose (2.4, SD = 1.7) to positive with respect to the ability of health care professionals to provide on-going management (4.0, SD = 0.9). The average *Comprehensiveness of Care* scale score of 16.3 (SD = 4.1, range = 9-22) indicated the overall somewhat positive position of respondents on this dimension.
- *Quality of Care*. Respondents held generally negative views with respect to the use of standardized diagnostic criteria (1.9, SD = 0.8) and care pathways (1.6, SD = 0.7), and somewhat positive views regarding the effectiveness of current screening tools (3.5, SD = 0.9). The average *Quality of Care* scale score of 11.1 (SD = 2.9, range = 8-16) demonstrated the overall negative position of respondents on this dimension.
- A final single summary item asked whether “the amount of supportive resources and services available in the community is adequate to allow individuals with dementia to remain at home for as long as possible.” According to this single item, Five Hills Health Region respondents held generally negative perceptions regarding the adequacy of supportive resources and services available in the community (2.1 (SD = 0.8, range = 1-4)).

*communities have limited Home Care services (e.g., one visit a day, Mon to Fri). Often limited access to physician, no support groups for Caregivers.”*  
(FIV007)

*“Long waiting list for personal care home. Often people have to wait for room in special care homes.”*  
(FIV008)

*“(There are) no adequate supports for people and families with dementia. Families are struggling which makes it harder for the client.”*

*“(There are) limited supports available in the community. Difficult to support families and clients under these circumstances.”*  
(FIV003)

## Environmental Scan Comments

Five Hills Health Region Home Care Assessors provided the following comments:

*“In the rural community I serve, there is Home Care once a day in am, not on weekends. Long Term Dementia Unit must be accessed outside the community 1 hour away.”*

*“Moose Jaw no longer has a Geriatrician. Most rural*



## Environmental Scan

Table 37 Availability of dementia-related services, Five Hills Health Region

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion	8	1 (12.5)	0	7 (87.5)
Healthy lifestyle promotion related to dementia	8	2 (25.0)	0	6 (75.0)
Recreational activities for older adults	8	7 (87.5)	0	1 (12.5)
<b>Primary Health Care</b>				
Pharmacist	8	7 (87.5)	0	1 (12.5)
Family Physician	8	6 (75.0)	0	2 (25.0)
Nurse Practitioner	8	5 (62.5)	0	3 (37.5)
Physical Therapist	8	6 (75.0)	0	2 (25.0)
Occupational Therapist	8	5 (62.5)	0	3 (37.5)
Social Worker	7	1 (14.3)	1 (14.3)	5 (71.4)
Other health care professionals	7	2 (28.6)	2 (28.6)	3 (42.9)
Screening of older adults	8	1 (12.5)	0	7 (87.5)
Multidisciplinary team assessment	8	1 (12.5)	1 (12.5)	6 (75.0)
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals	7	6 (85.7)	1 (14.3)	0
Volunteer services/visitors	8	7 (12.5)	0	1 (12.5)
Counselling diagnosed individuals	8	0	1 (12.5)	7 (87.5)
Counselling caregivers	8	0	1 (12.5)	7 (87.5)
Caregiver support group	8	0	5 (62.5)	3 (37.5)
Other caregiver support services	8	3 (37.5)	4 (50.0)	1 (12.5)
Private caregiving	8	5 (62.5)	0	3 (37.5)
Adult day program	8	6 (75.0)	0	2 (25.0)
Palliative care	8	8 (100.0)	0	0
<b>Home Care</b>				
Meals on Wheels	8	6 (75.0)	0	2 (25.0)
Meal Prep	8	8 (100.0)	0	0
Personal care - AM Care	8	8 (100.0)	0	0
Personal care - HS Care	8	7 (87.5)	0	1 (12.5)
Personal care – Toileting	8	7 (87.5)	0	1 (12.5)
Personal care – Bath Assist	8	8 (100.0)	0	0
Homemaking	8	1 (12.5)	1 (12.5)	6 (75.0)
Transportation to health care	8	5 (62.5)	0	3 (37.5)
In-home respite and visiting	8	7 (87.5)	0	1 (12.5)
Planned respite care	8	8 (100.0)	0	0
Night respite	8	7 (87.5)	0	1 (12.5)
Weekend respite	8	5 (62.5)	0	3 (37.5)
Emergency respite	8	2 (25.0)	1 (12.5)	5 (62.5)
<b>Long Term Care*</b>				
Counselling for individuals with dementia	8	0	1 (12.5)	7 (87.5)
Counselling for caregivers	8	1 (12.5)	3 (37.5)	4 (50.0)

\*Other available long-term care services (N = 5): seniors housing (100%, n = 8), special care home (87.5%, n = 7), personal care home (100%, n = 8), assisted living options (50%, n = 4), special care unit (75%, n = 6)

Table 38 Item statistics of Primary Health Care Orientation of Dementia-related Services, Five Hills Health Region

Attribute	N	Mean	SD (range)
<b>Information and Education</b>	<b>8</b>	<b>10.8</b>	<b>4.3 (6-17)</b>
Adequate awareness about 'what to do' or 'where to go'	8	2.4	1.4 (1-4)
Adequate information for caregivers	8	2.0	1.1 (1-4)
Adequate awareness of dementia among health care professionals in the community	8	3.0	1.7 (1-5)
Adequate dementia-specific continuing education for health care professionals	8	2.1	0.8 (1-4)
Adequate public education to reduce stigma of dementia	8	1.3	0.5 (1-2)
<b>Accessibility</b>	<b>8</b>	<b>11.3</b>	<b>2.6 (8-15)</b>
Appropriate frequency of services	8	1.8	0.5 (1-2)
Appropriate wait time for services	8	2.6	1.1 (1-4)
Available public transportation to services (for older adults)	8	3.5	1.9 (1-5)
Available subsidized/free transportation to services (for older adults)	8	1.8	1.0 (1-4)
Equally accessible services, regardless of geographic location	8	1.6	0.5 (1-2)
<b>Population Orientation</b>	<b>8</b>	<b>12.3</b>	<b>3.1 (8-14)</b>
Appropriate level of PHC services	8	1.6	0.5 (1-2)
Appropriate level of Home Care services	8	3.0	1.1 (2-4)
Appropriate number of LTC beds	8	2.8	1.4 (1-5)
Appropriate telehealth services	8	2.9	1.0 (1-4)
Appropriate level of support for caregivers	8	2.0	0.9 (1-4)
<b>Co-ordinated Care</b>	<b>8</b>	<b>17.4</b>	<b>3.3 (14-23)</b>
Service delivery by different health care professionals in the community is co-ordinated	8	3.8	1.2 (1-5)
All health care professionals in the community have easy access to patient health history	8	3.1	1.8 (1-5)
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]	8	4.0	0.5 (3-5)
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)	8	3.9	0.6 (3-5)
Seamless transition from community to LTC	8	2.6	1.3 (1-4)
<b>Comprehensiveness of Care</b>	<b>8</b>	<b>16.3</b>	<b>4.1 (9-22)</b>
One or more health care professional is able to diagnose	8	2.4	1.7 (1-5)
One or more health care professional is able to provide on-going management	8	4.0	0.9 (2-5)
There is timely referral to appropriate health and social services	8	3.6	1.2 (1-5)
Multidisciplinary care is available	8	3.5	1.3 (2-5)
Health care professionals consider dementia a chronic disease	8	2.8	1.4 (1-5)
<b>Quality of care</b>	<b>8</b>	<b>11.1</b>	<b>2.9 (8-16)</b>
Timely diagnosis occurs	8	2.0	0.5 (1-3)
Health care professionals use standardized diagnostic criteria	8	1.9	0.8 (1-3)
Current screening tools are effective	8	3.5	0.9 (2-4)
Care and management are guided by standardized care pathways	8	1.6	0.7 (1-3)
Health care professionals adequately monitor safety of individuals with dementia living at home	8	2.1	1.0 (1-4)
<b>Adequate amount of supportive resources and services</b>	<b>8</b>	<b>2.1</b>	<b>0.8 (1-4)</b>

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent

# Heartland Health Region

## Administrative Data Analysis

### Incidence (2012/2013)

#### Incidence by Sex and Age Group

Table 39

- A total of 195 incident (new) cases of dementia were identified among adults 45 years and older in Heartland Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted incidence rate of dementia was 9.54 per 1,000 population at risk (PAR).

#### Sex

- There were 114 incident cases among females and 81 incident cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted incidence rate was 42% higher among females than males (11.18 vs. 7.90 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults in the age groups 45 to 54 and 65 to 74 contributed 12% of incident cases (23/195). There were no incident cases among adults 55 to 64 years of age. Those aged 75 and over accounted for 88% of incident cases (172/195).
- The unadjusted incidence rate increased 3.5 times between the group aged 75 to 84 years and those aged 85 years and older (24.36 vs. 84.77 per 1,000 PAR).

#### Incidence by Health Region (Age- and Sex-adjusted rates)

Table 40

This table shows the unadjusted (crude) and adjusted total incidence of dementia (females and males combined), for Heartland Health Region. *Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted incidence rate for Heartland Health Region was 8.63 per 1,000 PAR, ranking this region 2 of 11 when the health region rates were ordered from highest to lowest. At 8.63 per 1,000 per PAR, the adjusted incidence rate for Heartland Health Region was 15% higher than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Incidence by Rural and Urban Residence

Table 41

- Among all adults aged 45 years and older, there were 113 incident cases among rural residents and 81 incident cases among urban residents.
- Among all age groups combined, the 23% higher unadjusted incidence rate in urban compared to rural residents was not statistically significant (10.94 vs. 8.89 per 1,000 PAR).

## Incidence

Table 39 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and age group, Heartland Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,046	*	<6	3,139	*	<6	6,185	*	0.25
55-64	.	2,952	.	.	3,381	.	.	6,333	.	.
65-74	6+	2,002	*	6+	2,029	*	6+	4,031	*	0.35
75-84	34	1,414	24.05	30	1,213	24.73	64	2,627	24.36	0.91
85+	68	786	86.51	40	488	81.97	108	1,274	84.77	0.78
All ages	114	10,200	<b>11.18</b>	81	10,250	<b>7.90</b>	195	20,450	9.54	<b>0.016</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 40 Age- and sex-adjusted 12-month incidence of dementia among adults 45 years of age and older, Heartland Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Heartland Health Region	195	20,450	9.54	<b>8.63</b>	7.5 - 9.9	1.18	1.0 - 1.4	<b>&lt;.05</b>

<sup>a</sup> Significance of difference between Heartland Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 41 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by rural and urban residence, Heartland Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,686	*	<6	2,365	*	<6	6,051	*	0.29
55-64	.	4,065	.	.	2,154	.	.	6,219	.	.
65-74	6+	2,608	*	6+	1,359	*	6+	3,967	*	0.31
75-84	38	1,629	23.33	26	975	26.67	64	2,604	24.58	0.59
85+	61	718	84.96	46	552	83.33	107	1,270	84.25	0.92
All ages	113	12,706	8.89	81	7,405	10.94	194	20,111	9.65	0.15

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Prevalence (2012/2013)

### Prevalence by Sex and Age Group

Table 42

- A total of 706 prevalent (existing) cases of dementia were identified among adults 45 years and older in Heartland Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted prevalence rate of dementia was 33.37 per 1,000 population at risk (PAR).
- Overall, the unadjusted 12-month prevalence rate among individuals aged 45 years and older was 3.5 times the unadjusted incidence rate (33.37 vs. 9.54 per 1,000 PAR).

#### Sex

- There were 423 prevalent cases among females and 283 prevalent cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted prevalence rate was 48% higher among females than males (39.82 vs. 26.87 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 5% of prevalent cases (38/706), those aged 65 to 84 accounted for 37% (259/706), and adults aged 85 years and older accounted for 58% (409/706).
- Overall, the unadjusted prevalence rate was 19 times higher among adults aged 85 and older than among those 65 to 74 years of age (243.02 vs. 12.74 per 1,000 PAR).

### Prevalence by Health Region (Age- and Sex-adjusted rates)

Table 43

This table shows the unadjusted (crude) and adjusted total prevalence of dementia (females and males combined), for Heartland Health Region. *Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted prevalence rate for Heartland Health Region was 29.0 per 1,000 PAR, ranking 5 of 11 when the health region rates were ordered from highest to lowest. This adjusted rate was 0.3% higher than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). This difference was not statistically significant.

### Prevalence by Rural and Urban Residence

Table 44

- Among all adults aged 45 years and older, there were 419 prevalent cases among rural residents and 282 prevalent cases among urban residents.
- Among all age groups combined, the unadjusted prevalence rate in urban residents was 15% higher compared to rural residents (36.69 vs. 31.92 per 1,000 PAR). This difference was not statistically significant.

## Prevalence

Table 42 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and age group, Heartland Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,050	*	<6	3,140	*	<6	6,190	*	0.21
55-64	6+	2,966	*	6+	3,400	*	6+	6,366	*	0.63
65-74	30	2,032	14.76	22	2,051	10.73	52	4,083	12.74	0.25
75-84	106	1,520	69.74	101	1,314	76.86	207	2,834	73.04	0.47
85+	269	1,055	254.98	140	628	222.93	409	1,683	243.02	0.14
All ages	423	10,623	<b>39.82</b>	283	10,533	<b>26.87</b>	706	21,156	33.37	<b>&lt;.0001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 43 Age- and sex-adjusted 12-month prevalence of dementia among adults 45 years of age and older, Heartland Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Heartland Health Region	706	21,156	33.37	29.00	26.9 - 31.2	1.05	0.97-1.15	ns

<sup>a</sup> Significance of difference between Heartland Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 44 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by rural and urban residence, Heartland Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,689	*	<6	2,367	*	<6	6,056	*	1.00
55-64	6+	4,085	*	6+	2,166	*	6+	6,251	*	0.73
65-74	38	2,646	14.36	14	1,373	10.20	52	4,019	12.94	0.27
75-84	118	1,747	67.54	87	1,062	81.92	205	2,809	72.98	0.16
85+	240	958	250.52	167	719	232.27	407	1,677	242.70	0.39
All ages	419	13,125	31.92	282	7,687	36.69	701	20,812	33.68	0.07

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Environmental Scan

Note that a total of 9 Home Care Assessors from Heartland Health Region responded to the environmental scan survey.

See 'Data Collection' under the Methods section of this report for a description of the measures below.

### Availability of Dementia-related Services

Table 45

- *Health Promotion Programs* related to dementia care varied in availability. While healthy brain promotion programs were generally unavailable, healthy lifestyle promotion related to dementia was available at least weekly according to one in three respondents and recreational activities for older adults were typically available weekly.
- *Primary Health Care* services related to dementia care that were available at least weekly according to more than half of respondents included pharmacists, family physicians, physical and occupational therapists, and other health care professionals (aside from those listed). The services of Nurse Practitioners, social workers, screening of older adults, and multidisciplinary team assessment were unavailable according to most respondents.
- *Post-diagnostic Support* services that were generally available at least weekly, according to most respondents, included case management, volunteer services/visitors, adult day program and palliative care. Most respondents indicated that private caregiving was unavailable. The availability of counselling for diagnosed individuals and caregivers, as well as other caregiver support services, varied from weekly to not available. Caregiver support groups were available less often than weekly.
- *Home Care* services were widely available weekly. Home care services that varied somewhat in availability included transportation to health care, planned respite care, weekend respite, and emergency respite.
- *Long-term Care* counselling for individuals with dementia and caregivers were reported to be unavailable by most respondents. Long-term care

housing\* available in the community, according to most respondents, included seniors housing and special care homes. Long-term housing options that were less likely to be available included personal care homes, assisted living options, and special care units.

\* See Table 45 bottom for these figures

### Primary Health Care (PHC) Orientation of Dementia-related Services\*

Table 46

- *Information and Education*. Mean scores on individual items in the *Information and Education* scale ranged from negative with respect to public education to reduce stigma (1.7, SD = 0.7) to somewhat positive with respect to dementia awareness among local health care professionals (4.0, SD = 1.3). The overall scale mean of 14.1 (SD = 3.9, range = 7-19) reflected the overall neutral perceptions toward the adequacy of information and education.
- *Accessibility*. Respondents held somewhat negative perceptions with regard to the geographic accessibility of services (2.3, SD = 1.0) and somewhat positive perceptions regarding wait times for services (3.8, SD = 1.2). Overall, respondents reported neutral views of *Accessibility*, with an average scale score of 15.1 (SD = 2.7, range = 12-19).
- *Population Orientation*. Respondents held somewhat negative views with respect to the level of caregiver support (2.6, SD = 0.9) and somewhat positive views regarding the level of Home Care services (3.4, SD = 0.9) and number of LTC beds (3.3, SD = 1.4). Respondents reported overall neutral perceptions of *Population Orientation*, with an average scale score of 15.1 (SD = 2.8, range = 11-20).

- *Coordinated Care*. Respondents held somewhat positive views regarding coordinated care, particularly with respect to the seamlessness of transitions from community to LTC (3.9, SD = 0.8). The average *Coordinated Care* scale score was somewhat positive at 17.1 (SD = 3.3, range = 12-20).
- *Comprehensiveness of Care*. On average, respondents held positive views on the comprehensiveness of care for individuals with dementia in their communities, particularly with respect to the ability of one or more health care professionals to provide on-going management (4.0, SD = 0.5) and the availability of multidisciplinary care (4.0, SD = 0.5). Of the 6 dimensions considered, *Comprehensiveness of Care* fared the most favorably. The average *Comprehensiveness of Care* scale score of 18.4 (SD = 2.1, range = 15-21) reflected the overall positive position of respondents on this dimension.
- *Quality of Care*. Respondents held somewhat negative to somewhat positive views on care quality. Somewhat negative views were apparent with respect to care and management as guided by standardized care pathways (2.6, SD = 1.0), whereas somewhat positive views were demonstrated with regard to the use of standardized diagnostic criteria (3.8, SD = 0.7). The average *Quality of Care* scale score of 16.4 (SD = 3.0, range = 12-20) indicated the overall somewhat positive position of respondents on this dimension.
- A final single summary item asked whether “the amount of supportive resources and services available in the community is adequate to allow individuals with dementia to remain at home for as long as possible.” According to this single item, Heartland Health Region respondents held somewhat positive views regarding the adequacy of supportive resources and services available in the community (3.3 (SD = 1.4, range = 1-4)).

## Environmental Scan Comments

Heartland Health Region Home Care Assessors provided the following comments:

*“We have one respite room. Respite dependent on availability of same or if we have a vacant LTC bed we can use for a short time. Emergency Respite sometimes managed in observation bed until alternate care arrangements can be made.”* (HEA004)

*“In-home respite availability is limited due to staffing and budgetary concerns.”*

*“We have pretty good HC services but the disconnect is between physician to other health care professionals and agencies. If the public healthcare system knows of the individual they get care arranged and more timely care. If the physician just treats dementia with Aricept, Reminyl, etc and doesn't refer, the public health system may not know about care options in a timely manner.”* (HEA006)

*“Smaller communities look out for their neighbors, help redirect, call Home Care if more changes. If no family in area, then harder for others to feel that they have to do the supervising.”* (HEA001)

*In rural SK we have to admit we have limited resources. Try our best with what we have.* (HEA008)

*“We need assisted living in this community and a PCH. Home Care does what it can to keep people at home, but we could keep people out of institutional care longer if we had these things. People don't want to leave this community to find these services elsewhere.”* (HEA009)



## Environmental Scan

Table 45 Availability of dementia-related services, Heartland Health Region

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion	9	1 (12.5)	0	7 (87.5)
Healthy lifestyle promotion related to dementia	9	3 (33.3)	3 (33.3)	3 (33.3)
Recreational activities for older adults	9	8 (88.9)	0	1 (11.1)
<b>Primary Health Care</b>				
Pharmacist	9	8 (88.9)	0	1 (11.1)
Family Physician	9	7 (77.8)	0	2 (22.2)
Nurse Practitioner	9	2 (22.2)	0	7 (77.8)
Physical Therapist	9	5 (55.6)	1 (11.1)	3 (33.3)
Occupational Therapist	9	8 (88.9)	0	1 (11.1)
Social Worker	9	2 (22.2)	2 (22.2)	5 (55.6)
Other health care professionals	9	5 (55.6)	3 (33.3)	1 (11.1)
Screening of older adults	9	4 (44.4)	1 (11.1)	4 (44.4)
Multidisciplinary team assessment	9	1 (11.1)	2 (22.2)	6 (66.7)
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals	9	6 (66.7)	0	3 (33.3)
Volunteer services/visitors	9	8 (88.9)	1 (11.1)	0
Counselling diagnosed individuals	9	3 (33.3)	2 (22.2)	4 (44.4)
Counselling caregivers	9	2 (22.2)	3 (33.3)	4 (44.4)
Caregiver support group	9	0	6 (66.7)	3 (33.3)
Other caregiver support services	9	4 (44.4)	2 (22.2)	3 (33.3)
Private caregiving	8	3 (37.5)	0	5 (62.5)
Adult day program	9	8 (88.9)	0	1 (11.1)
Palliative care	9	8 (88.9)	1 (11.1)	0
<b>Home Care</b>				
Meals on Wheels	9	9 (100.0)	0	0
Meal Prep	9	9 (100.0)	0	0
Personal care - AM Care	9	9 (100.0)	0	0
Personal care - HS Care	9	8 (88.9)	0	1 (11.1)
Personal care – Toileting	8	8 (100.0)	0	0
Personal care – Bath Assist	9	9 (100.0)	0	0
Homemaking	9	9 (100.0)	0	0
Transportation to health care	9	5 (55.6)	0	4 (44.4)
In-home respite and visiting	9	7 (77.8)	1 (11.1)	1 (11.1)
Planned respite care	9	7 (77.8)	2 (22.2)	0
Night respite	9	7 (77.8)	1 (11.1)	1 (11.1)
Weekend respite	9	7 (77.8)	2 (22.2)	0
Emergency respite	9	6 (66.7)	3 (33.3)	0
<b>Long Term Care*</b>				
Counselling for individuals with dementia	9	1 (11.1)	2 (22.2)	6 (66.7)
Counselling for caregivers	9	3 (33.3)	1 (11.1)	5 (55.6)

\*Other available long-term care services (N varied from 8 to 9): seniors housing (100%, n = 9), special care home (77.8%, n = 7), personal care home (22.2%, n = 2), assisted living options (33.3%, n = 3), special care unit (0%, n = 0)

Table 46 Item statistics of Primary Health Care Orientation of Dementia-related Services, Heartland Health Region

Attribute	N	Mean	SD (range)
<b>Information and Education</b>	9	14.1	3.9 (7-19)
Adequate awareness about 'what to do' or 'where to go'	9	3.1	1.1 (2-4)
Adequate information for caregivers	9	2.8	1.2 (1-4)
Adequate awareness of dementia among health care professionals in the community	9	4.0	1.3 (1-5)
Adequate dementia-specific continuing education for health care professionals	9	2.6	1.2 (1-4)
Adequate public education to reduce stigma of dementia	9	1.7	0.7 (1-3)
<b>Accessibility</b>	9	15.1	2.7 (12-19)
Appropriate frequency of services	9	2.8	1.2 (2-5)
Appropriate wait time for services	9	3.8	1.2 (2-5)
Available public transportation to services (for older adults)	9	3.3	1.3 (1-4)
Available subsidized/free transportation to services (for older adults)	9	2.9	1.4 (1-4)
Equally accessible services, regardless of geographic location	9	2.3	1.0 (1-4)
<b>Population Orientation</b>	9	15.1	2.8 (11-20)
Appropriate level of PHC services	9	2.9	1.2 (2-5)
Appropriate level of Home Care services	9	3.4	0.9 (2-4)
Appropriate number of LTC beds	9	3.3	1.4 (1-5)
Appropriate telehealth services	9	2.9	1.3 (1-4)
Appropriate level of support for caregivers	9	2.6	0.9 (2-4)
<b>Co-ordinated Care</b>	9	17.1	3.3 (12-20)
Service delivery by different health care professionals in the community is co-ordinated	9	3.4	1.1 (1-4)
All health care professionals in the community have easy access to patient health history	9	3.1	1.2 (1-4)
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]	9	3.3	0.9 (2-4)
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)	9	3.3	1.0 (2-4)
Seamless transition from community to LTC	9	3.9	0.8 (2-5)
<b>Comprehensiveness of Care</b>	9	18.4	2.1 (15-21)
One or more health care professional is able to diagnose	9	3.6	1.0 (2-5)
One or more health care professional is able to provide on-going management	9	4.0	0.5 (3-5)
There is timely referral to appropriate health and social services	9	3.0	1.0 (2-4)
Multidisciplinary care is available	9	4.0	0.5 (3-5)
Health care professionals consider dementia a chronic disease	9	3.9	0.6 (3-5)
<b>Quality of care</b>	9	16.4	3.0 (12-20)
Timely diagnosis occurs	9	3.3	0.9 (2-4)
Health care professionals use standardized diagnostic criteria	9	3.8	0.7 (3-5)
Current screening tools are effective	9	3.2	0.8 (2-4)
Care and management are guided by standardized care pathways	9	2.6	1.0 (1-4)
Health care professionals adequately monitor safety of individuals with dementia living at home	9	3.6	0.8 (2-4)
<b>Adequate amount of supportive resources and services</b>	8	3.3	1.4 (1-4)

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent

# Kelsey Trail Health Region

## Administrative Data Analysis

### Incidence (2012/2013)

#### Incidence by Sex and Age Group

Table 47

- A total of 175 incident (new) cases of dementia were identified among adults 45 years and older in Kelsey Trail Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted incidence rate of dementia was 8.96 per 1,000 population at risk (PAR).

#### Sex

- There were 101 incident cases among females and 74 incident cases among males aged 45 years and older.
- Among those aged 75 to 84 years, the unadjusted incidence rate was 37% higher among males than females (22.02 vs. 11.05). This difference was statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in incidence rates between females and males were not statistically significant.
- Among all age groups combined, the unadjusted incidence rate was 35% higher among females than males (10.28 vs. 7.63 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 5% of incident cases (9/175), those aged 65 to 84 contributed 37% (64/175), and 58% (102/175) were contributed by adults aged 85 years and older.
- The unadjusted incidence rate increased 15 times between the group aged 65 to 74 and those aged 85 years and older (5.21 vs. 78.04 per 1,000 PAR).

#### Incidence by Health Region (Age- and Sex-adjusted rates)

Table 48

This table shows the unadjusted (crude) and adjusted total incidence of dementia (females and males combined), for Kelsey Trail Health Region. *Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted incidence rate for Kelsey Trail Health Region was 7.72 per 1,000 PAR, ranking 5 of 11 when the health region rates were ordered from highest to lowest. At 7.72 per 1,000 per PAR, the adjusted incidence rate for Kelsey Trail Health Region was 3% higher than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). This difference was not statistically significant.

#### Incidence by Rural and Urban Residence

Table 49

- Among all adults aged 45 years and older, there were 104 incident cases among rural residents and 69 incident cases among urban residents.
- Among all age groups combined, the 18% higher unadjusted incidence rate in urban compared to rural residents was not statistically significant (10.04 vs. 8.50 per 1,000 PAR).

## Incidence

Table 47 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and age group, Kelsey Trail Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	2,752	*	<6	2,878	*	<6	5,630	*	1
55-64	<6	2,800	*	<6	2,980	*	<6	5,780	*	0.68
65-74	11	2,092	5.26	11	2,129	5.17	22	4,221	5.21	0.97
75-84	15	1,358	<b>11.05</b>	27	1,226	<b>22.02</b>	42	2,584	16.25	<b>0.03</b>
85+	70	825	84.85	32	482	66.39	102	1,307	78.04	0.23
All ages	101	9,827	<b>10.28</b>	74	9,695	<b>7.63</b>	175	19,522	8.96	<b>0.0499</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 48 Age- and sex-adjusted 12-month incidence of dementia among adults 45 years of age and older, Kelsey Trail Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Kelsey Trail Health Region	175	19522	8.96	7.72	6.6 - 8.9	1.04	0.9 - 1.2	ns

<sup>a</sup> Significance of difference between Kelsey Trail Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 49 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by rural and urban residence, Kelsey Trail Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,620	*	<6	1,891	*	<6	5,511	*	1.00
55-64	<6	3,634	*	<6	2,003	*	<6	5,637	*	0.64
65-74	15	2,647	5.67	7	1,476	4.74	22	4,123	5.34	0.70
75-84	28	1,589	17.62	13	954	13.63	41	2,543	16.12	0.44
85+	54	751	71.90	47	546	86.08	101	1,297	77.87	0.35
All ages	104	12,241	8.50	69	6,870	10.04	173	19,111	9.05	0.28

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Prevalence (2012/2013)

### Prevalence by Sex and Age Group

Table 50

- A total of 663 prevalent (existing) cases of dementia were identified among adults 45 years and older in Kelsey Trail Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted prevalence rate of dementia was 32.85 per 1,000 population at risk (PAR).
- Overall, the unadjusted 12-month prevalence rate among individuals aged 45 years and older was 3.7 times the unadjusted incidence rate (32.85 vs. 8.96 per 1,000 PAR).

#### Sex

- There were 425 prevalent cases among females and 238 prevalent cases among males aged 45 years and older.
- Among those aged 85 years and older, the unadjusted prevalence rate was 21% higher among females than males (246.58 vs. 203.31 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in prevalence rates between females and males were not statistically significant.
- Among all age groups combined, the unadjusted prevalence rate was 73% higher among females than males (41.46 vs. 23.96 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 6% of prevalent cases (41/663), those aged 65 to 84 accounted for 34% (229/663), and adults aged 85 years and older accounted for 59% (393/663).
- Overall, the unadjusted prevalence rate was 144 times higher among adults aged 85 and older than among those 45 to 54 years of age (231.18 vs. 1.60 per 1,000 PAR). The sharpest escalation in the unadjusted prevalence rate occurred at age 75 years, increasing by 4.8 times among the 75 to 84 age group compared to the 65 to 74 age group (62.75 vs. 13.09 per 1,000 PAR).

### Prevalence by Health Region (Age- and Sex-adjusted rates)

Table 51

This table shows the unadjusted (crude) and adjusted total prevalence of dementia (females and males combined), for Kelsey Trail Health Region. *Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted prevalence rate for Kelsey Trail Health Region was 27.36 per 1,000 PAR, ranking 8 of 11 when the health region rates were ordered from highest to lowest. This adjusted rate was 3% lower than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). This difference was not statistically significant.

### Prevalence by Rural and Urban Residence

Table 52

- Among all adults aged 45 years and older, there were 392 prevalent cases among rural residents and 262 prevalent cases among urban residents.
- Among all age groups combined, the 18% higher unadjusted prevalence rate in urban compared to rural residents (36.74 vs. 31.03 per 1,000 PAR) was statistically significant ( $p < 0.05$ ).

## Prevalence

Table 50 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and age group, Kelsey Trail Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	6+	2,760	*	<6	2,879	*	9	5,639	1.60	0.019
55-64	6+	2,816	*	6+	2,996	*	32	5,812	5.51	0.86
65-74	27	2,119	12.74	29	2,158	13.44	56	4,277	13.09	0.84
75-84	104	1,462	71.14	69	1,295	53.28	173	2,757	62.75	0.05
85+	270	1,095	<b>246.58</b>	123	605	<b>203.31</b>	393	1,700	231.18	<b>0.04</b>
All ages	425	10,252	<b>41.46</b>	238	9,933	<b>23.96</b>	663	20,185	32.85	<b>&lt;.0001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 51 Age- and sex-adjusted 12-month of dementia among adults 45 years of age and older, Kelsey Trail Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Kelsey Trail Health Region	663	20,185	32.85	27.36	25.3 - 29.5	0.98	0.90-1.07	ns

<sup>a</sup> Significance of difference between Kelsey Trail Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 52 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by rural and urban residence, Kelsey Trail Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	6+	3,626	*	<6	1,893	*	8	5,519	1.45	0.72
55-64	6+	3,651	*	6+	2,018	*	32	5,669	5.64	0.18
65-74	32	2,679	11.94	24	1,500	16.00	56	4,179	13.40	0.27
75-84	96	1,685	56.97	73	1,027	71.08	169	2,712	62.32	0.14
85+	241	992	242.94	148	694	213.26	389	1,686	230.72	0.15
All ages	392	12,633	<b>31.03</b>	262	7,132	<b>36.74</b>	654	19,765	33.09	<b>0.03</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Environmental Scan

Note that a total of 5 Home Care Assessors from Kelsey Trail Health Region responded to the environmental scan survey. Given missing responses across items, the total sample for Kelsey Trail Health Region (N) varied from 4 to 5. Due to the small sample size, the following findings must be interpreted with caution.

See 'Data Collection' under the Methods section of this report for a description of the measures below.

### Availability of Dementia-related Services Table 53

- *Health Promotion Programs* related to dementia care were reported to be widely unavailable according to the majority of respondents. The exception was recreational activities for older adults, which respondents indicated were available at least weekly in their communities.
- *Primary Health Care* services related to dementia care that were available weekly according to all respondents included pharmacists, family physicians, and screening of older adults. Other services that were available weekly, according to most respondents, included physical therapists, social workers, and multidisciplinary team assessments.
- *Post-diagnostic Support* services availability varied. Case management, adult day programs, and palliative care were available at least weekly according to all respondents. Counselling of diagnosed individuals and caregivers, caregiver support group, and other caregiver support services varied from available at least weekly to unavailable. Volunteer services/visitors were generally unavailable.
- *Home Care* services were widely available weekly. Home care services that were unavailable in most communities, according to the majority of respondents, included transportation to health care and night respite.
- *Long-term Care* counselling for individuals with dementia and caregivers varied from available at least weekly to unavailable. Long-term care housing\* available in the community, according to most respondents, included seniors housing, special care homes, and special care units. Less

than half of respondents indicated that personal care homes and assisted living options were available in their communities.

\* See Table 53 bottom for these figures

### Primary Health Care (PHC) Orientation of Dementia-related Services\*

#### Table 54

- *Information and Education.* Mean scores on individual items in the *Information and Education* scale ranged from strongly negative with respect to public education to reduce stigma (1.6, SD = 0.5) to positive with respect to dementia awareness among local health care professionals (3.8, SD = 1.6). The overall scale mean of 13.8 (SD = 5.1, range = 6-19) demonstrated that respondents perceived community-level dementia-related information and education to be somewhat inadequate.
- *Accessibility.* Respondents held somewhat negative views regarding the frequency of services (2.6, SD = 1.3), availability of subsidized/free transportation services (1.6, SD = 1.3), and geographic accessibility of services (1.8, SD = 0.4). Respondents reported overall somewhat negative perceptions of accessibility, with an average scale score of 12.2 (SD = 2.4, range = 9-15).
- *Population Orientation.* *Population Orientation* (i.e., community fit) of dementia-related services was perceived as inappropriate on average, specifically with regard to the level of primary health care services (2.4, SD = 1.3) and level of support for caregivers (1.8, SD = 0.4). Somewhat positive views were evident with respect to the number of LTC beds (3.6, SD = 1.5). Respondents

reported overall somewhat negative perceptions of population orientation, with an average scale score of 13.8 (SD = 3.4, range = 9-17).

- *Coordinated Care*. Perceptions ranged from somewhat negative regarding the seamlessness of transitions from community to LTC (2.6, SD = 1.5) to somewhat positive with respect to coordination amongst health care professionals (4.0, SD = 0.7). The overall average *Coordinated Care* scale score was somewhat positive at 16.6 (SD = 4.2, range = 12-23).
- *Comprehensiveness of Care*. Perceptions regarding the comprehensiveness of care were positive, particularly with respect to the ability of one or more health care professionals to diagnose (4.2, SD = 0.8) and provide on-going management (4.0, SD = 1.2). Of the 6 dimensions considered, *Comprehensiveness of Care* fared the most favorably. The average *Comprehensiveness of Care* scale score of 19.2 (SD = 5.1, range = 13-24) reflected the overall positive position of respondents on this dimension.
- *Quality of Care*. Views ranged from somewhat negative to somewhat positive with regard to care quality. Respondents held somewhat negative views regarding the guidance of care and management by standardized care pathways (2.2, SD = 0.8) and somewhat positive views concerning the use of standardized diagnostic criteria by health care professionals (3.4, SD = 0.9) and effectiveness of current screening tools (3.4, SD = 1.3). The average *Quality of Care* scale score of 15.2 (SD = 4.0, range = 9-19) demonstrated the overall neutral position of respondents on this dimension.
- A final single summary item asked whether “the amount of supportive resources and services available in the community is adequate to allow individuals with dementia to remain at home for as long as possible.” According to this single item, Kelsey Trail Health Region respondents held generally neutral perceptions regarding the adequacy of supportive resources and services available in the community (2.8 (SD = 1.1, range = 2-4)).

## Environmental Scan Comments

Kelsey Trail Health Region Home Care Assessors provided the following comments:

*“Home care services are limited in the outlying rural areas such as (names of communities).”*

*“Some services are more available than others related to the actual size of the communities (i.e., name of community vs. name of community). In (name of community) Home Care we do not offer any night service.”*

*“I really believe that in rural areas, there are very few supports in place for families dealing with dementia.” (KEL002)*

*“There is no level 2 secure housing with 24 hr supervision or intermediate care for people with dementia, therefore if they wander at night or are not easy to manage at home they must go to LTC even if they don't really require 24 hr nursing care. Also, most LTC applicants are placed in beds out of the community and then they transfer back which causes considerable adjustment problems for clients and families. All support groups are offered in communities with a 1 hr drive at least required to go to them.” (KEL004)*



## Environmental Scan

Table 53 Availability of dementia-related services, Kelsey Trail Health Region

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion	4	0	0	4 (100.0)
Healthy lifestyle promotion related to dementia	5	0	0	5 (100.0)
Recreational activities for older adults	5	5 (100.0)	0	0
<b>Primary Health Care</b>				
Pharmacist	5	5 (100.0)	0	0
Family Physician	5	5 (100.0)	0	0
Nurse Practitioner	5	5 (100.0)	0	0
Physical Therapist	5	4 (80.0)	1 (20.0)	0
Occupational Therapist	5	1 (20.0)	4 (80.0)	0
Social Worker	5	4 (80.0)	1 (20.0)	0
Other health care professionals	4	1 (25.0)	1 (25.0)	2 (50.0)
Screening of older adults	5	5 (100.0)	0	0
Multidisciplinary team assessment	5	3 (60.0)	1 (20.0)	1 (20.0)
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals	5	5 (100.0)	0	0
Volunteer services/visitors	5	1 (20.0)	0	4 (80.0)
Counselling diagnosed individuals	5	3 (60.0)	0	2 (40.0)
Counselling caregivers	5	2 (40.0)	1 (20.0)	2 (40.0)
Caregiver support group	5	1 (20.0)	1 (20.0)	3 (60.0)
Other caregiver support services	5	2 (40.0)	1 (20.0)	1 (20.0)
Private caregiving	5	2 (40.0)	0	3 (60.0)
Adult day program	5	5 (100.0)	0	0
Palliative care	5	5 (100.0)	0	0
<b>Home Care</b>				
Meals on Wheels	5	5 (100.0)	0	0
Meal Prep	5	5 (100.0)	0	0
Personal care - AM Care	5	5 (100.0)	0	0
Personal care - HS Care	5	5 (100.0)	0	0
Personal care – Toileting	5	5 (100.0)	0	0
Personal care – Bath Assist	5	5 (100.0)	0	0
Homemaking	5	4 (80.0)	0	1 (20.0)
Transportation to health care	5	1 (20.0)	1 (20.0)	4 (80.0)
In-home respite and visiting	5	4 (80.0)	0	1 (20.0)
Planned respite care	5	4 (80.0)	1 (20.0)	0
Night respite	5	1 (20.0)	0	4 (80.0)
Weekend respite	5	3 (60.0)	0	2 (40.0)
Emergency respite	5	5 (100.0)	0	0
<b>Long Term Care*</b>				
Counselling for individuals with dementia	5	1 (25.0)	1 (25.0)	2 (50.0)
Counselling for caregivers	5	2 (40.0)	1 (20.0)	2 (40.0)

\*Other available long-term care services (N = 5): seniors housing (100%, n = 5), special care home (100%, n = 5), personal care home (40%, n = 2), assisted living options (20%, n = 1), special care unit (60%, n = 3)

Table 54 Item statistics of Primary Health Care Orientation of Dementia-related Services, Kelsey Trail Health Region

Attribute	N	Mean	SD (range)
<b>Information and Education</b>	<b>5</b>	<b>13.8</b>	<b>5.1 (6-19)</b>
Adequate awareness about 'what to do' or 'where to go'	5	3.2	1.1 (1-4)
Adequate information for caregivers	5	2.4	1.1 (1-4)
Adequate awareness of dementia among health care professionals in the community	5	3.8	1.6 (1-4)
Adequate dementia-specific continuing education for health care professionals	5	2.8	1.3 (1-4)
Adequate public education to reduce stigma of dementia	5	1.6	0.5 (1-4)
<b>Accessibility</b>	<b>5</b>	<b>12.2</b>	<b>2.4 (9-15)</b>
Appropriate frequency of services	5	2.6	1.3 (1-4)
Appropriate wait time for services	5	3.2	1.3 (1-4)
Available public transportation to services (for older adults)	5	3.0	1.9 (1-4)
Available subsidized/free transportation to services (for older adults)	5	1.6	1.3 (1-4)
Equally accessible services, regardless of geographic location	5	1.8	0.4 (1-4)
<b>Population Orientation</b>	<b>5</b>	<b>13.8</b>	<b>3.4 (9-17)</b>
Appropriate level of PHC services	5	2.4	1.3 (1-4)
Appropriate level of Home Care services	5	3.0	1.0 (1-4)
Appropriate number of LTC beds	5	3.6	1.5 (1-4)
Appropriate telehealth services	5	3.0	0.7 (1-4)
Appropriate level of support for caregivers	5	1.8	0.4 (1-4)
<b>Co-ordinated Care</b>	<b>5</b>	<b>16.6</b>	<b>4.2 (12-23)</b>
Service delivery by different health care professionals in the community is co-ordinated	5	3.6	1.5 (1-4)
All health care professionals in the community have easy access to patient health history	5	3.2	1.1 (1-4)
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]	5	4.0	0.7 (1-4)
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)	5	3.2	0.8 (1-4)
Seamless transition from community to LTC	5	2.6	1.5 (1-4)
<b>Comprehensiveness of Care</b>	<b>5</b>	<b>19.2</b>	<b>5.1 (13-24)</b>
One or more health care professional is able to diagnose	5	4.2	0.8 (1-4)
One or more health care professional is able to provide on-going management	5	4.0	1.2 (1-4)
There is timely referral to appropriate health and social services	5	3.6	0.9 (1-4)
Multidisciplinary care is available	5	3.8	1.3 (1-4)
Health care professionals consider dementia a chronic disease	5	3.6	1.5 (1-4)
<b>Quality of care</b>	<b>5</b>	<b>15.2</b>	<b>4.0 (9-19)</b>
Timely diagnosis occurs	5	2.8	0.8 (1-4)
Health care professionals use standardized diagnostic criteria	5	3.4	0.9 (1-4)
Current screening tools are effective	5	3.4	1.3 (1-4)
Care and management are guided by standardized care pathways	5	2.2	0.8 (1-4)
Health care professionals adequately monitor safety of individuals with dementia living at home	5	3.4	1.1 (1-4)
<b>Adequate amount of supportive resources and services</b>	<b>5</b>	<b>2.8</b>	<b>1.1 (2-4)</b>

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent

# Prairie North Health Region

## Administrative Data Analysis

### Incidence (2012/2013)

#### Incidence by Sex and Age Group

Table 55

- A total of 179 incident (new) cases of dementia were identified among adults 45 years and older in Prairie North Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted incidence rate of dementia was 6.57 per 1,000 population at risk (PAR).

#### Sex

- There were 101 incident cases among females and 78 incident cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted incidence rate was 29% higher among females than males (7.41 vs. 5.73 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 11% of incident cases (20/179), those aged 65 to 84 contributed 45% (81/179), and 44% (78/179) were contributed by adults aged 85 years and older.
- The unadjusted incidence rate increased 87 times between the group aged 45 to 54 and those aged 85 years and older (0.82 vs. 71.17 per 1,000 PAR).

#### Incidence by Health Region (Age- and Sex-adjusted rates)

Table 56

This table shows the unadjusted (crude) and adjusted total incidence of dementia (females and males combined), for Prairie North Health Region. *Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted incidence rate for Prairie North Health Region was 8.08 per 1,000 PAR, ranking 4 of 11 when the health region rates were ordered from highest to lowest. At 8.08 per 1,000 per PAR, the adjusted incidence rate for Prairie North Health Region was 3% higher than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). This difference was not statistically significant.

#### Incidence by Rural and Urban Residence

Table 57

- Among all adults aged 45 years and older, there were 84 incident cases among rural residents and 93 incident cases among urban residents.
- Among all age groups combined, the 41% higher unadjusted incidence rate in urban compared to rural residents (8.06 vs. 5.71 per 1,000 PAR) was statistically significant ( $p < 0.05$ ).

## Incidence

Table 55 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and age group, Prairie North Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	4,886	*	<6	4,927	*	8	9,813	0.82	0.51
55-64	6+	4,171	*	6+	4,365	*	12	8,536	1.41	0.94
65-74	10	2,463	4.06	9	2,583	3.48	19	5,046	3.77	0.74
75-84	36	1,443	24.95	26	1,305	19.92	62	2,748	22.56	0.38
85+	44	674	65.28	34	422	80.57	78	1,096	71.17	0.34
All ages	101	13,637	7.41	78	13,602	5.73	179	27,239	6.57	0.09

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 56 Age- and sex-adjusted 12-month incidence of dementia among adults 45 years of age and older, Prairie North Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Prairie North Health Region	179	27239	6.57	8.08	6.9 - 9.4	1.10	0.9 - 1.3	ns

<sup>a</sup> Significance of difference between Prairie North Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 57 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by rural and urban residence, Prairie North Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	5,109	*	<6	4,273	*	7	9,382	0.75	1.00
55-64	6+	4,716	*	6+	3,506	*	12	8,222	1.46	0.61
65-74	8	2,934	2.73	11	1,960	5.61	19	4,894	3.88	0.11
75-84	29	1,436	20.19	33	1,243	26.55	62	2,679	23.14	0.28
85+	37	521	71.02	40	563	71.05	77	1,084	71.03	1.00
All ages	84	14,716	<b>5.71</b>	93	11,545	<b>8.06</b>	177	26,261	6.74	<b>0.021</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Prevalence (2012/2013)

### Prevalence by Sex and Age Group

Table 58

- A total of 697 prevalent (existing) cases of dementia were identified among adults 45 years and older in Prairie North Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted prevalence rate of dementia was 24.95 per 1,000 population at risk (PAR).
- Overall, the unadjusted 12-month prevalence rate among individuals aged 45 years and older was 3.8 times the unadjusted incidence rate (24.95 vs. 6.57 per 1,000 PAR).

#### Sex

- There were 394 prevalent cases among females and 303 prevalent cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted prevalence rate was 29% higher among females than males (28.08 vs. 21.79 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 9% of prevalent cases (63/697), those aged 65 to 84 accounted for 43% (303/697), and adults aged 85 years and older accounted for 47% (331/697).
- Overall, the unadjusted prevalence rate was 151 times higher among adults aged 85 and older than among those 45 to 54 years of age (231.96 vs. 1.53 per 1,000 PAR). The sharpest escalation in the unadjusted prevalence rate occurred at age 75 years, increasing by 4.2 times among the 75 to 84 age group compared to the 65 to 74 age group (72.25 vs. 17.33 per 1,000 PAR).

### Prevalence by Health Region (Age- and Sex-adjusted rates)

Table 59

This table shows the unadjusted (crude) and adjusted total prevalence of dementia (females and males combined), for the Prairie North Health Region.

*Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted prevalence rate for Prairie North Health Region was 29.57 per 1,000 PAR, ranking 3 of 11 when the health region rates were ordered from highest to lowest. This adjusted rate was 5% higher than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). This difference was not statistically significant.

### Prevalence by Rural and Urban Residence

Table 60

- Among all adults aged 45 years and older, there were 326 prevalent cases among rural residents and 355 prevalent cases among urban residents.
- Among all age groups combined, the 38% higher unadjusted prevalence rate in urban compared to rural residents (29.83 vs. 21.67 per 1,000 PAR) was statistically significant ( $p < 0.05$ ).

## Prevalence

Table 58 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and age group, Prairie North Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	9	4,895	1.84	6	4,933	1.22	15	9,828	1.53	0.43
55-64	28	4,199	6.67	20	4,385	4.56	48	8,584	5.59	0.19
65-74	36	2,499	14.41	53	2,636	20.11	89	5,135	17.33	0.12
75-84	104	1,547	67.23	110	1,415	77.74	214	2,962	72.25	0.27
85+	217	891	243.55	114	536	212.69	331	1,427	231.96	0.18
All ages	394	14,031	<b>28.08</b>	303	13,905	<b>21.79</b>	697	27,936	24.95	<b>&lt;0.001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 59 Age- and sex-adjusted 12-month prevalence of dementia among adults 45 years of age and older, Prairie North Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Prairie North Health Region	697	27936	24.95	29.57	27.4 - 31.8	1.08	0.99-1.17	ns

<sup>a</sup> Significance of difference between Prairie North Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 60 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by rural and urban residence, Prairie North Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	5,113	*	6+	4,283	*	14	9,396	1.49	0.06
55-64	6+	4,738	*	6+	3,530	*	46	8,268	5.56	0.19
65-74	45	2,979	15.11	42	2,002	20.98	87	4,981	17.47	0.12
75-84	101	1,537	65.71	108	1,351	79.94	209	2,888	72.37	0.14
85+	154	675	228.15	171	734	232.97	325	1,409	230.66	0.83
All ages	326	15,042	<b>21.67</b>	355	11,900	<b>29.83</b>	681	26,942	25.28	<b>&lt;0.001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Environmental Scan

### Tables 61 and 62

In the present report, we include only the results for the health regions with 4 or more Home Care Assessors responding to the environmental scan survey (the exception to this rule is the Athabasca Health Authority, which had 1 respondent and was grouped with Keewatin Yatthe into the 'Northern Health Regions' when reporting results from the environmental scan). Four health regions had fewer than 4 respondents, and therefore are not included in the environmental scan results: Cypress (1), Mamawetan Churchill River (0), Prairie North (1), and Prince Albert Parkland (1).

**Environmental Scan**

Table 61 Availability of dementia-related services, Prairie North Health Region

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion				
Healthy lifestyle promotion related to dementia				
Recreational activities for older adults				
<b>Primary Health Care</b>				
Pharmacist				
Family Physician				
Nurse Practitioner				
Physical Therapist				
Occupational Therapist				
Social Worker				
Other health care professionals				
Screening of older adults				
Multidisciplinary team assessment				
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals				
Volunteer services/visitors				
Counselling diagnosed individuals				
Counselling caregivers				
Caregiver support group				
Other caregiver support services				
Private caregiving				
Adult day program				
Palliative care				
<b>Home Care</b>				
Meals on Wheels				
Meal Prep				
Personal care - AM Care				
Personal care - HS Care				
Personal care – Toileting				
Personal care – Bath Assist				
Homemaking				
Transportation to health care				
In-home respite and visiting				
Planned respite care				
Night respite				
Weekend respite				
Emergency respite				
<b>Long Term Care*</b>				
Counselling for individuals with dementia				
Counselling for caregivers				

\*Other available long-term care services: seniors housing, special care home, personal care home, assisted living options, and special care unit



## Not available\*

Table 62 Item statistics of Primary Health Care Orientation of Dementia-related Services, Prairie North Health Region

Attribute	N	Mean	SD (range)
<b>Information and Education</b>			
Adequate awareness about 'what to do' or 'where to go'			
Adequate information for caregivers			
Adequate awareness of dementia among health care professionals in the community			
Adequate dementia-specific continuing education for health care professionals			
Adequate public education to reduce stigma of dementia			
<b>Accessibility</b>			
Appropriate frequency of services			
Appropriate wait time for services			
Available public transportation to services (for older adults)			
Available subsidized/free transportation to services (for older adults)			
Equally accessible services, regardless of geographic location			
<b>Population Orientation</b>			
Appropriate level of PHC services			
Appropriate level of Home Care services			
Appropriate number of LTC beds			
Appropriate telehealth services			
Appropriate level of support for caregivers			
<b>Co-ordinated Care</b>			
Service delivery by different health care professionals in the community is co-ordinated			
All health care professionals in the community have easy access to patient health history			
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]			
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)			
Seamless transition from community to LTC			
<b>Comprehensiveness of Care</b>			
One or more health care professional is able to diagnose			
One or more health care professional is able to provide on-going management			
There is timely referral to appropriate health and social services			
Multidisciplinary care is available			
Health care professionals consider dementia a chronic disease			
<b>Quality of care</b>			
Timely diagnosis occurs			
Health care professionals use standardized diagnostic criteria			
Current screening tools are effective			
Care and management are guided by standardized care pathways			
Health care professionals adequately monitor safety of individuals with dementia living at home			
<b>Adequate amount of supportive resources and services</b>			

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent

# Prince Albert Parkland Health Region

## Administrative Data Analysis

### Incidence (2012/2013)

#### Incidence by Sex and Age Group

Table 63

- A total of 191 incident (new) cases of dementia were identified among adults 45 years and older in Prince Albert Parkland Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted incidence rate of dementia was 5.96 per 1,000 population at risk (PAR).

#### Sex

- There were 104 incident cases among females and 87 incident cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted incidence rate was 15% higher among females than males (6.38 vs. 5.53 per 1,000 PAR). This difference was not statistically significant.

#### Age

- Adults 45 to 64 years contributed 9% of incident cases (18/191), those aged 65 to 84 contributed 38% (72/191), and 53% (101/191) were contributed by adults aged 85 years and older.
- The unadjusted incidence rate increased 18 times between the group aged 65 to 74 and those aged 85 years and older (3.86 vs. 69.23 per 1,000 PAR).

#### Incidence by Health Region (Age- and Sex-adjusted rates)

Table 64

This table shows the unadjusted (crude) and adjusted total incidence of dementia (females and males combined), for Prince Albert Parkland Health Region.

*Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted incidence rate for Prince Albert Parkland Health Region was 6.59 per 1,000 PAR, ranking 11 of 11 when the health region rates were ordered from highest to lowest. At 6.59 per 1,000 per PAR, the adjusted incidence rate for Prince Albert Parkland Region was 14% lower than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). This difference was not statistically significant.

#### Incidence by Rural and Urban Residence

Table 65

- Among all adults aged 45 years and older, there were 96 incident cases among rural residents and 93 incident cases among urban residents.
- Among all age groups combined, the 11% higher unadjusted incidence rate in urban compared to rural residents (6.45 vs. 5.82 per 1,000 PAR) was not statistically significant.

## Incidence

Table 63 12-month unadjusted (crude) unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and age group, Prince Albert Parkland Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	5,333	*	<6	5,199	*	<6	10,532	*	0.68
55-64	<6	4,911	*	6+	5,002	*	6+	9,913	*	0.58
65-74	9	3,203	2.81	16	3,274	4.89	25	6,477	3.86	0.18
75-84	22	1,947	11.30	25	1,717	14.56	47	3,664	12.83	0.38
85+	66	913	72.29	35	546	64.10	101	1,459	69.23	0.55
All ages	104	16,307	6.38	87	15,738	5.53	191	32,045	5.96	0.32

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 64 Age- and sex-adjusted incidence of dementia among adults 45 years of age and older, Prince Albert Parkland Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Prince Albert Parkland Health Region	191	32,045	5.96	6.59	5.7 - 7.6	0.87	0.8 - 1.0	ns

<sup>a</sup> Significance of difference between Prince Albert Parkland Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 65 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by rural and urban residence, Prince Albert Parkland Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	4,194	*	<6	5,195	*	<6	10,135	*	1.00
55-64	6+	5,282	*	<6	4,198	*	6+	9,480	*	1.00
65-74	14	3,642	3.84	11	2,638	4.17	25	6,280	3.98	0.84
75-84	24	1,958	12.26	22	1,616	13.61	46	3,574	12.87	0.72
85+	49	672	72.92	52	768	67.71	101	1,440	70.14	0.70
All ages	96	16,494	5.82	93	14,415	6.45	189	30,909	6.11	0.48

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Prevalence (2012/2013)

### Prevalence by Sex and Age Group

Table 66

- A total of 993 prevalent (existing) cases of dementia were identified among adults 45 years and older in Prince Albert Parkland Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted prevalence rate of dementia was 30.06 per 1,000 population at risk (PAR).
- Overall, the unadjusted 12-month prevalence rate among individuals aged 45 years and older was 5.0 times the unadjusted incidence rate (30.06 vs. 5.96 per 1,000 PAR).

#### Sex

- There were 594 prevalent cases among females and 399 prevalent cases among males aged 45 years and older.
- Among those aged 85 years and older, the unadjusted prevalence rate was 20% higher among females than males (260.73 vs. 217.77 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in prevalence rates between females and males were not statistically significant.
- Among all age groups combined, the unadjusted prevalence rate was 42% higher among females than males (35.15 vs. 24.73 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 10% of prevalent cases (98/993), those aged 65 to 84 accounted for 42% (421/993), and adults aged 85 years and older accounted for 48% (474/993).
- Overall, the unadjusted prevalence rate was 129 times higher among adults aged 85 and older than among those 45 to 54 years of age (245.21 vs. 1.90 per 1,000 PAR). The sharpest escalation in the unadjusted prevalence rate occurred at age 55 years, increasing by 4.1 times among the 55 to 64 age group compared to the 45 to 54 age group (7.81 vs. 1.90 per 1,000 PAR).

### Prevalence by Health Region (Age- and Sex-adjusted rates)

Table 67

This table shows the unadjusted (crude) and adjusted total prevalence of dementia (females and males combined), for the Prince Albert Parkland Health Region.

*Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted prevalence rate for Prince Albert Parkland Health Region was 31.91 per 1,000 PAR, ranking 1 of 11 when the health region rates were ordered from highest to lowest. This adjusted rate was 13% higher than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). This difference was statistically significant ( $p > 0.05$ ).

### Prevalence by Rural and Urban Residence

Table 68

- Among all adults aged 45 years and older, there were 467 prevalent cases among rural residents and 504 prevalent cases among urban residents.
- Unadjusted prevalence rates were significantly higher among urban than rural adults under 75 years of age. The unadjusted prevalence rate among urban adults aged 65 to 74 was 82% higher compared to rural adults (29.43 vs. 16.21 per 1,000 PAR). Among all age groups combined, the 23% higher unadjusted prevalence rate in urban compared to rural residents (33.78 vs. 27.53 per 1,000 PAR) was statistically significant ( $p < 0.05$ ).

## Prevalence

Table 66 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and age group, Prince Albert Parkland Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	10	5,343	1.87	10	5,209	1.92	20	10,552	1.90	0.95
55-64	44	4,955	8.88	34	5,036	6.75	78	9,991	7.81	0.23
65-74	72	3,275	21.98	72	3,346	21.52	144	6,621	21.75	0.90
75-84	146	2,093	69.76	131	1,848	70.89	277	3,941	70.29	0.89
85+	322	1,235	<b>260.73</b>	152	698	<b>217.77</b>	474	1,933	245.21	<b>0.035</b>
All ages	594	16,901	<b>35.15</b>	399	16,137	<b>24.73</b>	993	33,038	30.06	<b>&lt;.0001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 67 Age- and sex-adjusted 12-month prevalence of dementia among adults 45 years of age and older, Prince Albert Parkland Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Prince Albert Parkland Health Region	993	33,038	<b>30.06</b>	31.91	30.0 - 33.9	1.19	1.10-1.28	<.05

<sup>a</sup> Significance of difference between Prince Albert Parkland Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 68 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by rural and urban residence, Prince Albert Parkland Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	4,944	*	6+	5,211	*	20	10,155	1.97	<b>0.0123</b>
55-64	6+	5,307	*	6+	4,248	*	75	9,555	7.85	<b>0.0001</b>
65-74	60	3702	<b>16.21</b>	80	2,718	<b>29.43</b>	140	6,420	21.81	<b>0.0003</b>
75-84	141	2,099	67.17	128	1,744	73.39	269	3,843	70.00	0.45
85+	237	909	260.73	230	998	230.46	467	1,907	244.89	0.12
All ages	467	16,961	<b>27.53</b>	504	14,919	<b>33.78</b>	971	31,880	30.46	<b>0.0012</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Environmental Scan

### Tables 69 and 70

In the present report, we include only the results for the health regions with 4 or more Home Care Assessors responding to the environmental scan survey (the exception to this rule is the Athabasca Health Authority, which had 1 respondent and was grouped with Keewatin Yatthe into the 'Northern Health Regions' when reporting results from the environmental scan). Four health regions had fewer than 4 respondents, and therefore are not included in the environmental scan results: Cypress (1), Mamawetan Churchill River (0), Prairie North (1), and Prince Albert Parkland (1).

Table 69 Availability of dementia-related services, Prince Albert Health Region

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion				
Healthy lifestyle promotion related to dementia				
Recreational activities for older adults				
<b>Primary Health Care</b>				
Pharmacist				
Family Physician				
Nurse Practitioner				
Physical Therapist				
Occupational Therapist				
Social Worker				
Other health care professionals				
Screening of older adults				
Multidisciplinary team assessment				
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals				
Volunteer services/visitors				
Counselling diagnosed individuals				
Counselling caregivers				
Caregiver support group				
Other caregiver support services				
Private caregiving				
Adult day program				
Palliative care				
<b>Home Care</b>				
Meals on Wheels				
Meal Prep				
Personal care - AM Care				
Personal care - HS Care				
Personal care – Toileting				
Personal care – Bath Assist				
Homemaking				
Transportation to health care				
In-home respite and visiting				
Planned respite care				
Night respite				
Weekend respite				
Emergency respite				
<b>Long Term Care*</b>				
Counselling for individuals with dementia				
Counselling for caregivers				

\*Other available long-term care services: seniors housing, special care home, personal care home, assisted living options, and special care unit

Not available\*

Table 70 Item statistics of Primary Health Care Orientation of Dementia-related Services, Prince Albert Health Region

Attribute	N	Mean	SD (range)
<b>Information and Education</b>			
Adequate awareness about 'what to do' or 'where to go'			
Adequate information for caregivers			
Adequate awareness of dementia among health care professionals in the community			
Adequate dementia-specific continuing education for health care professionals			
Adequate public education to reduce stigma of dementia			
<b>Accessibility</b>			
Appropriate frequency of services			
Appropriate wait time for services			
Available public transportation to services (for older adults)			
Available subsidized/free transportation to services (for older adults)			
Equally accessible services, regardless of geographic location			
<b>Population Orientation</b>			
Appropriate level of PHC services			
Appropriate level of Home Care services			
Appropriate number of LTC beds			
Appropriate telehealth services			
Appropriate level of support for caregivers			
<b>Co-ordinated Care</b>			
Service delivery by different health care professionals in the community is co-ordinated			
All health care professionals in the community have easy access to patient health history			
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]			
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)			
Seamless transition from community to LTC			
<b>Comprehensiveness of Care</b>			
One or more health care professional is able to diagnose			
One or more health care professional is able to provide on-going management			
There is timely referral to appropriate health and social services			
Multidisciplinary care is available			
Health care professionals consider dementia a chronic disease			
<b>Quality of care</b>			
Timely diagnosis occurs			
Health care professionals use standardized diagnostic criteria			
Current screening tools are effective			
Care and management are guided by standardized care pathways			
Health care professionals adequately monitor safety of individuals with dementia living at home			
<b>Adequate amount of supportive resources and services</b>			

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent



## Administrative Data Analysis

### Incidence (2012/2013)

#### Incidence by Sex and Age Group

Table 71

- A total of 712 incident (new) cases of dementia were identified among adults 45 years and older in Regina Qu'Appelle Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted incidence rate of dementia was 6.54 per 1,000 population at risk (PAR).

#### Sex

- There were 416 incident cases among females and 296 incident cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted incidence rate was 31% higher among females than males (7.40 vs. 5.63 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 9% of incident cases (61/712), those aged 65 to 84 contributed 43% (308/712), and 48% (343/712) were contributed by adults aged 85 years and older.
- The unadjusted incidence rate increased 149 times between the group aged 45 to 54 and those aged 85 years and older (0.42 vs. 62.53 per 1,000 PAR).

#### Incidence by Health Region (Age- and Sex-adjusted rates)

Table 72

This table shows the unadjusted (crude) and adjusted total incidence of dementia (females and males combined), for Regina Qu'Appelle Health Region. *Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted incidence rate for Regina Qu'Appelle Health Region was 7.15 per 1,000 PAR, ranking 8 of 11 when the health region rates were ordered from highest to lowest. At 7.15 per 1,000 per PAR, the adjusted incidence rate for Regina Qu'Appelle Region was 15% lower than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). This difference was not statistically significant.

#### Incidence by Rural and Urban Residence

Table 73

- Among all adults aged 45 years and older, there were 166 incident cases among rural residents and 543 incident cases among urban residents.
- Unadjusted incidence rates were significantly higher among rural than urban adults aged 75 to 84 years (26.59 vs. 18.14 per 1,000 PAR) and 85 years and older (76.20 vs. 59.45 per 1,000 PAR). Among all age groups combined, the unadjusted incidence rate was 29% higher in rural compared to urban residents (8.09 vs. 6.27 per 1,000 PAR), a difference that was statistically significant ( $p < 0.05$ ). This finding was unique to Regina Qu'Appelle Health Region; in all other health regions, unadjusted incidence rates were higher in urban compared to rural residents, in some cases significantly so.

## Incidence

Table 71 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and age group, Regina Qu'Appelle Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	9	19,098	0.47	7	19,361	0.36	16	38,459	0.42	0.60
55-64	19	16,940	1.12	26	16,841	1.54	45	33,781	1.33	0.29
65-74	49	10,158	4.82	30	9,363	3.20	79	19,521	4.05	0.07
75-84	116	6,504	17.84	113	5,079	22.25	229	11,583	19.77	0.09
85+	223	3,523	63.30	120	1,962	61.16	343	5,485	62.53	0.75
All ages	416	56,223	<b>7.40</b>	296	52,606	<b>5.63</b>	712	108,829	6.54	<b>&lt;0.001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 72 Age- and sex-adjusted 12-month incidence of dementia among adults 45 years of age and older, Regina Qu'Appelle Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Regina Qu'Appelle Health Region	712	108,829	6.54	7.15	6.6 - 7.7	0.95	0.9 - 1.0	ns

<sup>a</sup> Significance of difference between Regina Qu'Appelle Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 73 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by rural and urban residence, Regina Qu'Appelle Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	6,491	*	6+	31,272	*	15	37,763	0.40	0.74
55-64	6+	6,629	*	6+	26,538	*	45	33,167	1.36	0.45
65-74	10	4,051	2.47	68	15,200	4.47	78	19,251	4.05	0.07
75-84	61	2,294	<b>26.59</b>	167	9,205	<b>18.14</b>	228	11,499	19.83	<b>0.0094</b>
85+	81	1,063	<b>76.20</b>	262	4,407	<b>59.45</b>	343	5,470	62.71	<b>0.0432</b>
All ages	166	20,528	<b>8.09</b>	543	86,622	<b>6.27</b>	709	107,150	6.62	<b>0.00</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Prevalence (2012/2013)

### Prevalence by Sex and Age Group

Table 74

- A total of 3,041 prevalent (existing) cases of dementia were identified among adults 45 years and older in Regina Qu'Appelle Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted prevalence rate of dementia was 27.18 per 1,000 population at risk (PAR).
- Overall, the unadjusted 12-month prevalence rate among individuals aged 45 years and older was 4.2 times the unadjusted incidence rate (27.18 vs. 6.54 per 1,000 PAR).

#### Sex

- There were 1,924 prevalent cases among females and 1,117 prevalent cases among males aged 45 years and older.
- Among those aged 85 years and older, the unadjusted prevalence rate was 34% higher among females than males (241.06 vs. 180.11 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in prevalence rates between females and males were not statistically significant.
- Among all age groups combined, the unadjusted prevalence rate was 59% higher among females than males (33.09 vs. 20.79 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 9% of prevalent cases (281/3,041), those aged 65 to 84 accounted for 40% (1,210/3,041), and adults aged 85 years and older accounted for 51% (1,550/3,041).
- Overall, the unadjusted prevalence rate was 146 times higher among adults aged 85 and older than among those 45 to 54 years of age (220.33 vs. 1.51 per 1,000 PAR). The sharpest escalation in the unadjusted prevalence rate occurred at age 55 years, increasing by 4.3 times among the 55 to 64 age group compared to the 45 to 54 age group (6.56 vs. 1.51 per 1,000 PAR).

### Prevalence by Health Region (Age- and Sex-adjusted rates)

Table 75

This table shows the unadjusted (crude) and adjusted total prevalence of dementia (females and males combined), for the Regina Qu'Appelle Health Region.

*Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted prevalence rate for Regina Qu'Appelle Health Region was 28.75 per 1,000 PAR, ranking 6 of 11 when the health region rates were ordered from highest to lowest. This adjusted rate was 2% higher than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). This difference was statistically significant ( $p > 0.05$ ).

### Prevalence by Rural and Urban Residence

Table 76

- Among all adults aged 45 years and older, there were 582 prevalent cases among rural residents and 2,436 prevalent cases among urban residents.
- Prevalence rates were significantly higher ( $p < 0.05$ ) among urban than rural adults aged 65 to 74 (18.34 vs. 12.43 per 1,000 PAR) but significantly higher among rural than urban adults aged 85 years and over (239.63 vs. 214.86 per 1,000 PAR). Among all age groups combined, prevalence rates among rural compared to urban residents were not significantly different.

## Prevalence

Table 74 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and age group, Regina Qu'Appelle Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	28	19,126	1.46	30	19,391	1.55	58	38,517	1.51	0.83
55-64	110	17,050	6.45	113	16,954	6.67	223	34,004	6.56	0.81
65-74	160	10,318	15.51	176	9,539	18.45	336	19,857	16.92	0.11
75-84	507	7,011	72.31	367	5,446	67.39	874	12,457	70.16	0.29
85+	1,119	4,642	<b>241.06</b>	431	2,393	<b>180.11</b>	1,550	7,035	220.33	<b>&lt;.0001</b>
All ages	1,924	58,147	<b>33.09</b>	1,117	53,723	<b>20.79</b>	3,041	111,870	27.18	<b>&lt;.0001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 75 Age- and sex-adjusted 12-month prevalence of dementia among adults 45 years of age and older, Regina Qu'Appelle Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Regina Qu'Appelle Health Region	3,041	111,870	27.18	<b>28.75</b>	27.7 - 29.8	1.05	1.01-1.10	<b>&lt;.05</b>

<sup>a</sup> Significance of difference between Regina Qu'Appelle Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 76 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by rural and urban residence, Regina Qu'Appelle Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	6	6,497	0.92	52	31,324	1.66	58	37,821	1.53	0.17
55-64	37	6,666	5.55	180	26,718	6.74	217	33,384	6.50	0.28
65-74	51	4,102	<b>12.43</b>	284	15,484	<b>18.34</b>	335	19,586	17.10	<b>0.01</b>
75-84	153	2,447	62.53	714	9,919	71.98	867	12,366	70.11	0.10
85+	335	1,398	<b>239.63</b>	1,206	5,613	<b>214.86</b>	1,541	7,011	219.80	<b>&lt; 0.05</b>
All ages	582	21,110	27.57	2,436	89,058	27.35	3,018	110,168	27.39	0.86

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Environmental Scan

Note that a total of 8 *rural* and 14 *urban* Home Care Assessors from Regina Qu'Appelle Health Region responded to the environmental scan survey. Due to missing responses across items, the total sample for *rural* Regina Qu'Appelle Health Region (N) varied from 7 to 8 and the total sample for *urban* Regina Qu'Appelle Health region varied from 10 to 14.

See 'Data Collection' under the Methods section of this report for a description of the measures below.

### Availability of Dementia-related Services

#### *Rural* Regina Qu'Appelle Health Region

Table 77

- *Health Promotion Programs* related to dementia care were reported to be widely unavailable according to the majority of respondents. The exception was recreational activities for older adults, which the most respondents indicated were available at least weekly in their communities.
- *Primary Health Care* services related to dementia care that were available at least weekly according to more than half of respondents included pharmacists, family physicians, Nurse Practitioners, and physical and occupational therapists. The services of other health care professionals (other than those listed), screening of older adults, were unavailable in the majority of respondents' communities. Multidisciplinary team assessment availability varied from at least weekly to unavailable.
- *Post-diagnostic Support* services varied in availability. Most respondents indicated that volunteer services/visitors and private caregiving were unavailable in their communities. However, most respondents also indicated that case management, adult day program, and palliative care were available weekly. The availability of counseling for caregivers, caregiver support groups, and other caregiver support services varied from at least weekly to unavailable.
- *Home Care* services were widely available weekly. Home care services that were unavailable in most communities, according to the majority of respondents, included

transportation to health care and night respite. Whereas half of respondents indicated that

- Personal HS Care was available weekly, the other half indicated that this type of Home Care was unavailable in their communities. Weekend and emergency respite also varied greatly from weekly to no availability across communities.
- *Long-term Care* counselling for individuals with dementia and caregivers were reported to be unavailable by most respondents. Long-term care housing\* available in the community, according to most respondents, included seniors housing, special care homes, and personal care homes. Long-term housing options that were less likely to be available included assisted living and special care units.

\* See Table 77 bottom for these figures

#### *Urban* Regina Qu'Appelle Health Region

Table 78

- *Health Promotion Programs* related to dementia care varied in availability from at least weekly to unavailable. The exception was recreational activities for older adults, which most respondents indicated were available at least weekly in their communities.
- *Primary Health Care* services related to dementia care were generally available at least weekly according to more than half of respondents. The exceptions included screening of older adults, which varied in availability, and multidisciplinary

team assessment, which was unavailable according to most respondents.

- *Post-diagnostic Support* services were generally available at least weekly according to most respondents. The exceptions were adult day program, which most respondents indicated were not available.
- *Home Care* services were widely available weekly. Home care services that were unavailable in most communities, according to the majority of respondents, included homemaking, transportation to health care, and night respite. Home Care services that varied in availability from at least weekly to unavailable included weekend and emergency respite.
- *Long-term Care* counselling for individuals with dementia and caregivers were reported to be unavailable by most respondents. Long-term care housing\* available in the community, according to most respondents, included seniors housing, special care homes, personal care homes, assisted living, and special care units.

\* See Table 78 bottom for these figures

## Primary Health Care (PHC) Orientation of Dementia-related Services\*

### Rural Regina Qu'Appelle Health Region

Table 79

- *Information and Education*. Mean scores on individual items in the *Information and Education* scale ranged from strongly negative with respect to public education to reduce stigma (1.4, SD = 0.5) to positive with respect to dementia awareness among local health care professionals (3.8, SD = 0.7). The overall scale mean of 12.3 (SD = 3.5, range = 7-17) demonstrated that respondents perceived community-level dementia-related information and education to be somewhat inadequate.
- *Accessibility*. Respondents held somewhat negative perceptions with regard to the frequency of services (2.0, SD = 1.3) and availability of subsidized/free transportation services (1.6, SD = 1.4). However, the availability of public transportation was viewed somewhat positively by respondents (3.3, SD = 1.4).

Respondents reported overall somewhat negative perceptions of accessibility, with an average scale score of 12.4 (SD = 5.7, range = 6-21).

- *Population Orientation*. *Population Orientation* (i.e., community fit) of dementia-related services was perceived as inappropriate on average, specifically with regard to the level of primary health care (PHC) services (2.1, SD = 1.0), appropriateness of telehealth services (2.0, SD = 0.9), and level of support for caregivers (1.8, SD = 1.0). Respondents reported overall negative perceptions of population orientation, with an average scale score of 10.8 (SD = 3.7, range = 5-17).
- *Coordinated Care*. Perceptions ranged from somewhat negative regarding the ease of access to patient health history (2.4, SD = 1.2) to somewhat positive with respect to coordination amongst health care professionals (3.3, SD = 0.9) and between health care professionals and community agencies (3.5, SD = 0.8). The mean *Coordinated Care* scale score was somewhat neutral at 15.1 (SD = 3.7, range = 9-20).
- *Comprehensiveness of Care*. Perceptions ranged from neutral regarding the availability of multidisciplinary care (3.0, SD = 1.2) to positive regarding the ability of one or more health care professional to diagnose (3.8, SD = 0.7) and provide on-going management (3.8, SD = 0.9). Of the 6 dimensions considered, *Comprehensiveness of Care* fared the most favorably. The mean *Comprehensiveness of Care* scale score of 16.8 (SD = 3.7, range = 10-21) indicated the overall somewhat positive position of respondents on this dimension.
- *Quality of Care*. Respondents held somewhat negative views with respect to the use of standardized care pathways to guide care and management (1.9, SD = 0.8) and neutral views with respect to the effectiveness of current screening tools (2.9, SD = 1.1) and timeliness of diagnosis (2.8, SD = 1.0). The average *Quality of Care* scale score of 14.1 (SD = 3.4, range = 8-17) reflected the overall neutral position of respondents on this dimension.
- A final single summary item asked whether "the amount of supportive resources and services available in the community is adequate to allow

individuals with dementia to remain at home for as long as possible.” According to this single item, *rural* Regina Qu’Appelle Health Region respondents held somewhat negative perceptions regarding the adequacy of supportive resources and services available in the community (2.6 (SD = 1.2, range = 1-4)).

## Urban Regina Qu’Appelle Health Region

Table 80

- *Information and Education.* Views with respect to public education to reduce stigma (2.4, SD = 0.8) and awareness about ‘what to do’ or ‘where to go’ were somewhat negative (2.6, SD = 1.2) to somewhat positive with respect to dementia awareness among local health care professionals (3.6, SD = 1.1). The overall scale mean of 14.5 (SD = 3.8, range = 7-20) indicated that respondents held generally neutral views regarding community-level dementia-related information and education.
- *Accessibility.* Respondents held negative perceptions with regard to the frequency of services (1.9, SD = 0.9), availability of subsidized/free transportation services (1.6, SD = 0.8), and wait time for services (2.2, SD = 1.2). Respondents reported overall somewhat negative perceptions of accessibility, with an average scale score of 11.6 (SD = 3.9, range = 5-18).
- *Population Orientation.* *Population Orientation* (i.e., community fit) was perceived as inappropriate across all services, from number of LTC beds (1.1, SD = 0.4) to appropriateness of telehealth services (2.0, SD = 1.0). Respondents reported overall strongly negative perceptions of population orientation, with an average scale score of 7.9 (SD = 2.8, range = 5-13).
- *Coordinated Care.* Perceptions ranged from somewhat negative regarding ease of access to patient health history (1.9, SD = 0.8) to somewhat positive with respect to coordination between health care professionals and community agencies (3.4, SD = 0.9). The overall mean *Coordinated Care* scale score was somewhat negative at 13.3 (SD = 2.7, range = 8-16).

- *Comprehensiveness of Care.* Perceptions were generally somewhat positive, particularly with respect to the availability of multidisciplinary care (3.6, SD = 1.1) and ability of one or more health care professionals to provide on-going management (3.4, SD = 1.2). Of the 6 dimensions considered, *Coordinated Care* fared the most favorably. The average *Comprehensiveness of Care* scale score of 15.6 (SD = 4.0, range = 7-20) reflected the overall neutral position of respondents on this dimension.
- *Quality of Care.* Respondents held somewhat negative views with respect to the timeliness of diagnosis (2.1, SD = 0.8) and use of standardized care pathways to guide care and management (2.3, SD = 1.1). The mean *Quality of Care* scale score of 13.3 (SD = 2.3, range = 8-17) demonstrated the overall somewhat negative position of respondents on this dimension.
- A final single summary item asked whether “the amount of supportive resources and services available in the community is adequate to allow individuals with dementia to remain at home for as long as possible.” According to this single item, *urban* Regina Qu’Appelle Health Region respondents held generally negative perceptions regarding the adequacy of supportive resources and services available in the community (1.4 (SD = 0.6, range = 1-3)).

## Environmental Scan Comments

*Rural* Regina Qu’Appelle Health Region Home Care Assessors provided the following comments:

*“Rural would greatly benefit from having a social worker available to our clients and health professionals. Our Home Care Nurse provides Palliative Care Nursing when required, however, the challenges remain with having to access Regina Palliative Support team to support us in doing the job; services are very limited in rural.”*

*“There are many primary caregivers of family members with dementia who do not seek help until a crisis occurs, often the support that could have been arranged sooner may have assisted them to avoid the crisis and better understand that others are available if that info was understood through education.”*  
(REG023)

*"In rural Home Care, this area we no longer have an acute care facility, have visiting doctor and NP."  
"Promotion programs and recreational activities are accessed by the client if they seek them out themselves either through internet or go to urban centres. PT/OT limited access as they cover a huge area. Home Care provides day service only and there is no palliative care coordinator in rural." (REG013)*

*"Often referrals for help come only when family/friends are no longer able to manage."  
(REG007)*

*"Severely lacking in education, support services, and appropriate placements for dementia clients and families." (REG005)*

*"Home Care in rural (location) does not include evening service, RN availability is limited to part time. The only tools we are trained to use are the MMSE which is not an accurate tool. We rely on OT for MOCA and OT are understaffed. Resources are limited. Counselling has a 6 month wait list (mental health)." (REG013)*

*"Home care is the only community based support we have for individuals with dementia. Adult day support programs are also very helpful, however not all programs are equal. For example, (name of community) LTC facility has an excellent day away program 5 x/week (if needed) where I can be assured clients are getting stimulation and socialization, whereas (name of community) day away program is only really 1 day/week with little substance. If we had consistently strong day away programs for clients/families dealing with dementia I think it would greatly improve their quality of life. Families would receive much needed respite, and clients much needed social interaction." (REG006)*

**Urban Regina Qu'Appelle Health Region Home Care Assessors provided the following comments:**

*"Services such as in-home respite (Home Care), personal care, meal prep, homemaking, special care homes, special care unit for individuals with dementia, meals on wheels, social worker, volunteer services and palliative services on paper are available but in reality there are long waitlists, not enough staff, or*

*criteria making most people not meet criteria to access these programs."*

*"Dementia care should include more opportunity for in-home respite, supervision and night time care. RQHR (urban) offers in-home respite between 12:30-15:30 daily to a max of 8 hrs/week. And even though technically this is offered, there are waitlists for the respite because it is deprioritized. Outside of these hours, Home Care cannot go in unless there is a specific task to do. Home Service is also not flexible and unable to give service PRN which, given the nature of aging and dementia, would be very beneficial. Some days are better than others for many people with dementia."*

*(REG017)*

*"Home care services could be provided daily, more reliably, if staffing was at an adequate level - many cancellations. Wait lists for different types of housing affect availability." (REG002)*

*"Home care services (i.e., meal prep, AM/HS care) are available in theory, however at times due to issues like staffing, care may be available, start date may be delayed, etc. Guidelines for some services are very restrictive and therefore limit access (i.e., homemaking). Access to special care homes/units for people with dementia exist, however, access is very limited due to long wait lists. The Alzheimer Society provides excellent education." (REG008)*

*"If HC available, difficulty for this population to f/u and be compliant. Lack of HC resources causes service to be denied or limited. If you can get qualified, service might be there. Criteria to access HC getting tighter - "Mobile dementia" often do not fit. Adult Day Programs are awesome resources - only reliable service, meets the need. Family described dementia unit at (name of facility) as "third world", like TV stories of dull, poorly maintained, spartan facilities. They cried."*

*"Daughter/power of attorney of mother with vascular dementia (diagnosed 1.5 years ago after 2 prior years of concerted effort to obtain diagnosis and help). Accessing professionals within City of Regina to diagnose dementia was a long process with many appointments of allergists, GPs, psychiatry, and neurologist (over 14 appointments in 1.5 years). No specialty in dementia and interest/knowledge was*



*lacking. Exhausting process just to learn and assert selves through the system just for diagnosis, which is only the beginning. And I work in the system with access to good info! We need gerontologist or clinic such as rural and remote memory clinic where professionals understand and prioritize dementia, or can rule it out.”*  
(REG010)

*“Most counselling/supportive services offered through Alzheimer Society of Saskatchewan - non profit organization.”* (REG016)

*“Home Care Meals on Wheels’ - Strict criteria. Home Care Personal Care HS Care - In theory, depends on staff availability; ‘Home Care services such as in-home respite or visiting’, ‘Night respite care’, Weekend respite care’, Emergency respite care’ – (all) private hire.”* (REG019)

*“Unfortunately there is no geriatric assessment unit or team in Regina. Geriatricians and geriatric specialists are in short supply in RQHR, e.g. one geriatric psychiatrist. Counselling and education regarding dementia is primarily done by the Alzheimer’s Society. Meals on Wheels for a very small number of Home Care clients as the criteria are extremely stringent. AM and HS care is often an assessed need but is often hard to get (especially on short notice) started due to limited Home Care resources. Toileting is difficult to arrange through HC unless for an established bowel care routine. Meal prep through Home Care in Regina means usually heating a frozen meal or making a sandwich and soup. There are essentially no homemaking services through Home Care in Regina. Transportation assistance to health care services is dependent on a small number of volunteers that Home Care have. Essentially, clients need to make their own arrangements. Those who qualify for the Aboriginal Home Care Team now have transportation services; this is relatively new. Emergency respite is dependent on PAC Committee approval and availability. This respite is in a LTC facility. Emergency respite in home must be hired through a private agency. Counselling for either those with dementia or the caregivers of those with dementia may be possible in long term care. It is likely that the amount available would be very minimal. Usually only one social worker per long term care*

*facility. Some long term care facilities do not have a social worker.”* (REG020)

## Environmental Scan

Table 77 Availability of dementia-related services, Regina Qu'Appelle Health Region **RURAL**

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion	8	2 (25.0)	1 (12.5)	5 (62.5)
Healthy lifestyle promotion related to dementia	8	2 (25.0)	2 (25.0)	4 (50.0)
Recreational activities for older adults	8	5 (62.5)	3 (37.5)	0
<b>Primary Health Care</b>				
Pharmacist	7	6 (85.7)	0	1 (14.3)
Family Physician	8	6 (75.0)	1 (12.5)	1 (12.5)
Nurse Practitioner	8	5 (62.5)	1 (12.5)	2 (25.0)
Physical Therapist	8	5 (62.5)	2 (25.0)	1 (12.5)
Occupational Therapist	8	4 (50.0)	3 (37.5)	1 (12.5)
Social Worker	8	3 (37.5)	2 (25.0)	3 (37.5)
Other health care professionals	8	2 (25.0)	2 (25.0)	4 (50.0)
Screening of older adults	7	3 (42.9)	0	4 (57.1)
Multidisciplinary team assessment	8	2 (25.0)	3 (37.5)	3 (37.5)
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals	8	5 (62.5)	2 (25.0)	1 (12.5)
Volunteer services/visitors	8	3 (37.5)	0	5 (62.5)
Counselling diagnosed individuals	8	1 (12.5)	4 (50.0)	3 (37.5)
Counselling caregivers	8	1 (12.5)	3 (37.5)	4 (50.0)
Caregiver support group	8	2 (25.0)	2 (25.0)	4 (50.0)
Other caregiver support services	8	1 (12.5)	3 (37.5)	4 (50.0)
Private caregiving	7	3 (42.9)	0	4 (57.1)
Adult day program	8	7 (87.5)	0	1 (12.5)
Palliative care	8	6 (75.0)	0	2 (25.0)
<b>Home Care</b>				
Meals on Wheels	8	7 (87.5)	0	1 (12.5)
Meal Prep	8	8 (100.0)	0	0
Personal care – AM Care	8	8 (100.0)	0	0
Personal care – HS Care	8	4 (50.0)	0	4 (50.0)
Personal care – Toileting	8	8 (100.0)	0	0
Personal care – Bath Assist	8	8 (100.0)	0	0
Homemaking	8	6 (75.0)	0	2 (25.0)
Transportation to health care	8	1 (12.5)	1 (12.5)	6 (75.0)
In-home respite and visiting	8	7 (87.5)	1 (12.5)	0
Planned respite care	8	1 (12.5)	6 (75.0)	1 (12.5)
Night respite	8	0	1 (12.5)	7 (87.5)
Weekend respite	8	1 (12.5)	3 (37.5)	4 (50.0)
Emergency respite	8	3 (37.5)	3 (37.5)	2 (25.0)
<b>Long Term Care</b>				
Counselling for individuals with dementia	7	1 (14.3)	2 (28.6)	4 (57.1)
Counselling for caregivers	8	1 (14.3)	2 (28.6)	4 (57.1)

\*Other available long-term care services (N varied from 7 to 8): seniors housing (75%, n = 6), special care home (57.1%, n = 4), personal care home (62.5%, n = 5), assisted living options (25%, n = 2), special care unit (28.6%, n = 2)

Table 78 Availability of dementia-related services, Regina Qu'Appelle Health Region **URBAN**

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion	11	2 (18.2)	3 (27.3)	6 (54.5)
Healthy lifestyle promotion related to dementia	11	2 (18.2)	4 (36.4)	5 (45.5)
Recreational activities for older adults	13	12 (92.3)	1 (7.7)	0
<b>Primary Health Care</b>				
Pharmacist	14	12 (85.7)	2 (14.3)	0
Family Physician	12	8 (66.7)	3 (25.0)	1 (8.3)
Nurse Practitioner	12	9 (75.0)	1 (8.3)	2 (16.7)
Physical Therapist	14	9 (64.3)	5 (35.7)	0
Occupational Therapist	14	8 (57.1)	6 (42.9)	0
Social Worker	14	7 (50.0)	5 (35.7)	2 (14.3)
Other health care professionals	12	6 (50.0)	2 (33.3)	2 (16.7)
Screening of older adults	13	2 (15.4)	6 (46.2)	5 (38.5)
Multidisciplinary team assessment	14	2 (14.3)	2 (14.3)	10 (71.4)
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals	14	12 (85.7)	2 (14.3)	0
Volunteer services/visitors	14	9 (69.2)	4 (30.8)	0
Counselling diagnosed individuals	12	7 (58.3)	6 (25.0)	2 (16.7)
Counselling caregivers	14	9 (64.3)	4 (28.6)	1 (7.1)
Caregiver support group	14	9 (64.3)	4 (28.6)	1 (7.1)
Other caregiver support services	14	12 (85.7)	1 (7.1)	1 (7.1)
Private caregiving	12	12 (100.0)	2 (14.3)	10 (71.4)
Adult day program	14	2 (14.3)	2 (14.3)	10 (71.4)
Palliative care	14	8 (57.1)	6 (42.9)	0
<b>Home Care</b>				
Meals on Wheels	14	13 (92.9)	0	1 (7.1)
Meal Prep	13	13 (92.9)	0	0
Personal care – AM Care	14	14 (100.0)	0	0
Personal care – HS Care	14	14 (100.0)	0	0
Personal care – Toileting	13	13 (100.0)	0	0
Personal care – Bath Assist	13	14 (100.0)	0	0
Homemaking	12	3 (25.0)	0	9 (75.0)
Transportation to health care	13	4 (30.8)	1 (7.7)	8 (61.5)
In-home respite and visiting	13	9 (69.2)	3 (23.1)	1 (7.7)
Planned respite care	13	9 (69.2)	4 (30.8)	0
Night respite	13	3 (23.1)	0	10 (76.9)
Weekend respite	10	5 (50.0)	2 (20.0)	3 (30.0)
Emergency respite	11	5 (45.5)	1 (9.1)	5 (45.5)
<b>Long Term Care*</b>				
Counselling for individuals with dementia	11	2 (18.2)	1 (9.1)	8 (72.7)
Counselling for caregivers	10	3 (30.0)	1 (10.0)	6 (60.0)

\*Other available long-term care services (N varied from 10 to 14): seniors housing (100%, n = 13), special care home (100%, n = 13), personal care home (100%, n = 13), assisted living options (100%, n = 12), special care unit (84.6%, n = 11)

Table 79 Item statistics of Primary Health Care Orientation of Dementia-related Services, Regina Qu'Appelle Health Region **RURAL**

Attribute	N	Mean	SD (range)
<b>Information and Education</b>	<b>8</b>	<b>12.3</b>	<b>3.5 (7-17)</b>
Adequate awareness about 'what to do' or 'where to go'	8	2.8	1.3 (1-4)
Adequate information for caregivers	8	2.3	1.2 (1-4)
Adequate awareness of dementia among health care professionals in the community	8	3.8	0.7 (2-4)
Adequate dementia-specific continuing education for health care professionals	8	2.1	1.2 (1-4)
Adequate public education to reduce stigma of dementia	8	1.4	0.5 (1-2)
<b>Accessibility</b>	<b>8</b>	<b>12.4</b>	<b>5.7 (6-21)</b>
Appropriate frequency of services	8	2.0	1.3 (1-4)
Appropriate wait time for services	8	2.9	1.5 (1-4)
Available public transportation to services (for older adults)	8	3.3	1.4 (1-5)
Available subsidized/free transportation to services (for older adults)	8	1.6	1.4 (1-5)
Equally accessible services, regardless of geographic location	8	2.6	1.7 (1-5)
<b>Population Orientation</b>	<b>8</b>	<b>10.8</b>	<b>3.7 (5-17)</b>
Appropriate level of PHC services	8	2.1	1.0 (1-4)
Appropriate level of Home Care services	8	2.6	1.2 (1-4)
Appropriate number of LTC beds	8	2.3	1.2 (1-4)
Appropriate telehealth services	8	2.0	0.9 (1-3)
Appropriate level of support for caregivers	8	1.8	1.0 (1-4)
<b>Co-ordinated Care</b>	<b>8</b>	<b>15.1</b>	<b>3.7 (9-20)</b>
Service delivery by different health care professionals in the community is co-ordinated	8	3.0	1.4 (1-4)
All health care professionals in the community have easy access to patient health history	8	2.4	1.2 (1-4)
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]	8	3.3	0.9 (2-4)
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)	8	3.5	0.8 (2-4)
Seamless transition from community to LTC	8	3.0	1.2 (1-4)
<b>Comprehensiveness of Care</b>	<b>8</b>	<b>16.8</b>	<b>3.7 (10-21)</b>
One or more health care professional is able to diagnose	8	3.8	0.7 (2-4)
One or more health care professional is able to provide on-going management	8	3.8	0.9 (2-5)
There is timely referral to appropriate health and social services	8	2.9	1.1 (1-4)
Multidisciplinary care is available	8	3.0	1.2 (1-4)
Health care professionals consider dementia a chronic disease	8	3.4	0.9 (2-5)
<b>Quality of care</b>	<b>8</b>	<b>14.1</b>	<b>3.4 (8-17)</b>
Timely diagnosis occurs	8	2.8	1.0 (2-4)
Health care professionals use standardized diagnostic criteria	8	3.3	1.0 (1-4)
Current screening tools are effective	8	2.9	1.1 (1-4)
Care and management are guided by standardized care pathways	8	2.5	0.9 (1-4)
Health care professionals adequately monitor safety of individuals with dementia living at home	8	2.8	1.2 (1-4)
<b>Adequate amount of supportive resources and services</b>	<b>8</b>	<b>2.6</b>	<b>1.2 (1-4)</b>

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent

Table 80 Item statistics of Primary Health Care Orientation of Dementia-related Services, Regina Qu'Appelle Health Region **URBAN**

Attribute	N	Mean	SD (range)
<b>Information and Education</b>	<b>14</b>	<b>14.5</b>	<b>3.8 (7-20)</b>
Adequate awareness about 'what to do' or 'where to go'	14	2.6	1.2 (1-5)
Adequate information for caregivers	14	3.0	1.0 (2-4)
Adequate awareness of dementia among health care professionals in the community	14	3.6	1.1 (1-5)
Adequate dementia-specific continuing education for health care professionals	14	2.9	1.1 (1-4)
Adequate public education to reduce stigma of dementia	14	2.4	0.8 (1-4)
<b>Accessibility</b>	<b>14</b>	<b>11.6</b>	<b>3.9 (5-18)</b>
Appropriate frequency of services	14	1.9	0.9 (1-4)
Appropriate wait time for services	14	2.2	1.2 (1-5)
Available public transportation to services (for older adults)	14	3.6	1.1 (1-3)
Available subsidized/free transportation to services (for older adults)	14	1.6	0.8 (1-5)
Equally accessible services, regardless of geographic location	14	2.4	1.5 (1-4)
<b>Population Orientation</b>	<b>14</b>	<b>7.9</b>	<b>2.8 (5-13)</b>
Appropriate level of PHC services	14	1.6	0.9 (1-4)
Appropriate level of Home Care services	14	1.4	0.5 (1-2)
Appropriate number of LTC beds	14	1.1	0.4 (1-2)
Appropriate telehealth services	14	2.0	1.0 (1-4)
Appropriate level of support for caregivers	14	1.8	1.0 (1-4)
<b>Co-ordinated Care</b>	<b>14</b>	<b>13.3</b>	<b>2.7 (8-16)</b>
Service delivery by different health care professionals in the community is co-ordinated	14	2.7	1.2 (1-4)
All health care professionals in the community have easy access to patient health history	14	1.9	0.8 (1-3)
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]	14	3.1	0.8 (2-4)
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)	14	3.4	0.9 (2-4)
Seamless transition from community to LTC	14	2.2	0.8 (1-4)
<b>Comprehensiveness of Care</b>	<b>14</b>	<b>15.6</b>	<b>4.0 (7-20)</b>
One or more health care professional is able to diagnose	14	3.1	1.4 (1-5)
One or more health care professional is able to provide on-going management	14	3.4	1.2 (1-5)
There is timely referral to appropriate health and social services	14	2.5	1.2 (1-4)
Multidisciplinary care is available	14	3.6	1.1 (1-5)
Health care professionals consider dementia a chronic disease	14	2.9	0.7 (2-4)
<b>Quality of care</b>	<b>14</b>	<b>13.3</b>	<b>2.3 (8-17)</b>
Timely diagnosis occurs	14	2.1	0.8 (1-3)
Health care professionals use standardized diagnostic criteria	14	2.9	0.9 (1-4)
Current screening tools are effective	14	3.1	1.1 (1-5)
Care and management are guided by standardized care pathways	14	2.3	1.1 (1-5)
Health care professionals adequately monitor safety of individuals with dementia living at home	14	2.9	1.1 (2-5)
<b>Adequate amount of supportive resources and services</b>	<b>14</b>	<b>1.4</b>	<b>0.6 (1-3)</b>

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent

# Saskatoon Health Region

## Administrative Data Analysis

### Incidence (2012/2013)

#### Incidence by Sex and Age Group

Table 81

- A total of 880 incident (new) cases of dementia were identified among adults 45 years and older in Saskatoon Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted incidence rate of dementia was 6.92 per 1,000 population at risk (PAR).

#### Sex

- There were 522 incident cases among females and 358 incident cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted incidence rate was 37% higher among females than males (7.95 vs. 5.82 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 9% of incident cases (78/880), those aged 65 to 84 contributed 39% (339/880), and 53% (463/880) were contributed by adults aged 85 years and older.
- The unadjusted incidence rate increased 161 times between the group aged 45 to 54 and those aged 85 years and older (0.44 vs. 70.67 per 1,000 PAR).

#### Incidence by Health Region (Age- and Sex-adjusted rates)

Table 82

This table shows the unadjusted (crude) and adjusted total incidence of dementia (females and males combined), for Saskatoon Health Region.

*Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted incidence rate for Saskatoon Health Region was 7.41 per 1,000 PAR, ranking 7 of 11 when the health region rates were ordered from highest to lowest. At 7.41 per 1,000 per PAR, the adjusted incidence rate for Saskatoon Health Region was 1% lower than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). This difference was not statistically significant.

#### Incidence by Rural and Urban Residence

Table 83

- Among all adults aged 45 years and older, there were 144 incident cases among rural residents and 731 incident cases among urban residents.
- Among all age groups combined, the 22% higher unadjusted incidence rate in urban compared to rural residents (7.24 vs. 5.92 per 1,000 PAR) was statistically significant ( $p < 0.05$ ).

## Incidence

Table 81 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and age group, Saskatoon Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	12	22,487	0.53	8	22,906	0.35	20	45,393	0.44	0.35
55-64	29	19,706	1.47	29	19,606	1.48	58	39,312	1.48	0.98
65-74	37	11,460	3.23	39	10,878	3.59	76	22,338	3.40	0.65
75-84	143	7,719	18.53	120	5,855	20.50	263	13,574	19.38	0.41
85+	301	4,258	70.69	162	2,294	70.62	463	6,552	70.67	0.99
All ages	522	65,630	<b>7.95</b>	358	61,539	<b>5.82</b>	880	127,169	6.92	<.0001

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note: Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 82 Age- and sex-adjusted 12-month incidence of dementia among adults 45 years of age and older, Saskatoon Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Saskatoon Health Region	880	127,169	6.92	7.41	6.9 - 7.9	1.00	0.9 - 1.1	ns

<sup>a</sup> Significance of difference between Saskatoon Health Region and other health regions combined

Note: Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 83 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by rural and urban residence, Saskatoon Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	7,904	*	6+	36,731	*	20	44,635	0.45	1
55-64	6+	7,883	*	6+	30,709	*	56	38,592	1.45	0.88
65-74	13	4,878	2.67	62	17,154	3.61	75	22,032	3.40	0.32
75-84	48	2,602	18.45	213	10,869	19.60	261	13,471	19.37	0.70
85+	69	1,053	65.53	394	5,477	71.94	463	6,530	70.90	0.46
All ages	144	24,320	<b>5.92</b>	731	100,940	<b>7.24</b>	875	125,260	6.99	<b>0.03</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note: Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Prevalence (2012/2013)

### Prevalence by Sex and Age Group

Table 84

- A total of 3,286 prevalent (existing) cases of dementia were identified among adults 45 years and older in Saskatoon Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted prevalence rate of dementia was 25.19 per 1,000 population at risk (PAR).
- Overall, the unadjusted 12-month prevalence rate among individuals aged 45 years and older was 3.6 times the unadjusted incidence rate (25.19 vs. 6.92 per 1,000 PAR).

#### Sex

- There were 2,067 prevalent cases among females and 1,219 prevalent cases among males aged 45 years and older.
- Among those aged 85 years and older, the unadjusted prevalence rate was 34% higher among females than males (220.29 vs. 172.44 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in prevalence rates between females and males were not statistically significant.
- Among all age groups combined, the unadjusted prevalence rate was 57% higher among females than males (30.53 vs. 19.42 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 9% of prevalent cases (312/3,286), those aged 65 to 84 accounted for 39% (1,293/3,286), and adults aged 85 years and older accounted for 51% (1,681/3,286).
- Overall, the unadjusted prevalence rate was 175 times higher among adults aged 85 and older than among those 45 to 54 years of age (204.18 vs. 1.17 per 1,000 PAR). The sharpest escalation in the unadjusted prevalence rate occurred at age 55 years, increasing by 5.6 times among the 55 to 64 age group compared to the 45 to 54 age group (6.55 vs. 1.17 per 1,000 PAR).

### Prevalence by Health Region (Age- and Sex-adjusted rates)

Table 85

This table shows the unadjusted (crude) and adjusted total prevalence of dementia (females and males combined), for the Saskatoon Health Region. *Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted prevalence rate for Saskatoon Health Region was 26.45 per 1,000 PAR, ranking 9 of 11 when the health region rates were ordered from highest to lowest. This adjusted rate was 6% lower than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). This difference was statistically significant ( $p > 0.05$ ).

### Prevalence by Rural and Urban Residence

Table 86

- Among all adults aged 45 years and older, there were 621 prevalent cases among rural residents and 2,653 prevalent cases among urban residents.
- Prevalence rates were significantly higher ( $p < 0.05$ ) among urban than rural adults aged 55 to 64 (7.37 vs. 3.92 per 1,000 PAR) but significantly higher among rural than urban adults aged 85 years and over (243.53 vs. 195.98 per 1,000 PAR). Among all age groups combined, prevalence rates among rural compared to urban residents were not significantly different.



## Prevalence

Table 84 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and age group, Saskatoon Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	25	22,512	1.11	28	22,934	1.22	53	45,446	1.17	0.73
55-64	133	19,839	6.70	126	19,732	6.39	259	39,571	6.55	0.69
65-74	183	11,643	15.72	168	11,046	15.21	351	22,689	15.47	0.76
75-84	523	8,242	63.46	419	6,274	66.78	942	14,516	64.89	0.42
85+	1,203	5,461	<b>220.29</b>	478	2,772	<b>172.44</b>	1,681	8,233	204.18	<b>&lt;.0001</b>
All ages	2,067	67,697	<b>30.53</b>	1,219	62,758	<b>19.42</b>	3,286	130,455	25.19	<b>&lt;.0001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 85 Age- and sex-adjusted 12-month prevalence of dementia among adults 45 years of age and older, Saskatoon Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Saskatoon Health Region	3,286	130,455	25.19	<b>26.45</b>	25.6 - 27.4	0.92	0.88-0.96	<b>&lt;.05</b>

<sup>a</sup> Significance of difference between Saskatoon Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 86 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by rural and urban residence, Saskatoon Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	6	7,910	0.76	47	36,778	1.28	53	44,688	1.19	0.22
55-64	31	7,914	<b>3.92</b>	228	30,937	<b>7.37</b>	259	38,851	6.67	<b>&lt; 0.001</b>
65-74	64	4,942	12.95	287	17,441	16.46	351	22,383	15.68	0.08
75-84	181	2,783	65.04	756	11,625	65.03	937	14,408	65.03	1.00
85+	339	1,392	<b>243.53</b>	1,335	6,812	<b>195.98</b>	1,674	8,204	204.05	<b>&lt;.0001</b>
All ages	621	24,941	24.90	2,653	103,593	25.61	3,274	128,534	25.47	0.52

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Environmental Scan

Note that a total of 4 Home Care Assessors from Saskatoon Health Region responded to the environmental scan survey. **All respondents were rural Home Care Assessors.** Due to the small sample size, the following findings must be interpreted with caution.

See 'Data Collection' under the Methods section of this report for a description of the measures below.

### Availability of Dementia-related Services

Table 87

- *Health Promotion Programs* With the exception of recreational activities for older adults which were available at least weekly, health promotion programs related to dementia care were reported to be widely unavailable according to the majority of respondents.
- *Primary Health Care* services related to dementia care that were available weekly according to all respondents included pharmacists, family physicians, and physical and occupational therapists. Availability of Nurse Practitioners varied from at least weekly to unavailable. Screening of older adults, social workers, and other health care professionals (aside from those listed) varied in availability from less often than weekly to unavailable, while multidisciplinary team assessment was generally not available.
- *Post-diagnostic Support* services were generally available less often than weekly or not available. The exceptions were case management of diagnosed individuals and palliative care, which were available at least weekly according to the majority of respondents. Counselling of diagnosed individuals and private caregiving services were generally unavailable according to most respondents.
- *Home Care* services were widely available weekly. Home care services that were unavailable in most communities, according to the majority of respondents, included transportation to health care, and respite for night, weekend, and emergency care.
- *Long-term Care* counselling for individuals with dementia and caregivers were unavailable

according to all respondents. Long-term care housing\* available in the community, according to half of respondents, included seniors housing, special care homes, and special care units. Less than half of respondents indicated that assisted living options were available in their communities and no respondents reported that personal care homes were available in their communities.

\* See Table 87 bottom for these figures

### Primary Health Care (PHC) Orientation of Dementia-related Services\*

Table 88

- *Information and Education.* Mean scores on individual items in the *Information and Education* scale were generally somewhat negative, particularly regarding dementia-specific continuing education for health care professionals (2.0, SD = 0), public education to reduce stigma (2.3, SD = 0.5), and information to caregivers (2.3, SD = 0.5). The overall scale mean of 12.3 (SD = 3.3, range = 10-17) demonstrated that respondents perceived community-level dementia-related information and education to be somewhat inadequate.
- *Accessibility.* Respondents held generally negative views regarding accessibility of dementia-related services. The lowest-rated accessibility items were wait times for services (1.3, SD = 0.5), availability of subsidized/free transportation services (1.3, SD = 0.5), and geographic accessibility of services (1.3, SD = 0.5). Respondents reported overall negative perceptions of accessibility, with an average scale score of 8.0 (SD = 1.4, range = 7-10).

- *Population Orientation. Population Orientation* (i.e., community fit) of dementia-related services was perceived as inappropriate on average. Rated particularly low were items related to the level of primary health care services (1.3, SD = 0.5) and number of LTC beds (1.3, SD = 0.5). Positive views were reported with respect to the appropriateness of telehealth services (4.0, SD = 0). Respondents reported overall somewhat negative perceptions of population orientation, with an average scale score of 10.8 (SD = 2.9, range = 9-15).
- *Coordinated Care.* Perceptions regarding *Coordinated Care* ranged from negative regarding the seamlessness of transitions from community to LTC (1.3, SD = 0.5) to somewhat positive with respect to coordination amongst health care professionals within and outside the community (3.5, SD = 1.0). The overall mean *Coordinated Care* scale score was somewhat positive at 14.0 (SD = 2.5, range = 11-17).
- *Comprehensiveness of Care.* Perceptions regarding the comprehensiveness of care ranged from somewhat negative to somewhat positive. Respondents held somewhat negative views with respect to whether chronic disease is considered a chronic disease by health care professionals (2.3, SD = 1.9) and the timeliness of referrals to health and social services (2.5, SD = 1.0), and somewhat positive views regarding the ability of one or more health care professionals to provide on-going management (3.5, SD = 1.0). Of the 6 dimensions considered, *Comprehensiveness of Care* fared the most favorably. The mean *Comprehensiveness of Care* scale score of 14.8 (SD = 5.8, range = 7-21) reflected the overall neutral position of respondents on this dimension.
- *Quality of Care.* Views ranged from somewhat negative to neutral with regard to care quality. Respondents held somewhat negative views regarding the timeliness diagnosis (1.8, SD = 0.5) and the guidance of care and management by standardized care pathways (1.8, SD = 0.5) and neutral views concerning the use of standardized diagnostic criteria by health care professionals (2.8, SD = 0.5) and effectiveness of current screening tools (3.0, SD = 0). The average *Quality of Care* scale score of 11.8 (SD = 2.1, range = 9-

14) indicated the overall negative position of respondents on this dimension.

- A final single summary item asked whether “the amount of supportive resources and services available in the community is adequate to allow individuals with dementia to remain at home for as long as possible.” According to this single item, Saskatoon Health Region respondents held somewhat negative perceptions regarding the adequacy of supportive resources and services available in the community (2.3 (SD = 0.5, range = 2-3)).

## Environmental Scan Comments

Rural Saskatoon Health Region Home Care Assessors provided the following comments:

*“The questions above assume that there are services and multidisciplinary professionals available in rural communities. They aren't. We try to refer to resources in the city and we often don't get a response or the response we do get is how busy they are and that they won't be coming out for a very long time.”*

*“Services only provided in town. Services dependent on staffing and scheduling. Severely under resourced in rural SK!!!!” (SAS003)*

*“PCH/LTC/Assisted Living not in every community. Home care limited in more rural areas.” (SAS001)*

*“Residents would benefit from subsidized assisted living - zero present as government doesn't subsidize these, also would delay LTC admissions.” (SAS002)*

*“Of the services that are available, the majority of the support has no room available and often people are waitlisted due to limited resources, i.e., Home Care/Respite/Adult Day Program/Special Care Home/OT/PT.”*

*“Very limited resources and staffing make it very difficult to provide care that would be ideal for clients. A very large base of support is provided by Home Care (when available) or family support.” (SAS004)*

## Environmental Scan

Table 87 Availability of dementia-related services, Saskatoon Health Region

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion	4	0	0	4
Healthy lifestyle promotion related to dementia	4	0	0	4
Recreational activities for older adults	4	3	1	0
<b>Primary Health Care</b>				
Pharmacist	4	4	0	0
Family Physician	4	3	0	1
Nurse Practitioner	4	2	0	2
Physical Therapist	4	3	1	0
Occupational Therapist	4	3	1	0
Social Worker	4	0	3	1
Other health care professionals	4	0	2	2
Screening of older adults	4	0	3	1
Multidisciplinary team assessment	4	1	0	3
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals	4	4	0	0
Volunteer services/visitors	4	0	2	2
Counselling diagnosed individuals	4	0	1	3
Counselling caregivers	4	0	2	2
Caregiver support group	4	0	2	2
Other caregiver support services	4	0	3	1
Private caregiving	3	0	0	3
Adult day program	4	2	0	2
Palliative care	4	3	1	0
<b>Home Care</b>				
Meals on Wheels	4	4	0	0
Meal Prep	4	4	0	0
Personal care – AM Care	4	4	0	0
Personal care – HS Care	4	4	0	0
Personal care – Toileting	4	4	0	0
Personal care – Bath Assist	4	4	0	0
Homemaking	4	3	0	1
Transportation to health care	4	0	0	4
In-home respite and visiting	4	3	1	0
Planned respite care	4	0	4	0
Night respite	4	0	0	4
Weekend respite	4	1	0	3
Emergency respite	4	0	0	4
<b>Long Term Care*</b>				
Counselling for individuals with dementia	4	0	0	4
Counselling for caregivers	4	0	0	4

\*Other available long-term care services (N varied from 2 to 3): seniors housing (n = 2), special care home (n = 2), personal care home (n = 0), assisted living options (n = 1), special care unit (n = 2)

Table 88 Item statistics of Primary Health Care Orientation of Dementia-related Services, Saskatoon Health Region

Attribute	N	Mean	SD (range)
<b>Information and Education</b>	4	12.3	3.3 (10-17)
Adequate awareness about 'what to do' or 'where to go'	4	2.5	1.0 (2-4)
Adequate information for caregivers	4	2.3	0.5 (2-3)
Adequate awareness of dementia among health care professionals in the community	4	3.3	1.5 (2-5)
Adequate dementia-specific continuing education for health care professionals	4	2.0	0 (2-2)
Adequate public education to reduce stigma of dementia	4	2.3	0.5 (2-3)
<b>Accessibility</b>	4	8.0	1.4 (7-10)
Appropriate frequency of services	4	1.8	0.5 (1-2)
Appropriate wait time for services	4	1.3	0.5 (1-2)
Available public transportation to services (for older adults)	4	2.5	1.7 (1-5)
Available subsidized/free transportation to services (for older adults)	4	1.3	0.5 (1-2)
Equally accessible services, regardless of geographic location	4	1.3	0.5 (1-2)
<b>Population Orientation</b>	4	10.8	2.9 (9-15)
Appropriate level of PHC services	4	1.3	0.5 (1-2)
Appropriate level of Home Care services	4	2.3	0.5 (2-3)
Appropriate number of LTC beds	4	1.3	0.5 (1-2)
Appropriate telehealth services	4	4.0	0 (4-4)
Appropriate level of support for caregivers	4	2.0	1.4 (1-4)
<b>Co-ordinated Care</b>	4	14.0	2.5 (11-17)
Service delivery by different health care professionals in the community is co-ordinated	4	3.8	0.5 (3-4)
All health care professionals in the community have easy access to patient health history	4	3.5	1.0 (2-4)
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]	4	3.5	1.0 (2-4)
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)	4	2.0	1.4 (1-4)
Seamless transition from community to LTC	4	1.3	0.5 (1-2)
<b>Comprehensiveness of Care</b>	4	14.8	5.8 (7-21)
One or more health care professional is able to diagnose	4	3.3	1.5 (1-4)
One or more health care professional is able to provide on-going management	4	3.5	1.0 (2-4)
There is timely referral to appropriate health and social services	4	2.5	1.0 (2-4)
Multidisciplinary care is available	4	3.3	1.5 (1-4)
Health care professionals consider dementia a chronic disease	4	2.3	1.9 (1-5)
<b>Quality of care</b>	4	11.8	2.1 (9-14)
Timely diagnosis occurs	4	1.8	0.5 (1-2)
Health care professionals use standardized diagnostic criteria	4	2.8	0.5 (2-3)
Current screening tools are effective	4	3.0	0 (3-3)
Care and management are guided by standardized care pathways	4	1.8	0.5 (1-2)
Health care professionals adequately monitor safety of individuals with dementia living at home	4	2.5	1.0 (2-4)
<b>Adequate amount of supportive resources and services</b>	<b>4</b>	<b>2.3</b>	<b>0.5 (2-3)</b>

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent

# Sun Country Health Region

## Administrative Data Analysis

### Incidence (2012/2013)

#### Incidence by Sex and Age Group

Table 89

- A total of 227 incident (new) cases of dementia were identified among adults 45 years and older in Sun Country Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted incidence rate of dementia was 9.47 per 1,000 population at risk (PAR).

#### Sex

- There were 128 incident cases among females and 99 incident cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted incidence rate was 31% higher among females than males (10.76 vs. 8.20 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 4% of incident cases (9/227), those aged 65 to 84 contributed 45% (101/227), and 52% (117/227) were contributed by adults aged 85 years and older.
- The unadjusted incidence rate increased 18 times between the group aged 65 to 74 and those aged 85 years and older (4.25 vs. 78.95) per 1,000 PAR).

#### Incidence by Health Region (Age- and Sex-adjusted rates)

Table 90

This table shows the unadjusted (crude) and adjusted total incidence of dementia (females and males combined), for Sun Country Region.

*Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted incidence rate for Sun Country Health Region was 8.77 per 1,000 PAR, ranking this region 1 of 11 when the health region rates were ordered from highest to lowest. At 8.77 per 1,000 per PAR, the adjusted incidence rate for Sun Country Health Region was 17% higher than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Incidence by Rural and Urban Residence

Table 91

- Among all adults aged 45 years and older, there were 114 incident cases among rural residents and 112 incident cases among urban residents.
- Among all age groups combined, the 31% higher unadjusted incidence rate in urban compared to rural residents was not statistically significant (11.04 vs. 8.41 per 1,000 PAR).

## Incidence

Table 89 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and age group, Sun Country Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,720	*	<6	4,060	*	<6	7,780	*	1.00
55-64	<6	3,457	*	6+	3,769	*	6+	7,226	*	0.29
65-74	9	2,216	4.06	10	2,256	4.43	19	4,472	4.25	0.85
75-84	48	1,597	30.06	34	1,407	24.16	82	3,004	27.30	0.32
85+	69	905	76.24	48	577	83.19	117	1,482	78.95	0.63
All ages	128	11,895	<b>10.76</b>	99	12,069	<b>8.20</b>	227	23,964	9.47	<b>0.04</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 90 Age- and sex-adjusted 12-month incidence of dementia among adults 45 years of age and older, Sun Country Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Sun Country Health Region	227	23,964	9.47	<b>8.77</b>	7.7 - 10.0	1.20	1.0 - 1.4	<b>&lt;.05</b>

<sup>a</sup> Significance of difference between Sun Country Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 91 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by rural and urban residence, Sun Country Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	4,095	*	<6	3,570	*	<6	7,665	*	0.47
55-64	6+	4,331	*	<6	2,803	*	6+	7,134	*	0.49
65-74	11	2,740	4.01	7	1,691	4.14	18	4,431	4.06	0.95
75-84	41	1,615	25.39	41	1,376	29.80	82	2,991	27.42	0.46
85+	56	772	72.54	61	705	86.52	117	1,477	79.21	0.32
All ages	114	13,553	<b>8.41</b>	112	10,145	<b>11.04</b>	226	23,698	9.54	<b>0.04</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Prevalence (2012/2013)

### Prevalence by Sex and Age Group

Table 92

- A total of 851 prevalent (existing) cases of dementia were identified among adults 45 years and older in Sun Country Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted prevalence rate of dementia was 34.29 per 1,000 population at risk (PAR).
- Overall, the unadjusted 12-month prevalence rate among individuals aged 45 years and older was 3.6 times the unadjusted incidence rate (34.29 vs. 9.47 per 1,000 PAR).

#### Sex

- There were 539 prevalent cases among females and 312 prevalent cases among males aged 45 years and older.
- Among those aged 65 to 74 years, the unadjusted prevalence rate was 68% higher among females than males (22.07 vs. 13.12), and 46% higher among females than males aged 85 and older (263.63 vs. 180.40). These differences were statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in incidence rates between females and males were not statistically significant.
- Among all age groups combined, the unadjusted prevalence rate was 72% higher among females than males (43.35 vs. 25.20 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 57% of prevalent cases (59/851), those aged 65 to 84 accounted for 40% (341/851), and adults aged 85 years and older accounted for 53% (451/851).
- Overall, the unadjusted prevalence rate was 152 times higher among adults aged 85 and older than among those 45 to 54 years of age (233.32 vs. 1.54 per 1,000 PAR).

### Prevalence by Health Region (Age- and Sex-adjusted rates)

Table 93

This table shows the unadjusted (crude) and adjusted total prevalence of dementia (females and males combined), for Sun Country Health Region. *Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted prevalence rate for Sun Country Health Region was 30.55 per 1,000 PAR, ranking 2 of 11 when the health region rates were ordered from highest to lowest. This rate was 8% higher than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

### Prevalence by Rural and Urban Residence

Table 94

- Among all adults aged 45 years and older, there were 434 prevalent cases among rural residents and 415 prevalent cases among urban residents.
- Among all age groups combined, the unadjusted prevalence rate in urban residents was 27% higher compared to rural residents (39.30 vs. 31.03 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).



## Prevalence

Table 92 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and age group, Sun Country Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	6	3,726	1.61	6	4,066	1.48	12	7,792	1.54	0.88
55-64	22	3,479	6.32	25	3,794	6.59	47	7,273	6.46	0.89
65-74	50	2,266	<b>22.07</b>	30	2,286	<b>13.12</b>	80	4,552	17.57	<b>0.02</b>
75-84	137	1,734	79.01	124	1,531	80.99	261	3,265	79.94	0.83
85+	324	1,229	<b>263.63</b>	127	704	<b>180.40</b>	451	1,933	233.32	<b>&lt;.0001</b>
All ages	539	12,434	<b>43.35</b>	312	12,381	<b>25.20</b>	851	24,815	34.29	<b>&lt;.0001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 93 Age- and sex-adjusted 12-month prevalence of dementia among adults 45 years of age and older, Sun Country Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Sun Country Health Region	851	24,815	34.29	<b>30.55</b>	28.6 - 32.6	1.13	1.04-1.22	<b>&lt;.05</b>

<sup>a</sup> Significance of difference between Sun Country Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 94 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by rural and urban residence, Sun Country Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	6+	4,103	*	<6	3,574	*	12	7,677	1.56	0.40
55-64	6+	4,357	*	6+	2,824	*	47	7,181	6.55	0.45
65-74	45	2,785	16.16	35	1,726	20.28	80	4,511	17.73	0.31
75-84	134	1,749	76.62	127	1,503	84.50	261	3,252	80.26	0.41
85+	221	993	222.56	228	933	244.37	449	1,926	233.13	0.26
All ages	434	13,987	<b>31.03</b>	415	10,560	<b>39.30</b>	849	24,547	34.59	<b>&lt; 0.001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Environmental Scan

Note that a total of 22 Home Care Assessors from Sun Country Health Region responded to the environmental scan survey. Due to missing responses across items, the total sample for Sun Country Health Region (N) varied from 20 to 22.

See 'Data Collection' under the Methods section of this report for a description of the measures below.

### Availability of Dementia-related Services

Table 95

- *Health Promotion Programs* related to dementia care varied in availability. Healthy brain promotion and healthy lifestyle promotion related to dementia were unavailable according to most respondents, while recreational activities for older adults were typically available weekly.
- *Primary Health Care* services related to dementia care that were available at least weekly according to more than half of respondents included pharmacists, family physicians, physical and occupational therapists, social workers, and other health care professionals (aside from those listed). Nurse Practitioners were generally unavailable according to most respondents. The services of screening of older adults and multidisciplinary team assessment varied from available at least weekly to not available.
- *Post-diagnostic Support* services that were generally available at least weekly, according to most respondents, included case management, volunteer services/visitors, adult day program and palliative care. Unavailable services, according to most respondents, included counseling for diagnosed individuals, caregiver support group, other caregiver support services, and private caregiving. The availability of counselling for caregivers varied from weekly to not available.
- *Home Care* services were widely available weekly. Transportation to health care was the single Home Care service that varied somewhat in availability from weekly to unavailable. According to most respondents, unavailable services included night respite, weekend respite, and emergency respite.

- *Long-term Care* counselling for individuals with dementia was reported to be unavailable by most respondents and Long-term Care counseling for caregivers varied in availability from weekly to unavailable. Long-term care housing\* available in the community, according to most respondents, included seniors housing, and special care homes, personal care homes. Long-term assisted living options were reported to be available by half of respondents and special care units were reported to be available by less than half of respondents.

\* See Table 95 bottom for these figures

### Primary Health Care (PHC) Orientation of Dementia-related Services\*

Table 96

- *Information and Education.* Mean scores on individual items in the *Information and Education* scale were generally somewhat negative, particularly public education to reduce stigma (1.9, SD = 0.9) to neutral with respect to dementia awareness among local health care professionals (3.2, SD = 1.2). The overall scale mean of 12.6 (SD = 3.7, range = 6-20) reflected the overall neutral perceptions toward the adequacy of information and education.
- *Accessibility.* Respondents held somewhat negative perceptions with regard to the accessibility of dementia-related services, particularly regarding the availability of subsidized/free transportation to services for older adults (1.9, SD = 1.4) and geographic accessibility of services (2.2, SD = 1.2). Overall, respondents reported generally somewhat negative views of *Accessibility*, with an average scale score of 12.0 (SD = 3.5, range = 6-21).

- *Population Orientation.* Respondents held somewhat negative views with respect to the level of caregiver support (2.1, SD = 0.7), level of PHC services (2.4, SD = 0.9), and number of LTC beds (2.5, SD = 1.2). Respondents reported overall neutral perceptions of *Population Orientation*, with an average scale score of 12.8 (SD = 3.0, range = 8-20).
- *Coordinated Care.* Respondents held somewhat positive views regarding coordinated care, particularly with respect to the coordination of service delivery by health care professionals in the community (3.5, SD = 0.8) and outside the community (3.5, SD = 1.1). Respondents held neutral views with respect to the seamlessness of transitions from community to LTC (3.0, SD = 1.0). The mean *Coordinated Care* scale score was somewhat positive at 16.2 (SD = 3.9, range = 8-22).
- *Comprehensiveness of Care.* On average, respondents held positive views on the comprehensiveness of care for individuals, particularly with respect to the ability of one or more health care professionals to provide on-going management (3.9, SD = 0.9), availability of multidisciplinary care (3.8, SD = 1.0), and consideration of dementia as a chronic disease by health care professionals (3.8, SD = 0.8). Of the 6 dimensions considered, *Comprehensiveness of Care* fared the most favorably. The *Comprehensiveness of Care* average scale score of 18.0 (SD = 3.9, range = 10-24) reflected the overall somewhat positive position of respondents on this dimension.
- *Quality of Care.* Respondents held somewhat negative to somewhat positive views on care quality. Timeliness of diagnosis (2.7, SD = 1.0) and safety monitoring of individuals with dementia living at home by health care professionals was viewed somewhat negatively (2.7, SD = 1.2). The use of standardized diagnostic criteria (3.6, SD = 0.8) and effectiveness of current screening tools (3.5, SD = 0.8) were viewed somewhat positively. The average *Quality of Care* scale score of 15.3 (SD = 2.9, range = 10-21) reflected the overall neutral position of respondents on this dimension.
- A final single summary item asked whether “the amount of supportive resources and services available in the community is adequate to allow individuals with dementia to remain at home for as long as possible.” According to this single item, Sun Country Health Region respondents held somewhat negative views regarding the adequacy of supportive resources and services available in the community (2.6 (SD = 1.2, range = 1-4)).

## Environmental Scan Comments

Sun Country Health Region Home Care Assessors provided the following comments:

*“My experience is that once an individual is determined to have ‘Dementia’ they remain at home until their family burns out then the Health Care Professionals ‘mandate’ pursuing LTC placement. Only 2 LTC facilities in the SCHR have units that can accommodate severe cognitive impairment - that can mean up to 2 hours away from their home community.” (SUC021)*

*“Home care will provide transportation to health care services only if planned ahead and home care is the last resort, eg. Handivan not available, family/friends not available.”*

*“Most available professional services are part time so it is difficult to provide a good team approach - no LTC bed/room specifically for dementia patients. All residents of the community over the past 5 years have had to move out of the community for LT placement, waiting for LT placement here, not much money in health region, budget for education and no one to fill in while a CM (Case Manager) is gone.” (SUC002)*

*“Families in rural communities deal with family members with dementia without much support available for long periods of time. Often the dementia is very advanced prior to families seeking help and that is due a lot to the limited resources in rural communities. Most times home care is surprised at how long the family has coped and how advanced the dementia has become.”*

*“(Name of community) office serves a huge rural area and unless you live right in (name of location) there are few services available. Names of communities - (just an example of some of the communities that go without a lot of services).”* (SUC004)

*“The services available are often dependent on staffing at the time especially for respite care in the home. Respite may be pre-booked but is the first service to be canceled if not enough staff. Also keeping dementia clients in the home is dependent on family and friend support. It's difficult for the services to be adequate if this support isn't there.”* (SUC009)

*“Many of the services are dependent on staff +/- or space available.”* (SUC012)

*“I am only aware of minimal services available directly related to clients with dementia. Very poor regional documentation and education of services available.”* (SUC014)

*“In home support is mostly dependent on staffing and availability of family support. Many live at risk due to above factors.”* (SUC010)

*“In the (name of location), resources are limited due to the demand placed on them. Team members such as OT and SW can handle only so many people per week to assess and provide recommendations to other multi team members such as Home Care, Respite Care and LTC.”* (SUC001)

## Environmental Scan

Table 95 Availability of dementia-related services, Sun Country Health Region

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion	21	2 (9.5)	4 (19.0)	15 (71.4)
Healthy lifestyle promotion related to dementia	21	1 (4.8)	2 (9.5)	18 (85.7)
Recreational activities for older adults	22	18 (81.8)	2 (9.1)	2 (9.1)
<b>Primary Health Care</b>				
Pharmacist	21	20 (95.2)	0	1 (4.8)
Family Physician	22	21 (95.5)	0	1 (4.5)
Nurse Practitioner	22	4 (18.2)	2 (9.1)	16 (72.7)
Physical Therapist	20	12 (60.0)	6 (30.0)	2 (10.0)
Occupational Therapist	22	13 (59.1)	9 (40.9)	0
Social Worker	22	15 (68.2)	5 (22.7)	2 (9.1)
Other health care professionals	22	16 (72.7)	1 (4.5)	5 (22.7)
Screening of older adults	22	9 (40.9)	4 (18.2)	9 (40.9)
Multidisciplinary team assessment	21	8 (38.1)	4 (19.0)	9 (42.9)
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals	21	15 (71.4)	1 (4.8)	5 (23.8)
Volunteer services/visitors	21	12 (57.1)	7 (33.3)	2 (9.5)
Counselling diagnosed individuals	22	6 (27.3)	2 (9.1)	14 (63.6)
Counselling caregivers	22	7 (31.8)	4 (18.2)	11 (50.0)
Caregiver support group	20	1 (5.0)	3 (15.0)	16 (80.0)
Other caregiver support services	22	5 (22.7)	5 (22.7)	12 (54.5)
Private caregiving	21	3 (13.6)	1 (4.8)	17 (81.0)
Adult day program	22	17 (77.3)	0	5 (22.7)
Palliative care	22	21 (95.5)	1 (4.5)	0
<b>Home Care</b>				
Meals on Wheels	22	22 (100.0)	0	0
Meal Prep	22	19 (86.4)	0	3 (13.6)
Personal care - AM Care	22	22 (100.0)	0	0
Personal care - HS Care	22	17 (77.3)	0	5 (22.7)
Personal care – Toileting	22	16 (72.7)	0	6 (27.3)
Personal care – Bath Assist	22	22 (100.0)	0	0
Homemaking	21	20 (95.2)	1 (4.8)	0
Transportation to health care	22	11 (50.0)	2 (9.1)	9 (40.9)
In-home respite and visiting	22	16 (72.7)	4 (18.2)	2 (9.1)
Planned respite care	20	19 (95.0)	1 (5.0)	0
Night respite	22	3 (13.6)	1 (4.5)	18 (81.8)
Weekend respite	21	6 (28.6)	2 (9.5)	13 (61.9)
Emergency respite	22	7 (31.8)	3 (13.6)	12 (54.5)
<b>Long Term Care*</b>				
Counselling for individuals with dementia	22	6 (27.3)	2 (9.1)	14 (63.6)
Counselling for caregivers	22	7 (31.8)	4 (18.2)	11 (50.0)

\*Other available long-term care services (N varied from 20 to 22): seniors housing (n=19, 95.0%), special care home (n=16, 84.2%), personal care home (n=14, 70.0%), assisted living options (n=10, 50%), special care unit (n=9, 45.0%).

Table 96 Item statistics of Primary Health Care Orientation of Dementia-related Services, Sun Country Health Region

Attribute	N	Mean	SD (range)
<b>Information and Education</b>	<b>21</b>	<b>12.6</b>	<b>3.7 (6-20)</b>
Adequate awareness about 'what to do' or 'where to go'	21	2.7	1.1 (1-4)
Adequate information for caregivers	21	2.1	0.93 (1-4)
Adequate awareness of dementia among health care professionals in the community	21	3.2	1.2 (2-5)
Adequate dementia-specific continuing education for health care professionals	21	2.6	0.9 (1-4)
Adequate public education to reduce stigma of dementia	21	1.9	0.9 (1-4)
<b>Accessibility</b>	<b>21</b>	<b>12.0</b>	<b>3.5 (6-21)</b>
Appropriate frequency of services	21	2.6	1.1 (1-5)
Appropriate wait time for services	21	2.8	1.1 (1-5)
Available public transportation to services (for older adults)	21	2.6	1.5 (1-5)
Available subsidized/free transportation to services (for older adults)	21	1.9	1.4 (1-5)
Equally accessible services, regardless of geographic location	21	2.2	1.2 (1-5)
<b>Population Orientation</b>	<b>21</b>	<b>12.8</b>	<b>3.0 (8-20)</b>
Appropriate level of PHC services	21	2.4	0.9 (1-4)
Appropriate level of Home Care services	21	3.0	1.2 (1-5)
Appropriate number of LTC beds	21	2.5	1.2 (1-5)
Appropriate telehealth services	21	2.8	1.1 (1-4)
Appropriate level of support for caregivers	21	2.1	0.7 (1-3)
<b>Co-ordinated Care</b>	<b>21</b>	<b>16.2</b>	<b>3.9 (8-22)</b>
Service delivery by different health care professionals in the community is co-ordinated	21	3.5	0.8 (2-5)
All health care professionals in the community have easy access to patient health history	21	3.2	1.2 (1-5)
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]	21	3.5	1.1 (2-5)
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)	21	3.1	1.0 (2-5)
Seamless transition from community to LTC	21	3.0	1.0 (1-5)
<b>Comprehensiveness of Care</b>	<b>21</b>	<b>18.0</b>	<b>3.9 (10-24)</b>
One or more health care professional is able to diagnose	21	3.3	1.7 (1-5)
One or more health care professional is able to provide on-going management	21	3.9	0.9 (2-5)
There is timely referral to appropriate health and social services	21	3.1	0.9 (1-5)
Multidisciplinary care is available	21	3.8	1.0 (1-5)
Health care professionals consider dementia a chronic disease	21	3.8	0.8 (2-5)
<b>Quality of care</b>	<b>21</b>	<b>15.3</b>	<b>2.9 (10-21)</b>
Timely diagnosis occurs	21	2.7	1.0 (1-5)
Health care professionals use standardized diagnostic criteria	21	3.6	0.8 (3-5)
Current screening tools are effective	21	3.5	0.8 (2-5)
Care and management are guided by standardized care pathways	21	2.9	0.9 (1-4)
Health care professionals adequately monitor safety of individuals with dementia living at home	21	2.7	1.2 (1-4)
<b>Adequate amount of supportive resources and services</b>	<b>21</b>	<b>2.6</b>	<b>1.2 (1-4)</b>

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent

# Sunrise Health Region

## Administrative Data Analysis

### Incidence (2012/2013)

#### Incidence by Sex and Age Group

Table 97

- A total of 286 incident (new) cases of dementia were identified among adults 45 years and older in Sunrise Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted incidence rate of dementia was 10.09 per 1,000 population at risk (PAR).

#### Sex

- There were 162 incident cases among females and 124 incident cases among males aged 45 years and older.
- Among all age groups combined, the unadjusted incidence rate was 27% higher among females than males (11.25 vs. 8.89 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 6% of incident cases (16/286), those aged 65 to 84 contributed 40% (115/286), and 54% (155/286) were contributed by adults aged 85 years and older.
- The unadjusted incidence rate increased 23 times between the group aged 65 to 74 and those aged 85 years and older (3.32 vs. 76.85) per 1,000 PAR).

#### Incidence by Health Region (Age- and Sex-adjusted rates)

Table 98

This table shows the unadjusted (crude) and adjusted total incidence of dementia (females and males combined), for Sunrise Region.

*Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted incidence rate for Sunrise Health Region was 8.30 per 1,000 PAR, ranking this region 3 of 11 when the health region rates were ordered from highest to lowest. At 8.30 per 1,000 per PAR, the adjusted incidence rate for Sunrise Health Region was 11% higher than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). This difference was not statistically significant.

#### Incidence by Rural and Urban Residence

Table 99

- Among all adults aged 45 years and older, there were 139 incident cases among rural residents and 145 incident cases among urban residents.
- The unadjusted prevalence rate was significantly higher ( $p < 0.05$ ) among rural than urban adults aged 85 and older (93.96 vs. 63.46 per 1,000 PAR). Among all age groups combined, the 3% higher unadjusted incidence rate in rural compared to urban residents was not statistically significant (10.43 vs. 10.08 per 1,000 PAR).

## Incidence

Table 97 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by sex and age group, Sunrise Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,908	*	<6	4,105	*	<6	8,013	*	0.68
55-64	6+	4,016	*	<6	4,291	*	6+	8,307	*	0.77
65-74	7	3,085	2.27	13	2,932	4.43	20	6,017	3.32	0.14
75-84	51	2,147	23.75	44	1,849	23.80	95	3,996	23.77	0.99
85+	95	1,244	76.37	60	773	77.62	155	2,017	76.85	0.92
All ages	162	14,400	<b>11.25</b>	124	13,950	<b>8.89</b>	286	28,350	10.09	<b>&lt; 0.05</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 98 Age- and sex-adjusted 12-month incidence of dementia among adults 45 years of age and older, Sunrise Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Sunrise Health Region	286	28,350	10.09	8.30	7.4 - 9.3	1.13	1.0 - 1.3	ns

<sup>a</sup> Significance of difference between Sunrise Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 99 12-month unadjusted (crude) incidence of dementia among adults 45 years of age and older, by rural and urban residence, Sunrise Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,585	*	<6	4,222	*	<6	7,807	*	1
55-64	6+	4,092	*	<6	3,989	*	6+	8,081	*	0.75
65-74	7	2,933	2.39	13	2,950	4.41	20	5,883	3.40	0.18
75-84	40	1,826	21.91	55	2,126	25.87	95	3,952	24.04	0.42
85+	84	894	<b>93.96</b>	70	1,103	<b>63.46</b>	154	1,997	77.12	<b>0.01</b>
All ages	139	13,330	10.43	145	14,390	10.08	284	27,720	10.25	0.77

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).



## Prevalence (2012/2013)

### Prevalence by Sex and Age Group

Table 100

- A total of 1,107 prevalent (existing) cases of dementia were identified among adults 45 years and older in Sunrise Health Region during the 2012/13 12-month period. Among all adults aged 45 years and older, the unadjusted prevalence rate of dementia was 37.58 per 1,000 population at risk (PAR).
- Overall, the unadjusted 12-month prevalence rate among individuals aged 45 years and older was 3.7 times the unadjusted incidence rate (37.58 vs. 10.09 per 1,000 PAR).

#### Sex

- There were 704 prevalent cases among females and 403 prevalent cases among males aged 45 years and older.
- Among those aged 85 and older, the unadjusted prevalence rate was 33% higher among females than males (273.79 vs. 205.55 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ). Within all other age groups, the differences in incidence rates between females and males were not statistically significant.
- Among all age groups combined, the unadjusted prevalence rate was 66% higher among females than males (46.61 vs. 28.08 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

#### Age

- Adults 45 to 64 years contributed 6% of prevalent cases (61/1,107), those aged 65 to 84 accounted for 34% (377/1,107), and adults aged 85 years and older accounted for 60% (669/1,107).
- Overall, the unadjusted prevalence rate was 166 times higher among adults aged 85 and older than among those 45 to 54 years of age (249.07 vs. 1.50 per 1,000 PAR).

### Prevalence by Health Region (Age- and Sex-adjusted rates)

Table 101

This table shows the unadjusted (crude) and adjusted total prevalence of dementia (females and males combined), for Sunrise Health Region.

*Note that the unadjusted (crude) and adjusted rates are different. The adjusted rates presented in the present report are more appropriate than the unadjusted rates for making comparisons across health regions.*

- The adjusted prevalence rate for Sunrise Health Region was 29.40 per 1,000 PAR, ranking 4 of 11 when the health region rates were ordered from highest to lowest. This rate was 4% higher than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

### Prevalence by Rural and Urban Residence

Table 102

- Among all adults aged 45 years and older, there were 481 prevalent cases among rural residents and 619 prevalent cases among urban residents.
- Among all age groups combined, the unadjusted prevalence rate in urban residents was 18% higher compared to rural residents (41.24 vs. 34.83 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).

## Prevalence

Table 100 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by sex and age group, Sunrise Health Region (April 1, 2012 to March 31, 2013)

Age group	Female			Male			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	6	3,914	1.53	6	4,111	1.46	12	8,025	1.50	0.93
55-64	25	4,041	6.19	24	4,315	5.56	49	8,356	5.86	0.71
65-74	49	3,134	15.63	45	2,977	15.12	94	6,111	15.38	0.87
75-84	155	2,302	67.33	128	1,977	64.74	283	4,279	66.14	0.73
85+	469	1,713	<b>273.79</b>	200	973	<b>205.55</b>	669	2,686	249.07	<b>&lt;.0001</b>
All ages	704	15,104	<b>46.61</b>	403	14,353	<b>28.08</b>	1,107	29,457	37.58	<b>&lt;.0001</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

Table 101 Age- and sex-adjusted 12-month prevalence of dementia among adults 45 years of age and older, Sunrise Health Region, Saskatchewan (April 1, 2012 to March 31, 2013)

Health Region	n	PAR (missing RHA data excluded)	Crude rate per 1,000 PAR	Risk-adjusted rate (RA) per 1,000 PAR	RA Rate per 1,000 PAR CI	Odds Ratio	95% CI	p-value <sup>a</sup>
Sunrise Health Region	1,107	29,457	37.58	<b>29.40</b>	27.7 - 31.1	1.07	1.003-1.15	<b>&lt;.05</b>

<sup>a</sup> Significance of difference between Sunrise Health Region and other health regions combined

Note. Bold indicates a rate that is significantly different than other health regions combined ( $p < 0.05$ ). NS indicates a rate that is not significantly different than other health regions combined. The health regions are age- and sex-adjusted to the total SK population.

Table 102 12-month unadjusted (crude) prevalence of dementia among adults 45 years of age and older, by rural and urban residence, Sunrise Health Region (April 1, 2012 to March 31, 2013)

Age group	Rural			Urban			Total			p-value <sup>a</sup>
	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	n	PAR	Crude rate per 1,000 PAR	
45-54	<6	3,590	*	6+	4,229	*	12	7,819	1.53	1.00
55-64	6+	4,114	*	6+	4,015	*	48	8,129	5.90	0.51
65-74	44	2,977	14.78	50	3,000	16.67	94	5,977	15.73	0.56
75-84	118	1,944	60.70	163	2,289	71.21	281	4,233	66.38	0.17
85+	292	1,186	246.21	373	1,476	252.71	665	2,662	249.81	0.70
All ages	481	13,811	<b>34.83</b>	619	15,009	<b>41.24</b>	1,100	28,820	38.17	<b>&lt; 0.05</b>

<sup>a</sup> Fisher's exact test where  $n < 6$ ; Chi-square test where  $n \geq 6$

\* Data is suppressed where  $n$  is between 1 and 5

Note. Bold indicates a statistically significant difference in rates ( $p < 0.05$ ).

## Environmental Scan

Note that a total of 8 Home Care Assessors from Sunrise Health Region responded to the environmental scan survey. Due to missing responses across items, the total sample for Sunrise Health Region (N) varied from 5 to 8.

See 'Data Collection' under the Methods section of this report for a description of the measures below.

### Availability of Dementia-related Services

Table 103

- *Health Promotion Programs* related to dementia care were unavailable according to most respondents. However, recreational activities for older adults were typically available weekly.
- *Primary Health Care* services related to dementia care that were available at least weekly according to more than half of respondents included pharmacists, family physicians, physical therapists, and social workers. Other health care professionals (aside from those listed) and occupational therapists varied in their availability from weekly to unavailable. The services of screening of older adults and multidisciplinary team assessment were not available, according to most respondents.
- *Post-diagnostic Support* services that were generally available at least weekly, according to most respondents, included case management, adult day program and palliative care. The availability of volunteer services/visitors, counselling for diagnosed individuals and caregivers, and other caregiver support services varied from weekly to not available. According to most respondents, caregiver support groups varied in availability from less often than weekly to unavailable, and private caregiving was not available.
- *Home Care* services were widely available weekly. Services that were the exception included homemaking, transportation to health care, night respite, and weekend respite, which were unavailable according to most respondents. Services that varied in availability from weekly to unavailable included in-home respite and visiting, planned respite care, and emergency respite.

- *Long-term Care* counselling for individuals with dementia and caregivers varied in availability from weekly to unavailable. Long-term care housing\* available in the community, according to most respondents, included seniors housing, and special care homes, and personal care homes. Long-term assisted living options and special care units were reported to be available by less than half of respondents.

\* See Table 103 bottom for these figures

### Primary Health Care (PHC) Orientation of Dementia-related Services\*

Table 104

- *Information and Education.* Mean scores on individual items were generally somewhat negative, particularly with respect to public education to reduce stigma (2.0, SD = 0.9) and awareness about 'what to do' or 'where to go' (2.1, SD = 1.3). The overall scale mean of 12.5 (SD = 4.6, range = 8-23) demonstrated that respondents perceived community-level dementia-related information and education to be somewhat inadequate.
- *Accessibility.* Respondents held somewhat negative perceptions with regard to the accessibility of dementia-related services, particularly regarding the geographic accessibility of services (2.1, SD = 1.1), and availability of subsidized/free transportation to services for older adults (2.4, SD = 1.2). Neutral views were exhibited with respect to frequency of services (3.1, SD = 1.1) and availability of public transportation to services (3.1, SD = 1.6). Overall, respondents reported generally somewhat negative views of *Accessibility*, with an average scale score of 13.5 (SD = 3.5, range = 6-18).

- *Population Orientation.* Respondents held somewhat negative to neutral views with respect to Population Orientation (community-fit) of dementia-related services. Negative perceptions were particularly apparent with respect to level of caregiver support (1.8, SD = 1.0), whereas responses were somewhat neutral regarding level of PHC services (2.8, SD = 1.0) and Home Care services (2.9, SD = 1.6). Respondents reported overall somewhat negative views of *Population Orientation*, with an average scale score of 12.4 (SD = 4.7, range = 7-21).
- *Coordinated Care.* Respondents held somewhat negative to somewhat positive views regarding coordinated care. Respondents held somewhat positive views with respect service delivery coordination among health care professionals within the community (3.6, SD = 1.1) and outside the community (3.6 SD = 1.4). The overall average *Coordinated Care* scale score was somewhat positive at 15.8 (SD = 4.5, range = 11-24).
- *Comprehensiveness of Care.* Overall, positive views on comprehensiveness of care were held by respondents. Respondents were most positive with respect to the ability of one or more health care professional to provide on-going management (3.6, SD = 0.9) and consideration of dementia as a chronic disease by health care professionals (3.6, SD = 0.7). Of the 6 dimensions considered, *Comprehensiveness of Care* fared the most favorably. The mean *Comprehensiveness of Care* scale score of 16.6 (SD = 3.8, range = 13-25) demonstrated the overall somewhat positive position of respondents on this dimension.
- *Quality of Care.* Respondents held somewhat negative to somewhat positive views on care quality. Whereas the use of standardized care pathways (2.1, SD = 1.0) and timeliness of diagnosis (2.6, SD = 0.9) were viewed somewhat negatively, the effectiveness of current screening tools (3.4, SD = 0.5) was viewed somewhat positively. The mean *Quality of Care* scale score of 14.1 (SD = 2.9, range = 10-18) reflected the overall somewhat negative position of respondents on this dimension.
- A final single summary item asked whether “the amount of supportive resources and services

available in the community is adequate to allow individuals with dementia to remain at home for as long as possible.” According to this single item, Sunrise Health Region respondents held somewhat negative views the regarding the adequacy of supportive resources and services available in the community (2.4 (SD = 1.1, range = 1-4)).

## Environmental Scan Comments

Sunrise Health Region Home Care Assessors provided the following comments:

*“As an assessor it is my experience that dementia frequently goes undiagnosed. It is obvious that an inpatient referred to me for assessment has some form of dementia but there is no formal diagnosis. Usually by the time the patient is referred to me, the dementia is advanced, the individual beyond community care and requiring Long Term Care placement.”*

*“Emergency respite refers to acute care bed in hospital. The bed designated as 'emergency respite' not always available. Palliative Care Coordinator partners with Home Care to provide some services.”* (SUR009)

*“Gaps - need for PCH - couple accommodation or variable care levels. Home Care - no HS care, respite (in-home), minimal/to no weekend care; lack of available staff, lack of incentives to work in small rural towns. Starting medical assessment of dementia clients monthly; no billing code for physician's assessment. Dr. volunteered time to secure research data.”*

*“Role of Case Manager is beginning. Assessment role in Home Care provides the pivotal role to coordinate the multidiscipline team efforts. Major drawback - rural services and resources not available as witnessed in major centers. 2) Need for increased Home Care services to provide daily and H.S. support vital. Clientele and their family supports would manage better if resources from Home Care were available. Hospitalization due to social breakdown could be minimized. 3) Increased availability of adult day program days to 5 days/wk rather than 3 days/wk would provide valuable support. 4) Access to medical services in Yorkton, Regina, or Saskatoon are*

*available but barriers exist, such as transportation costs, accommodation costs, family not available to escort elderly/disable clientele, etc.”*  
(SUR007)

*“All of our Special Care Homes and Housing options are full and have a wait list. Some PCH may have some vacancy.”* (SUR003)

*“Our area relies on the regional facility to provide services for OT/PT/Social Workers, if budget and staffing allows we may have them weekly. Home Care services cover just the basic needs for seniors in our community.”*

*“Need more services from Home Care, Social Work, Physiotherapy.”* (SUR008)

## Environmental Scan

Table 103 Availability of dementia-related services, Sunrise Health Region

Service	N	At least weekly n (%)	Less often than weekly n (%)	Not available n (%)
<b>Health Promotion Programs</b>				
Healthy brain promotion	8	2 (25.0)	0	6 (75.0)
Healthy lifestyle promotion related to dementia	8	0	1 (12.5)	7 (87.5)
Recreational activities for older adults	8	8 (100.0)	0	0
<b>Primary Health Care</b>				
Pharmacist	8	7 (87.5)	1 (12.5)	0
Family Physician	8	7 (87.5)	1 (12.5)	0
Nurse Practitioner	8	2 (25.0)	1 (12.5)	5 (62.5)
Physical Therapist	8	5 (62.5)	1 (12.5)	2 (25.0)
Occupational Therapist	8	4 (50.0)	3 (37.5)	1 (12.5)
Social Worker	8	6 (75.0)	2 (25.0)	0
Other health care professionals	8	4 (50.0)	1 (12.5)	3 (37.5)
Screening of older adults	8	1 (12.5)	2 (25.0)	5 (62.5)
Multidisciplinary team assessment	8	2 (12.5)	0	7 (87.5)
<b>Post-diagnosis Support</b>				
Case management of diagnosed individuals	8	5 (62.5)	1 (12.5)	2 (25.0)
Volunteer services/visitors	8	3 (37.5)	1 (12.5)	4 (50.0)
Counselling diagnosed individuals	8	1 (12.5)	4 (50.0)	3 (37.5)
Counselling caregivers	8	1 (12.5)	5 (62.5)	2 (25.0)
Caregiver support group	8	0	4 (50.0)	4 (50.0)
Other caregiver support services	8	2 (25.0)	2 (25.0)	4 (50.0)
Private caregiving	7	3 (42.9)	0	4 (57.1)
Adult day program	8	8 (100.0)	0	0
Palliative care	8	8 (100.0)	0	0
<b>Home Care</b>				
Meals on Wheels	8	8 (100.0)	0	0
Meal Prep	8	8 (100.0)	0	0
Personal care – AM Care	8	8 (100.0)	0	0
Personal care – HS Care	8	7 (87.5)	0	1 (12.5)
Personal care – Toileting	8	5 (62.5)	0	3 (37.5)
Personal care – Bath Assist	8	8 (100.0)	0	0
Homemaking	8	3 (37.5)	0	5 (62.5)
Transportation to health care	8	1 (12.5)	0	7 (87.5)
In-home respite and visiting	8	4 (50.0)	2 (25.0)	2 (25.0)
Planned respite care	8	4 (50.0)	4 (50.0)	0
Night respite	8	0	1 (12.5)	7 (87.5)
Weekend respite	8	0	2 (25.0)	6 (75.0)
Emergency respite	8	3 (37.5)	1 (12.5)	4 (50.0)
<b>Long Term Care*</b>				
Counselling for individuals with dementia	6	1 (16.7)	2 (33.3)	3 (50.0)
Counselling for caregivers	5	1 (12.5)	2 (40.0)	2 (40.0)

\*Other available long-term care services (N varied from 5 to 8): seniors housing (100%, n = 7), special care home (83.3%, n = 5), personal care home (87.5%, n = 7), assisted living options (28.6%, n = 2), special care unit (33.3%, n = 2)

Table 104 Item statistics of Primary Health Care Features of Dementia-related Services, Sunrise Health Region

Attribute	N	Mean	SD (range)
<b>Information and Education</b>	<b>8</b>	<b>12.5</b>	<b>4.6 (8-23)</b>
Adequate awareness about 'what to do' or 'where to go'	8	2.1	1.3 (1-5)
Adequate information for caregivers	8	2.3	1.3 (1-4)
Adequate awareness of dementia among health care professionals in the community	8	3.6	1.2 (2-5)
Adequate dementia-specific continuing education for health care professionals	8	2.5	1.2 (1-5)
Adequate public education to reduce stigma of dementia	8	2.0	0.9 (1-4)
<b>Accessibility</b>	<b>8</b>	<b>13.5</b>	<b>3.5 (6-18)</b>
Appropriate frequency of services	8	3.1	1.1 (1-4)
Appropriate wait time for services	8	2.8	0.9 (2-4)
Available public transportation to services (for older adults)	8	3.1	1.6 (1-5)
Available subsidized/free transportation to services (for older adults)	8	2.4	1.2 (1-4)
Equally accessible services, regardless of geographic location	8	2.1	1.1 (1-4)
<b>Population Orientation</b>	<b>8</b>	<b>12.4</b>	<b>4.7 (7-21)</b>
Appropriate level of PHC services	8	2.8	1.0 (2-4)
Appropriate level of Home Care services	8	2.9	1.6 (1-5)
Appropriate number of LTC beds	8	2.4	1.2 (1-4)
Appropriate telehealth services	8	2.6	1.4 (1-5)
Appropriate level of support for caregivers	8	1.8	1.0 (1-4)
<b>Co-ordinated Care</b>	<b>8</b>	<b>15.8</b>	<b>4.5 (11-24)</b>
Service delivery by different health care professionals in the community is co-ordinated	8	3.6	1.1 (2-5)
All health care professionals in the community have easy access to patient health history	8	2.4	1.6 (1-5)
Health care professionals co-ordinate well with each other to manage [patient care (within and outside community)]	8	3.6	1.4 (1-5)
Health care professionals co-ordinate well with community agencies to manage patient care (within and outside community)	8	3.3	0.9 (2-5)
Seamless transition from community to LTC	8	2.9	1.2 (1-4)
<b>Comprehensiveness of Care</b>	<b>8</b>	<b>16.6</b>	<b>3.8 (13-25)</b>
One or more health care professional is able to diagnose	8	3.0	1.2 (2-5)
One or more health care professional is able to provide on-going management	8	3.6	0.9 (2-5)
There is timely referral to appropriate health and social services	8	3.0	1.1 (2-5)
Multidisciplinary care is available	8	3.4	1.2 (2-5)
Health care professionals consider dementia a chronic disease	8	3.6	0.7 (3-5)
<b>Quality of care</b>	<b>8</b>	<b>14.1</b>	<b>2.9 (10-18)</b>
Timely diagnosis occurs	8	2.6	0.9 (2-4)
Health care professionals use standardized diagnostic criteria	8	2.8	1.2 (1-4)
Current screening tools are effective	8	3.4	0.5 (3-4)
Care and management are guided by standardized care pathways	8	2.1	1.0 (1-3)
Health care professionals adequately monitor safety of individuals with dementia living at home	8	3.3	0.7 (2-4)
<b>Adequate amount of supportive resources and services</b>	<b>8</b>	<b>2.4</b>	<b>1.1 (1-4)</b>

1=No, not at all; 2=No, not really; 3=Undecided; 4=Yes, to some extent; 5=Yes, to a very great extent





# Key Findings

The main findings for each of the three components of this study are reviewed below.

## Best Practice Review

Nine national dementia plans were included in the review of best practices: Australia, England, Finland, France, Norway, Scotland, Northern Ireland, United States, and Wales. Six common best practices themes were identified in the national plans: (1) expanding dementia research, (2) quality improvement in care services, (3) raising public awareness, (4) early/timely diagnosis and treatment, (5) staff training, and (6) family support. The leading two themes supported by all 9 countries were *quality improvement in care services* and *expanding dementia research*. Eight countries recommended *raising public awareness*, six recommended *early/timely diagnosis and treatment* and *staff training*, and five recommended *family support*. The 6 best practice themes were as follows:

- **Expanding Dementia Research** *involves an increased emphasis on growing the dementia research field.*
- **Quality improvement in Care Services** *encompasses improved access, availability, and coordination of current and future services throughout the disease stages along the continuum of care.*
- **Raising Public Awareness** *includes recommendations to assist with the recognition of symptoms and reduction of stigma.*
- **Early/Timely Diagnosis and Treatment** *emphasizes disseminating information to the public and health care professionals, to improve early diagnosis and encourage help seeking in early stage.*
- **Staff Training** *involves increasing resources to improve awareness, knowledge, and training among health care professionals responsible for providing care to individuals with dementia.*
- **Family Support** *emphasizes the need to improve the availability and appropriateness of community support and respite options to caregivers and families of individuals with dementia.*

## Administrative Data Analysis

The administrative data analysis employed linked administrative databases in the province of Saskatchewan to determine the 12-month incidence and prevalence of dementia among individuals aged 45 and older in the province of Saskatchewan by database of identification, demographic characteristics (age group, sex, and rural/urban residence), and health region. Key findings regarding the incidence and prevalence of dementia as identified in the administrative data analysis are reviewed below.

### Incidence of dementia (2012/2013) - Province of Saskatchewan\*

- A total of 3,270 incident (new) cases of dementia were identified among adults 45 years and older in Saskatchewan during the 12-month period of 2012/13. The unadjusted incidence rate of dementia was 7.28 per 1,000 population at risk (PAR).

- There were 1,887 incident cases among females and 1,383 incident cases among males aged 45 years and older. The unadjusted incidence rate was 31% higher among females than males (8.25 vs. 6.28 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).
- Within every health region, similar to the province overall, the unadjusted incidence rate of dementia was higher among females than males. In 6 health regions, these differences were statistically significant ( $p < 0.05$ ).
- **Adults 45 to 64 years of age contributed 8% of incident cases (247/3,270), those aged 65 to 84 contributed 41% (1,343/3,270), and 51% (1,680/3,270) were contributed by adults aged 85 years and older.** The unadjusted incidence rate increased 152 times between the group aged 45 to 54 and those aged 85 years and older (0.46 vs. 69.73 per 1,000 PAR).
- The greatest proportion of all 12-month incident cases in 2012/13 was first identified in long-term care (34.98%), followed closely by a diagnosis in physician services claims (29.94%), and a diagnosis in hospital (28.53%). Of note, 6.54% of all incident cases were first identified as a result of a cholinesterase inhibitor prescription.
- Of the incident cases that were *first identified in long-term care* in 2012/13, 79.72% (912/1,144) were identified at the point of admission. The remaining 20.28% (232/1,144) were admitted to long-term care *prior* to April 1, 2012 (in some cases by many years) and were not identified as having dementia until 2012/13. Therefore, of *all* incident cases of dementia, **27.89% (912/3,270) were first identified with dementia at the point of admission to long-term care.**
- There were 1,133 incident cases among rural residents and 2,105 incident cases among urban residents. Among those aged 85 years and older, the unadjusted incidence rate was 14% higher among rural than urban residents (a statistically significant difference  $p < 0.05$ ). Within all other age groups, the differences in unadjusted incidence rates between rural and urban residents were not statistically significant.
- The incidence (and population at risk) was highest in Saskatoon Health Region, where a total of 880 new cases were identified for the 2012/13 12-month period. The incidence (and population at risk) was lowest in the Northern Health Regions, where a total of 32 cases were identified for the same 12-month period.
- The age- and sex-adjusted incidence rate was highest in Sun Country Health Region (8.77 per 1,000 PAR) and second highest in Heartland Health Region (8.63 per 1,000 PAR). These adjusted incidence rates were 15-17% higher than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). The difference between each of these adjusted rates and the adjusted rate for all health regions combined was statistically significant ( $p < 0.05$ ).
- The age- and sex-adjusted incidence rates were lowest in Prince Albert Parkland (6.59 per 1,000 PAR) and the Northern Health Regions (6.66 per 1,000 PAR). These rates were 13-14% lower than the adjusted rate for all health regions combined (7.51 per 1,000 PAR). The difference between each of these adjusted rates and the adjusted rate for all health regions combined was not statistically significant.

### Prevalence of dementia (2012/2013) - Province of Saskatchewan\*

- A total of 13,012 prevalent (existing) cases of dementia were identified among adults 45 years and older in Saskatchewan during the 2012/13 12-month period; the unadjusted prevalence rate of dementia was 28.16 per 1,000 population at risk (PAR).

- Overall, the 12-month unadjusted prevalence rate among individuals aged 45 years and older was 3.9 times the unadjusted incidence rate (28.16 vs. 7.28 per 1,000 PAR).
- There were 8,099 prevalent cases among females and 4,913 prevalent cases among males aged 45 years and older. The unadjusted prevalence rate was 57% higher among females than males (34.19 vs. 21.82 per 1,000 PAR). This difference was statistically significant ( $p < 0.05$ ).
- Within every health region, similar to the province overall (34.49 vs. 22.09 per 1,000 PAR), the prevalence rate of dementia was higher among females than males. These sex differences were statistically significant in every health region ( $p < 0.05$ ) except the Northern Health Regions, ranging from a difference of 73% in Kelsey Trail (41.46 vs. 23.96 per 1,000 PAR) to a difference of 29% in Prairie North (28.08 vs. 21.79 per 1,000 PAR).
- Adults 45 to 64 years of age contributed 8% of prevalent cases (1,087/13,012), those aged 65 to 84 accounted for 39% (5,078/13,012), and adults aged 85 years and older accounted for 53% (6,847/13,012). Overall, the unadjusted prevalence rate was 160 times higher among adults aged 85 and older than among those 45 to 54 years of age (221.30 vs. 1.38 per 1,000 PAR).
- The greatest proportion of all 12-month prevalent cases in 2012/13 was first identified by a diagnosis in physician services claims (40.16%). A further 24.72% were first identified in long-term care, 23.84% by a diagnosis in hospital, and 11.28% by a cholinesterase inhibitor prescription.
- Of the prevalent cases *that were first identified in long-term care* in 2012/13, 68.89% (2,216/3,217) were identified at the point of admission to long-term care, and 31.12% (1,001/3,217) were identified 30 days or longer after admission. Therefore, of *all* prevalent cases of dementia, 17.03% (2,216/13,012) were first identified with dementia at the point of admission to long-term care.
- Among all adults aged 45 years and older, there were 4,394 prevalent cases among rural residents and 8,497 prevalent cases among urban residents. Among those younger than 85 years, the unadjusted prevalence rates were higher among urban than rural residents; among those aged 85 years and older, the unadjusted prevalence rate was 13% higher among rural than urban residents. Among all age groups combined, the unadjusted prevalence rate was 6% higher among urban than rural residents. All rural vs. urban differences were statistically significant ( $p < 0.05$ ).
- Prevalence (number of existing cases) ranged from 126 to 3,286 across the health regions. The prevalence (and population at risk) was highest in Saskatoon Health Region, where a total of 3,286 existing cases were identified for the 2012/13 12-month period. Regina Qu'Appelle Health Region had the second highest prevalence at 3,041 cases. The prevalence (and population at risk) was lowest in the Northern Health Regions, where a total of 126 cases were identified for the same 12-month period.
- The age- and sex-adjusted prevalence rates ranged from 25.87 to 31.91 per 1,000 PAR across the health regions. The adjusted prevalence rate was highest in Prince Albert Parkland Health Region (31.91 per 1,000 PAR) and second highest in Sun Country Health Region (30.55 per 1,000 PAR). These adjusted prevalence rates were 8-13% higher than the adjusted rate for all health regions combined (28.16 per 1,000 PAR). Two additional health regions also had adjusted prevalence rates that were statistically significantly higher ( $p < 0.05$ ) than all health regions combined: Sunrise at 29.40 and Regina Qu'Appelle at 28.75 per 1,000 PAR).
- The age- and sex-adjusted prevalence rate was lowest in the Northern Health Regions (25.87 per 1,000 PAR). This adjusted rate was 9% lower than the adjusted rate for all health regions combined (28.16 per 1,000 PAR),

which was not a statistically significant difference. The adjusted prevalence rate the Saskatoon Health Region (26.45 per 1,000 PAR) was 6% lower than the adjusted rate for all health regions combined; this difference was statistically significant ( $p < 0.05$ ).

## Environmental Scan

The purposes of the environmental scan were to determine, within each of the 13 health regions of the province of Saskatchewan and for the province as a whole: 1) the availability of dementia-related services and resources across the continuum of care, and 2) the orientation of dementia-related services toward key dimensions of primary health care.

### Availability of Dementia-related Services - Province of Saskatchewan\*

- **Health Promotion Programs** related to dementia care were reported to be widely unavailable according to more than half of respondents. The exception was recreational activities for older adults, which most respondents indicated were available at least weekly in their communities.
- **Primary Health Care** services related to dementia care that were available at least weekly according to more than half of respondents, included basic services - pharmacists, family physicians, physical therapists, and occupational therapists. However, multidisciplinary team assessment and Nurse Practitioners were unavailable in approximately half of the communities served by respondents.
- **Post-diagnosis Support** services that most respondents indicated were available weekly, rank ordered, included the broad health services of palliative care, adult day programs, case management, and volunteer services/visitors. More than half of respondents reported that other post-diagnostic support was not available in their communities, including private caregiving, caregiver support groups, and counselling for diagnosed individuals.
- **Home Care** services were widely available weekly, including personal care services, meal preparation, meals on wheels, in-home respite, planned respite, and homemaking. Home care services that were unavailable in their communities, according to the majority of respondents, were night respite, transportation to health care, and weekend respite.
- **Long-term Care** counselling for individuals with dementia and caregivers was reported to be widely unavailable. Long-term care housing available in the community, according to most respondents, included seniors housing, special care homes, and personal care homes. Long-term care housing that was more likely to be unavailable included assisted living options and special care units.

### Primary Health Care Orientation of Dementia-related Services - Province of Saskatchewan\*

- **Information and Education.** Overall, respondents perceived community-level dementia-related information and education to be inadequate. Views on individual items in the *Information and Education* scale ranged from strongly negative with respect to adequacy of public education to reduce stigma to somewhat positive concerning dementia awareness among local health care professionals.
- **Accessibility.** Overall, respondents held somewhat negative perceptions on the dimension of *Accessibility* of dementia-related services, particularly regarding the influence of geographic location on accessibility and availability of subsidized/free transportation services.

- **Population Orientation.** Respondents held somewhat negative views overall on *Population Orientation*, (i.e., community fit), specifically with respect to level of caregiver support and level of primary health care services.
- **Coordinated Care.** Perceptions on overall *Coordinated Care* were in the neutral range. Views were neutral on the seamlessness of transition from community to long-term care as well as ease of access to patient health history, and somewhat positive on coordination of patient care and service delivery.
- **Comprehensiveness of Care.** Of the 6 dimensions considered, *Comprehensiveness of Care* fared the most favorably with somewhat positive views overall. Perceptions ranged from neutral regarding timely referral to appropriate services to somewhat positive with respect to one or more health care professional being able to provide on-going management.
- **Quality of Care.** Respondents held somewhat negative to somewhat positive views of *Quality of Care* with respect to timely diagnosis (somewhat negative) and effectiveness of screening tools (somewhat positive). *Quality of Care* overall was viewed neutrally.
- According to a single summary item, environmental scan respondents perceived the amount of supportive resources and services available in the community to be somewhat *inadequate* overall.

\* *Results are also presented by health region within the current report, as listed in the Table of Contents.*



## Discussion

Several key points for discussion emerge from this multi-method investigation of dementia and related services in Saskatchewan.

Regarding the epidemiology of dementia over a 12-month period in 2012/2013 in the province of Saskatchewan, as demonstrated by the administrative data analysis in the current study:

- Approximately 7 in every 1,000 Saskatchewan residents aged 45 years and older (3,270) were diagnosed or otherwise identified with dementia during this time period, and 28 of every 1,000 aged 45 and older (13,012) had been previously diagnosed or otherwise identified and were currently living with dementia. Specifically, there were 3,270 incident (new) cases and 13,012 prevalent (existing) cases of dementia identified in physician services claims, hospital, prescription drug data, or long-term care during this 12-month period. *Adults 45 to 64 years of age contributed 8% of incident cases and 8% of prevalent cases; these individuals represent cases of early onset dementia (i.e., younger than aged 65 years).*
- Among females compared to males 45 years and older, the incidence rate of dementia was 31% higher and the prevalence rate was 57% higher. Significant sex differences in incidence and prevalence rates within age groups were not apparent, with the exception of a higher prevalence rate among females than males 85 years and older (239.77 vs. 187.14 per 1,000 PAR). A recent World Health Organization and Alzheimer Disease International report (2012) found that the overall prevalence was 19% to 29% higher among females than males aged 60 and older (with the exception of Asia Pacific and North America). A higher prevalence rate among females than males, most notably among the oldest-old, suggests that females are likely to live longer with dementia than men (Thies and Bleiler 2013, Prince et al., 2013b), whereas negligible sex differences in incidence rates across all age groups suggests that females are no more likely than males to develop dementia (Thies and Bleiler 2013).

### *Recommendation for action*

**Improve and encourage access to a timely and accurate diagnosis by:**

- **Establishing and maintaining accessible and relevant continuing education programs for health care professionals** to improve skills in assessment, diagnosis, and management. Partners in these programs may include experts in dementia and dementia care, University of Saskatchewan, Telehealth Saskatchewan, Saskatchewan Medical Association, nursing associations, Alzheimer Society of Saskatchewan, health region representatives, and other interested partners.
- **Increasing the capacity of local resources (e.g., primary health care, home care, and other support services) to provide the necessary post-diagnostic health and social services to individuals with dementia and their families.** The capacity of local resources should be increased by providing adequate funding to maintain local programs and services for individuals with dementia and their families, and dementia-specific training to health care professionals. Increasing local community capacity may encourage help-seeking, as well as reduce the need for travel and early admission to long-term care.

- The incidence and prevalence of dementia found in the current study likely underestimate the true epidemiology of dementia, since previous studies have shown that between 31% and 69% of *primary care patients with dementia* do not receive a documented diagnosis (Boustani et al. 2003; Bradford et al. 2009; van den Dungen et al. 2012). Therefore the true number of incident cases over a 12-month period in Saskatchewan may vary between 4,700 and 10,500. As shown in **Tables 105 and 106**, the *Rising Tide* report (Smetanin et al. 2009) projected 4,154 incident cases and 18,332 prevalent cases of dementia in Saskatchewan in the year 2012, based on previous field studies of individuals living in the community and long-term care. When compared to these *Rising Tide* projections, our findings would suggest that only 79% of incident cases (3,270/4,154) and 71% of prevalent cases (13,012/18,332) were diagnosed or otherwise identified; 21% of incident cases and 29% of prevalent cases were not diagnosed or otherwise identified.
- Approximately 35% of all incident cases of dementia were first identified in long-term care, 30% in physician services claims, 28% in hospital, and 7% as a result of a cholinesterase inhibitor prescription. Further analysis revealed that 28% of all incident cases of dementia were first identified with dementia at the point of admission to long-term care. These findings indicate that approximately one in four individuals with incident dementia were admitted to long-term care before a formal diagnosis of dementia was recorded in physician or hospital data, suggesting underdiagnosis.
- Among rural compared to urban residents aged 85 years and older, the unadjusted incidence rate was 14% higher and the unadjusted prevalence rate was 13% higher [these differences were statistically significant ( $p < 0.05$ )]. These findings point to the substantial need among our oldest citizens in rural communities for accessible services related to dementia care.
- Regarding differences in rates of dementia between health regions, it must be noted that the significantly higher incidence rates of dementia observed in Sun Country and Heartland, compared to the other health regions combined, may actually indicate greater sensitivity and recognition of dementia among health care professionals in these two health regions. *Further research is needed to compare health regions' incidence and prevalence rates across the administrative health databases* (i.e., physician services claims, hospital, prescription drug, and long-term care) to determine whether differences in overall rates may be attributed to differences in identification within particular health care settings.

#### *Recommendation for action*

**Track quality indicators of dementia care provincially and by health region, to ensure that individuals are properly assessed, diagnosed, and managed within the health care system. The following principles provide guidance:**

- Quality indicators should be identified in partnership with experts in dementia, health care professionals, health region representatives, eHealth, Health Quality Council, and other interested partners.
- Quality indicators should be publicly reported annually, with changes over time and their implications noted.



Table 105 A comparison of incidence of dementia in Saskatchewan and Ontario, according to the current study (2012/2013 data) and the *Rising Tide* report (2012 projections)

Dementia	SK (current RaDAR-HQC Report) [admin. data analysis – 1-yr]			SK (Smetanin et al. 2009) [projection estimated from field projections – 1 yr] <sup>a</sup>			ON (Gill et al. 2011) [admin. data analysis – 5-yr] <sup>b</sup>		
	2012/13 Female n (%) <sup>c</sup>	2012/13 Male n (%) <sup>d</sup>	2012/13 Total n (%) <sup>e</sup>	2012 Female n (%) <sup>f</sup>	2012 Male n (%) <sup>g</sup>	2012 Total n (%) <sup>h</sup>	2007 Female %	2007 Male %	2007 Total %
Incidence ages 45-64	122 (0.1)	125 (0.1)	247 (0.1)	n/a	n/a	n/a	n/a	n/a	n/a
Incidence ages 65-74	165 (0.4)	164 (0.4)	329 (0.4)	303 (0.7)	328 (0.8)	631 (0.8)	n/a	n/a	n/a
Incidence ages 75-84	539 (1.9)	475 (2.1)	1,014 (2.0)	807 (2.8)	631 (2.7)	1,438 (2.7)	n/a	n/a	n/a
Incidence ages 85+	1,061 (7.0)	619 (7.0)	1,680 (7.0)	1,410 (8.3)	676 (7.8)	2,085 (8.1)	n/a	n/a	n/a
Incidence ages 45+	1,887 (0.8)	1,383 (0.6)	3,270 (0.7)	n/a	n/a	n/a	n/a	n/a	n/a
Incidence ages 65+	1,765 (2.1)	1,258 (1.7)	3,023 (1.9)	2,519 (2.9)	1,635 (2.3)	4,154 (2.6)	n/a	n/a	n/a
Incidence total population	1,887 (0.3) <sup>i</sup>	1,383 (0.3) <sup>i</sup>	<b>3,270</b> (0.3) <sup>i</sup>	2,519 (0.5)	1,635 (0.3)	<b>4,154</b> (0.4)	n/a	n/a	n/a

<sup>a</sup> The *Rising Tide: Impact of Dementia in Saskatchewan 2008 to 2038* (Smetanin et al. 2009) included projections of 12-month dementia incidence in the province of Saskatchewan by 5-yr age group (age 65+), for every year from 2008 to 2038. These projections were estimated from the 1991 Canadian Study of Health and Aging (a field study of individuals living in the community and long-term care) and a review of EURODEM field studies (included individuals living in the community and long-term care) in Berr et al. 2005.

<sup>b</sup> Comparative incidence data for Ontario is not available in “Community-dwelling older adults with dementia: tracking encounters with the health system” (Gill et al. 2011).

<sup>c</sup> Rates calculated based on female PAR (population at risk) as indicated in Table 3

<sup>d</sup> Rates calculated based on male PAR as indicated in Table 3

<sup>e</sup> Rates calculated based on total PAR as indicated in Table 3

<sup>f</sup> Rates calculated based on 2012 female population: 65-74 = 40,634; 75-84 = 29,332; 85+ = 17,042; 45+ = 227,773; 65+ = 87,008; total = 540,772 (Saskatchewan Bureau of Statistics, 2014)

<sup>g</sup> Rates calculated based on 2012 male population: 65-74 = 38,194; 75-84 = 22,992; 85+ = 8,679; 45+ = 216,386; 65+ = 69,865; total = 546,774 (Saskatchewan Bureau of Statistics, 2014)

<sup>h</sup> Rates calculated based on 2012 population: 65-74 = 78,828; 75-84 = 52,324; 85+ = 25,721; 45+ = 444,159; 65+ = 156,873; total = 1,087,546 (Saskatchewan Bureau of Statistics, 2014)

<sup>i</sup> Rates calculated based on 2012 total covered population, female = 545,760; male = 545,193; total = 1,090,953 (Saskatchewan Ministry of Health, 2012a)

Table 106 A comparison of prevalence of dementia in Saskatchewan and Ontario, according to the current study (2012/2013 data), *Rising Tide* report (2012 projections), and Ontario study of older adults (2002-2007 data)

Alzheimer's disease or a related dementia	SK (current RaDAR-HQC Report) [admin. data analysis – 1-yr]			SK (Smetanin et al. 2009) [projection estimated from field projections – 1 yr] <sup>a</sup>			ON (Gill et al. 2011) [admin. data analysis – 5-yr] <sup>b</sup>		
	2012/13 Female n (%) <sup>c</sup>	2012/13 Male n (%) <sup>d</sup>	2012/13 Total n (%) <sup>e</sup>	2012 Female n (%) <sup>f</sup>	2012 Male n (%) <sup>g</sup>	2012 Total n (%) <sup>h</sup>	2007 Female %	2007 Male %	2007 Total %
Prevalence ages 45-64	556 (0.4)	531 (0.4)	1,087 (0.4)	1,097 (0.8)	1,086 (0.7)	2,183 (0.8)	n/a	n/a	n/a
Prevalence ages 65-74	694 (1.6)	697 (1.7)	1,391 (1.6)	1,300 (3.2)	1,104 (2.9)	2,404 (3.0)	2.7 (66-74)	2.6 (66-74)	2.7 (66-74)
Prevalence ages 75-84	2,034 (6.8)	1,653 (6.7)	3,687 (6.8)	2,949 (10.1)	1,902 (8.3)	4,851 (9.3)	9.1	8.3	8.8
Prevalence ages 85+	4,815 (24.0)	2,032 (18.7)	6,847 (22.1)	6,545 (38.4)	2,348 (27.1)	8,893 (34.6)	20.3	18.3	19.6
Prevalence ages 45+	8,099 (3.4)	4,913 (2.2)	13,012 (2.8)	11,892 (5.2)	6,440 (3.0)	18,332 (4.1)	n/a	n/a	n/a
Prevalence ages 65+	7,543 (8.1)	4,382 (5.7)	11,925 (7.0)	10,794 (12.4)	5,354 (7.7)	16,149 (10.3)	7.4 (66+)	6.0 (66+)	6.8 (66+)
Prevalence for total population	8,099 (1.5) <sup>i</sup>	4,913 (0.9) <sup>j</sup>	<b>13,012</b> (1.2) <sup>j</sup>	11,892 (2.2)	6,440 (1.2)	<b>18,332</b> (1.7)	n/a	n/a	n/a

<sup>a</sup> The *Rising Tide: Impact of Dementia in Saskatchewan 2008 to 2038* (Smetanin et al. 2009) included projections of 12-month dementia prevalence in the province of Saskatchewan by 5-yr age group (age 65+), for every year from 2008 to 2038. These projections were estimated from the 1991 Canadian Study of Health and Aging (a field study of individuals living in the community and long-term care) and a review of EURODEM field studies (included individuals living in the community and long-term care) in Berr et al. 2005.

<sup>b</sup> "Community-dwelling older adults with dementia: tracking encounters with the health system" (Gill et al. 2011) used the following case definition algorithm to determine dementia prevalence among those with a health system encounter in the province of Ontario over a 5-year period: individuals 66 and older with  $\geq 1$  physician visits or  $\geq 1$  hospitalizations or any cholinesterase inhibitor prescription during a 5-year period for physician and hospital data (2002-2007) and a 1 year period for prescription data (2006-2007).

<sup>c</sup> Rates calculated based on female PAR (population at risk) as indicated in Table 8

<sup>d</sup> Rates calculated based on male PAR as indicated in Table 8

<sup>e</sup> Rates calculated based on total PAR as indicated in Table 8

<sup>f</sup> Rates calculated based on 2012 female population: 45-64 = 140,765; 65-74 = 40,634; 75-84 = 29,332; 85+ = 17,042; 45+ = 227,773; 65+ = 87,008; total = 540,772 (Saskatchewan Bureau of Statistics, 2014)

<sup>g</sup> Rates calculated based on 2012 male population: 45-64 = 146,521; 65-74 = 38,194; 75-84 = 22,992; 85+ = 8,679; 45+ = 216,386; 65+ = 69,865; total = 546,774 (Saskatchewan Bureau of Statistics, 2014)

<sup>h</sup> Rates calculated based on 2012 population: 45-64 = 287,286; 65-74 = 78,828; 75-84 = 52,324; 85+ = 25,721; 45+ = 444,159; 65+ = 156,873; total = 1,087,546 (Saskatchewan Bureau of Statistics, 2014)

<sup>i</sup> Rates calculated based on 2012 total covered population, female = 545,760; male = 545,193; total = 1,090,953 (Saskatchewan Ministry of Health, 2012a)

Regarding the significant gaps between actual and best practices\* in dementia care, as demonstrated by a comparison of findings from the best practice review and the environmental scan:

- The best practice of **quality improvement in care services** calls for improved access, availability, and coordination of current and future services throughout the disease states along the continuum of care. **Gaps:** Overall accessibility of dementia-related services is low across the province, ranging from a lack of subsidized/free transportation to services, to inappropriate frequency, wait time, and geographic accessibility of services. The coordination of care for individuals with dementia also requires improvement, particularly with respect to transitioning from the community to long-term care and access to patient health history among health care professionals. Additionally, the population orientation of dementia-related services i.e., fit between the community's needs and the services it receives, was found to be poor across the continuum from primary health care to caregiver support and long-term care.

*Recommendation for action*

Include dementia in the provincial Chronic Disease Management Quality Improvement Program, thereby establishing a patient registry and decision support tools (standardized care) for health care professionals similar to other chronic conditions (e.g., Diabetes Mellitus, Chronic Obstructive Pulmonary Disease, Coronary Artery Disease, Congestive Heart Failure).

The following principles provide guidance:

- A working group should be struck to develop clinical practice guidelines, visit flowsheets, and patient/family support tools, based on the best available evidence. The working group should involve experts in dementia, health care professionals, the Alzheimer Society, and other interested partners.
- Clinical practice guidelines should be reviewed every three years or at the time that significant emerging evidence warrants a review.

- The best practice of **family support** recommends improving the availability and appropriateness of community support and respite options to caregivers. **Gaps:** Numerous services that are highly useful to older adults and individuals with dementia and their families were either 'not available' or were available 'less often than weekly', including: primary health care (Nurse Practitioners, multidisciplinary team assessment), post-diagnostic care (counselling for diagnosed individuals and caregivers, caregiver support groups and other caregiver support services, and private caregiving), home care (transportation to health care, night respite, weekend respite, and emergency respite), and long-term care (counselling for individuals with dementia and caregivers, assisted living, and special care units).

*Recommendation for action*

Ensure that individuals with dementia and their families are adequately supported by considering:

- Increasing investment in the First Link referral program provided by the Alzheimer Society of Saskatchewan, to ensure that links are made among individuals with dementia, their families, local health services, and Alzheimer Society programs.
- Actions to improve the availability and frequency of home-based and community-based day care and respite care, including evening, weekend, and emergency care *particularly in rural communities*.
- Opportunities for subsidized and/or free transportation for older adults *living in rural communities* outside of Saskatoon and Regina (specialist services) and outside of communities with the desired services.
- The availability of services that have been developed to meet unique and complex needs (e.g., individuals who are recently new to Canada, living with children, living alone).

- The best practice of **raising public awareness** recommends increased recognition of symptoms and the reduction of stigma. **Gaps:** The amount of community-level dementia-related information and education is inadequate, particularly with respect to public education to reduce stigma, information for caregivers of individuals with dementia, and information about 'what to do' or 'where to go' for information.
- The best practice of **early/timely diagnosis and treatment** emphasizes disseminating information to the public and health care professionals, to improve early diagnosis and encourage help seeking in early stages. **Gap:** There is a gap between this best practice and actual practice, particularly with respect to timely diagnosis and the low use of standardized care pathways to guide care and management.
- The best practice of **staff training** involves recommendations to increase resources to improve awareness, knowledge, and training among health care professionals responsible for providing care to individuals with dementia. **Gaps:** Awareness of dementia among health care professionals is adequate and one or more health care professionals in communities is able to diagnose dementia and provide on-going care. However, dementia-specific continuing education for health care professionals is currently inadequate and requires attention, particularly in light of possible underdiagnosis and absence of standardized care pathways in care and management.

*Recommendation for action*

*Review the **Provincial Strategy for Alzheimer Disease and Related Dementias in Saskatchewan** (released in 2004) and consider aligning with the proposed national strategy while reflecting the needs of individuals with dementia and their families living in Saskatchewan. In conjunction with a review of the provincial strategy:*

- *Encourage partnerships among the **Alzheimer Society of Saskatchewan, provincial Ministry of Health, other interested partners, and media - social, print, and broadcast - to raise public awareness of dementia, including warning signs, risk reduction strategies, the importance of timely and accurate diagnosis, and the availability of existing support services.***
- *Encourage communities to become **dementia-friendly** - by making efforts to be inclusive of people with dementia and empowering them as valuable and contributing community members.*
- *Emphasize the benefits of providing **accessible, appropriate care and services to individuals with dementia and their families in improving quality of life and possibly delaying admission to long-term care.***

\* *Expanding dementia research* was identified as a best practice in all national dementia plans, but was not assessed in the current investigation.

## Recommendations for Action

Recommendations for action to improve dementia care in Saskatchewan are offered below, based on the report findings. The recommendations were developed over two steps. In the first step, the RaDAR Team workshopped 10 draft recommendations with participants of the 7<sup>th</sup> Summit of the Knowledge Network in Rural and Remote Dementia Care. Participants revised the recommendations, ranked the top 5, and suggested plans for action (see <http://www.cchsa-ccssma.usask.ca/ruraldementiacare/summit2014.html>). In the second step, the RaDAR-HQC Steering Committee endorsed the top 5 recommendations and provided further suggestions for revision.

These recommendations acknowledge the evidence presented in this report, that over a single 12-month period, 3,270 adults in Saskatchewan were diagnosed or otherwise identified with dementia and 13,012 were living with dementia (aged 45 years and over). These recommendations address the challenges associated with providing appropriate services to individuals with dementia and their families. These challenges will intensify over the coming years as our population ages if we do not develop long-term plans.

### Recommendations for Action

- 1. Include dementia in the provincial Chronic Disease Management Quality Improvement Program**, thereby establishing a patient registry and decision support tools (standardized care) for health care professionals similar to other chronic conditions (e.g., Diabetes Mellitus, Chronic Obstructive Pulmonary Disease, Coronary Artery Disease, Congestive Heart Failure). The following principles provide guidance:
  - A working group should be struck to develop clinical practice guidelines, visit flowsheets, and patient/family support tools, based on the best available evidence. The working group should involve experts in dementia, health care professionals, the Alzheimer Society, and other interested partners.
  - Clinical practice guidelines should be reviewed every three years or at the time that significant emerging evidence warrants a review.
- 2. Track quality indicators of dementia care provincially and by health region**, to ensure that individuals are properly assessed, diagnosed, and managed within the health care system. The following principles provide guidance:
  - Quality indicators should be identified in partnership with experts in dementia, health care professionals, health region representatives, eHealth, Health Quality Council, and other interested partners.
  - Quality indicators should be publicly reported annually, with changes over time and their implications noted.
- 3. Improve and encourage access to a timely and accurate diagnosis by:**
  - **Establishing and maintaining accessible and relevant continuing education programs for health care professionals** to improve skills in assessment, diagnosis, and management. Partners in these programs may include experts in dementia and dementia care, University of Saskatchewan, Telehealth Saskatchewan, Saskatchewan Medical Association, nursing associations, Alzheimer Society of Saskatchewan, health region representatives, and other interested partners.
  - **Increasing the capacity of local resources (e.g., primary health care, home care, and other support services) to provide the necessary post-diagnostic health and social services to individuals with dementia and their families.** Consider options to increase local community capacity to provide programs and services for individuals with dementia and their families, and dementia-specific training to health

care professionals. Increasing local community capacity may encourage help-seeking, as well as reduce the need for travel and early admission to long-term care.

4. Ensure that individuals with dementia and their families are adequately supported by considering:
  - Increasing investment in the First Link referral program provided by the Alzheimer Society of Saskatchewan, to ensure that links are made among individuals with dementia, their families, local health services, and Alzheimer Society programs.
  - Actions to improve the availability and frequency of home-based and community-based day care and respite care, including evening, weekend, and emergency care *particularly in rural communities*.
  - Opportunities for subsidized and/or free transportation for older adults *living in rural communities* outside of Saskatoon and Regina (specialist services) and outside of communities with the desired services.
  - The availability of services that have been developed to meet unique and complex needs (e.g., individuals who are recently new to Canada, living with children, living alone).
  
5. Review the *Provincial Strategy for Alzheimer Disease and Related Dementias in Saskatchewan* (released in 2004) and consider aligning with the proposed national strategy while reflecting the needs of individuals with dementia and their families living in Saskatchewan. In conjunction with a review of the provincial strategy:
  - Encourage partnerships among the Alzheimer Society of Saskatchewan, provincial Ministry of Health, other interested partners, and media - social, print, and broadcast - to raise public awareness of dementia, including warning signs, risk reduction strategies, the importance of timely and accurate diagnosis, and the availability of existing support services.
  - Encourage communities to become *dementia-friendly* - by making efforts to be inclusive of people with dementia and empowering them as valuable and contributing community members.
  - Emphasize the benefits of providing accessible, appropriate care and services to individuals with dementia and their families in improving quality of life and possibly delaying admission to long-term care.

## About the RaDAR Team

The Rural Dementia Action Research (RaDAR) Team is an interdisciplinary group of researchers from Ontario, Alberta, and the United Kingdom, based at the University of Saskatchewan.

Dr. Debra Morgan, Professor in the Canadian Centre for Health and Safety in Agriculture, College of Medicine (U of S), leads the RaDAR Team and is a founding member of the Gateway to Rural International Initiatives in Dementia (GRIID).



Since 2004, the RaDAR Team has been working together to improve rural and remote dementia care. RaDAR's flagship project is the Rural and Remote Memory Clinic, which began as a CIHR-funded demonstration project and is now funded by the Saskatchewan Ministry of Health. The Rural and Remote Memory Clinic focuses on diagnosing and managing atypical and complex cases of suspected dementia in patients living in rural and remote communities outside of Saskatoon and Regina.

The RaDAR Decision-Maker Advisory Council provides guidance to the team, meeting annually at the Summit of the Knowledge Network in Rural and Remote Dementia Care. The Council includes health care providers, family members, health region representatives, and governmental and community-based organizations.

To learn more about the research and activities of the RaDAR Team, visit their rural dementia care website: [www.cchsa-ccssma.usask.ca/ruraldementiacare](http://www.cchsa-ccssma.usask.ca/ruraldementiacare). To learn more about GRIID, visit [www.ruraldementia.com](http://www.ruraldementia.com).

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Andrew Dunn (Seniors Consultant, Community Care Branch), Elaine Halvorsen (RAI MDS Program Consultant), Linda Restau (Director, Continuing Care and Rehabilitation, Community Care Branch), and Stefanie Wihlidal (Seniors Consultant, Community Care Branch)



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## Appendix

Table A1 Case definition algorithms employed to identify dementia in administrative health databases, by Canadian study

Study/Institute	Case definition algorithm <sup>b</sup>	Age group	Timeframe
Present study <sup>a</sup>	$\geq 1$ physician visits or $\geq 1$ hospitalizations or $\geq 1$ prescriptions for a cholinesterase inhibitor or [a RAI-MDS CPS score of $\geq 2$ and/or (a disease category of Alzheimer's disease or dementia other than Alzheimer's disease)]	$\geq 45$ years	1 year (2012-2013)
Manitoba Centre for Health Policy <sup>c</sup>	$\geq 1$ physician visits or $\geq 1$ hospitalizations	$\geq 55$ years	5 years
Chartier et al. 2012	$\geq 1$ physician visits or $\geq 1$ hospitalizations	$\geq 55$ years	5 years (2004-2009)
Martens et al. 2010	$\geq 1$ physician visits or $\geq 1$ hospitalizations	$\geq 55$ years	5 years (2002-2007)
Fransoo et al. 2009	$\geq 1$ physician visits or $\geq 1$ hospitalizations	$\geq 55$ years	5 years (1996-2001) and 5 years (2001-2006)
Gill et al. 2011	$\geq 1$ physician visits or $\geq 1$ hospitalizations or any cholinesterase inhibitor prescription	66-105 years	5 years (2002-2007) for physician and hospital data; 1 year for prescription data (2006-2007)
Jacklin et al. 2013	$\geq 1$ physician visits	all ages	1 year (2008-2009)
Jacklin and Walker 2012	$\geq 2$ physician visits or $\geq 1$ hospitalizations	$\geq 60$ years	1 year (2006-2007)

<sup>a</sup> See 'case definition criteria' (Methods section) for the complete case definition algorithm employed in the present study

<sup>b</sup> See Table A2 for the diagnosis codes and other criteria employed to identify dementia cases in each study

<sup>c</sup> Research institute

Table A2 Diagnosis codes and other criteria employed to identify dementia cases in administrative health databases, by Canadian study<sup>a</sup>

Diagnosis codes	Publication/Study							
	Present Study	Manitoba Centre for Health Policy (MCHP), 2012	Chartier et al. 2012	Martens et al. 2010	Fransoo et al. 2009	Gill et al. 2011	Jacklin et al. 2013	Jacklin and Walker 2012
Hospital Discharge Abstract Database ICD-9 (1996-2001)								
290.0 Senile dementia, simple type	Y	Y	Y	Y	Y	Y		Y
290.1 Presenile dementia	Y	Y	Y	Y	Y	Y		Y
290.2 Senile dementia, depressed or paranoid type	Y	Y	Y	Y	Y	Y		Y
290.3 Senile dementia with acute confusional state	Y	Y	Y	Y	Y	Y		Y
290.4 Arteriosclerotic dementia	Y	Y	Y	Y	Y	Y		Y
290.8 Other senile and presenile organic psychotic conditions	Y	Y	Y	Y	Y	Y		Y
290.9 Unspecified senile and presenile organic psychotic conditions	Y	Y	Y	Y	Y	Y		Y
291.1 Korsakov's psychosis, alcoholic	Y	Y	Y	Y	Y			
291.2 Other alcoholic dementia	Y	Y	Y	Y	Y			
292.8 Other drug psychoses	Y	Y	Y	Y	Y			
294.0 Korsakov's psychosis or syndrome (nonalcoholic)	Y	Y	Y	Y	Y			Y
294.1 Dementia in conditions classified elsewhere	Y	Y	Y	Y	Y			Y
294.8 Other organic psychotic conditions (chronic)	Y	Y	Y	Y	Y			Y
294.9 Unspecified other organic psychotic conditions (chronic)	Y	Y	Y	Y	Y			Y
331.0 Alzheimer's disease	Y	Y	Y	Y	Y	Y		Y
331.1 Pick's disease	Y	Y	Y	Y	Y	Y		Y
331.2 Senile degeneration of brain	Y	Y	Y	Y	Y	Y		Y
331.3 Communicating hydrocephalus	Y	Y	Y	Y	Y	Y		Y



Diagnosis codes	Publication/Study							
	Present Study	Manitoba Centre for Health Policy (MCHP), 2012	Chartier et al. 2012	Martens et al. 2010	Fransoo et al. 2009	Gill et al. 2011	Jacklin et al. 2013	Jacklin and Walker 2012
331.4 Obstructive hydrocephalus	Y	Y	Y	Y	Y	Y		Y
331.5 Jakob-Creutzfeldt disease	Y	Y	Y	Y	Y	Y		Y
331.6 Progressive multifocal leucoencephalopathy	Y	Y	Y	Y	Y	Y		Y
331.7 Cerebral degeneration in other diseases classified elsewhere	Y	Y	Y	Y	Y	Y		Y
331.8 Other cerebral deeneration	Y	Y	Y	Y	Y	Y		Y
331.9 Unspecified	Y	Y	Y	Y	Y	Y		Y
797 Senility without mention of psychosis	Y	Y	Y	Y	Y	Y		Y
Hospital Discharge Abstract Database ICD-10-CA (2001-2013)								
F00.0 Dementia in Alzheimer's Disease with early onset	Y	Y	Y	Y	Y	Y		Y
F00.1 Dementia in Alzheimer's Disease with late onset	Y	Y	Y	Y	Y	Y		Y
F00.2 Dementia in Alzheimer's Disease, atypical or mixed type	Y	Y	Y	Y	Y	Y		Y
F00.9 Dementia in Alzheimer's Disease, unspecified	Y	Y	Y	Y	Y	Y		Y
F01.0 Vascular dementia of acute onset	Y	Y	Y	Y	Y	Y		Y
F01.1 Multifarct dementia	Y	Y	Y	Y	Y	Y		Y
F01.2 Subcortical vascular dementia	Y	Y	Y	Y	Y	Y		Y
F01.3 Mixed cortical and subcortical vascular dementia	Y	Y	Y	Y	Y	Y		Y
F01.8 Other vascular dementia	Y	Y	Y	Y	Y	Y		Y
F01.9 Vascular dementia, unspecified	Y	Y	Y	Y	Y	Y		Y
F02.0 Dementia in Pick's disease	Y	Y	Y	Y	Y	Y		Y
F02.1 Dementia in Creutzfeldt-Jakob disease	Y	Y	Y	Y	Y	Y		Y
F02.2 Dementia in Huntington's disease	Y	Y	Y	Y	Y	Y		Y

Diagnosis codes	Publication/Study							
	Present Study	Manitoba Centre for Health Policy (MCHP), 2012	Chartier et al. 2012	Martens et al. 2010	Fransoo et al. 2009	Gill et al. 2011	Jacklin et al. 2013	Jacklin and Walker 2012
F02.3 Dementia in Parkinson's disease	Y	Y	Y	Y	Y	Y		Y
F02.4 Dementia in human immunodeficiency virus HIV disease	Y	Y	Y	Y	Y	Y		Y
F02.8 Dementia in other specified diseases classified elsewhere	Y	Y	Y	Y	Y	Y		Y
F03 Unspecified dementia	Y	Y	Y	Y	Y	Y		Y
F04 Organic amnesic syndrome, not induced by alcohol and other psychoactive substances	Y	Y	Y	Y	Y			
F05.1 Delirium superimposed on dementia	Y	Y	Y	Y	Y	Y		
F06.8 Other specified mental disorders due to brain damage and dysfunction and to physical disease	Y	Y	Y	Y	Y	Y		
F06.9 Unspecified mental disorder due to brain damage and dysfunction and to physical disease	Y	Y	Y	Y	Y	Y		
F09 Unspecified organic or symptomatic mental disorder	Y	Y	Y	Y	Y	Y		
F10.6 Mental and behavioural disorders due to use of alcohol, amnesic syndrome	Y			Y	Y			
F10.7 Mental and behavioural disorders due to use of alcohol, residual and late-onset psychotic disorder	Y	Y	Y	Y	Y			
F18.6 Mental and behavioural disorders due to use of volatile solvents, amnesic syndrome	Y			Y	Y			
F18.7 Mental and behavioural disorders due to use of volatile solvents, residual and late-onset psychotic disorder	Y	Y	Y	Y	Y			

Diagnosis codes	Publication/Study							
	Present Study	Manitoba Centre for Health Policy (MCHP), 2012	Chartier et al. 2012	Martens et al. 2010	Fransoo et al. 2009	Gill et al. 2011	Jacklin et al. 2013	Jacklin and Walker 2012
F19.6 Mental and behavioural disorders due to multiple drug use and use of other psychoactive substances, amnesic syndrome	Y			Y	Y			
F19.7 Mental and behavioural disorders due to multiple drug use and use of psychoactive substances, residual and late-onset psychotic disorder	Y	Y	Y	Y	Y			
G30.0 Alzheimer's disease with early onset	Y	Y	Y	Y	Y	Y		Y
G30.1 Alzheimer's disease with late onset	Y	Y	Y	Y	Y	Y		Y
G30.8 Other Alzheimer's disease	Y	Y	Y	Y	Y	Y		Y
G30.9 Alzheimer's disease, unspecified	Y	Y	Y	Y	Y	Y		Y
G31.0 Circumscribed brain atrophy	Y	Y	Y	Y	Y	Y		
G31.1 Senile degeneration of brain, not elsewhere classified	Y	Y	Y	Y	Y	Y		
G91.0 Communicating hydrocephalus	Y	Y	Y	Y	Y			
G91.2 Normal-pressure hydrocephalus	Y	Y	Y	Y	Y			
R54 Senility	Y	Y	Y	Y	Y	Y		
Physician Services Claims Database & Physician Characteristics Database ICD-9 (2001-2013)								
290 Senile and presenile organic psychotic conditions	Y	Y	Y	Y	Y	Y	Y	Y
294 Other organic psychotic conditions chronic	Y	Y	Y	Y	Y			Y
331 Other cerebral degenerations	Y	Y	Y	Y	Y	Y	Y	Y
797 Senility without mention of psychosis	Y	Y	Y	Y	Y	Y		
Prescription Drug Database (2001-2013)								
Aricept (02232043, 02232011)	Y					Y		

Diagnosis codes	Publication/Study							
	Present Study	Manitoba Centre for Health Policy (MCHP), 2012	Chartier et al. 2012	Martens et al. 2010	Fransoo et al. 2009	Gill et al. 2011	Jacklin et al. 2013	Jacklin and Walker 2012
Exelon (0224215-0224218, 02245240)	Y					Y		
Reminyl (02244298-02244300, 02266717, 02266725, 02266733)	Y					Y		
Resident Assessment Index – Minimum Data Set (RAI-MDS) (2004-2013)								
Cognitive Performance Scale Score $\geq 2$	Y							
Diagnosis of Alzheimer’s Disease	Y							
Diagnosis of Dementia other than Alzheimer’s Disease	Y							

<sup>a</sup> All diagnosis codes and other criteria that were used to identify dementia cases in the present study are listed in this table. However, some of the cited studies used additional codes that are not listed in this table.

*Note.* In line with MCHP recommendations, and in contrast to earlier Canadian studies of dementia in hospital data 2001 and onward (Martens et al. 2010; Fransoo et al. 2009), the present study excluded most ICD-10-CA codes of ‘mental and behavioural disorders’ due to the use of alcohol, illicit drugs, sedatives, stimulants, tobacco, volatile solvents, and other multiple drug use combined with psychoactive substances (exceptions noted above) [i.e., F10.5, F11.0, F11.3-11.6, F11.8, F11.9, F12.0, F12.3-12.6, F12.8, F12.9, F13.0, F13.3-F13.6, F13.8, F13.9, F14.0, F14.3-14.6, F14.9, F15.0, F15.3-15.6, F15.8, F15.9, F16.0, F16.3-16.6, F16.8, F16.9, F17.0, F17.3-F17.9, F18.0, F18.3-F18.5, F18.8, F18.9, F19.0, F19.3-19.5, F19.8, F19.9]. In contrast to MCHP recommendations and earlier studies (Martens et al. 2010; Fransoo et al. 2009), the present study excluded ICD-10-CA codes of ‘mental and behavioural disorders residual and late-onset psychotic disorder’, due to use of illicit drugs, sedatives, and stimulants (i.e., F11.7, F12.7, F13.7, F14.7, F15.7, F16.7). Further, in contrast to MCHP recommendations and earlier studies (Martens et al. 2010; Fransoo et al. 2009), the present study excluded certain ICD-10-CA codes of ‘degenerative diseases of nervous system’ (G31.9, G32.8), certain ‘hydrocephalus’ codes (G91.1, G91.3, G91.8, G91.9), ‘Reye’s syndrome’ (G93.7), and all ‘other disorders of brain in diseases classified elsewhere’ (G94.0, G94.1, G94.2, G94.8). The present study also excluded ICD-10-CA codes of ‘organic dissociative disorder (F06.5) and ‘organic emotionally labile disorder’ (F06.6), in contrast to MCHP recommendations and earlier studies (Martens et al. 2010; Fransoo et al. 2009, Gill et al. 2011).

Table A3 Environmental Scan response rate by health region<sup>a</sup>

Health Region	n	N	Response rate (%)
Five Hills	8	7	100.0
Heartland	9	14	64.3
Kelsey Trail	5	10	50.0
Northern <sup>b</sup>	4	8+	50.0
Regina Qu'Appelle <sup>c</sup>	22	33	66.7
Saskatoon <sup>d</sup>	4	55	7.3
Sun Country	22	37	59.5
Sunrise	8	16	50.0
Total	82	180	45.6

<sup>a</sup> Four health regions did not have a sufficient number of environmental scan respondents to include in the present report (Mamawetan Churchill River, Cypress, Prairie North, and Prince Albert Parkland)

<sup>b</sup> Northern health regions include Keewatin Yatthe and Athabasca Health Authority

<sup>c</sup> Included 8 rural and 14 urban respondents

<sup>d</sup> All Saskatoon Health Region respondents were rural

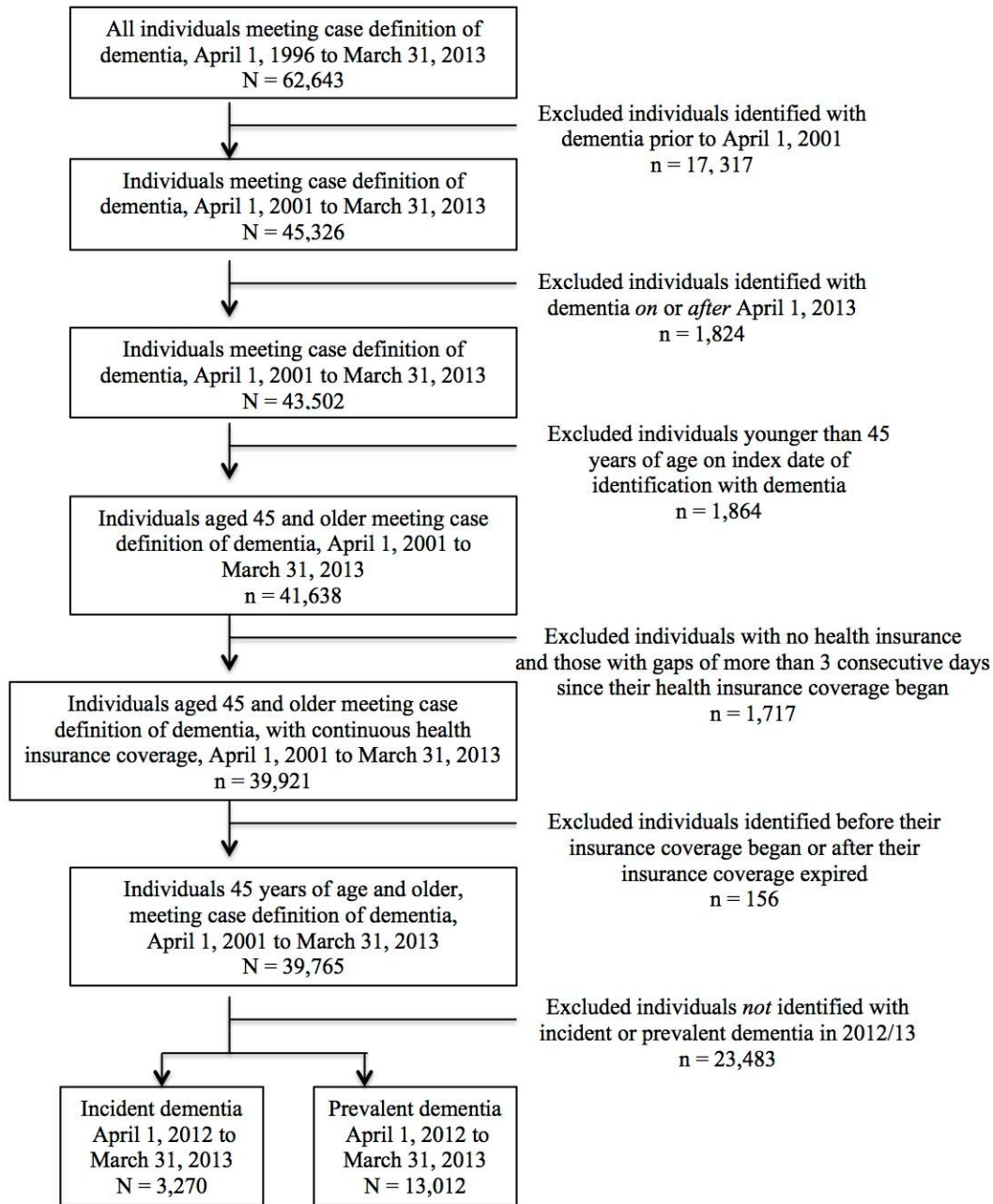


Figure A1 Identification of incident and prevalent cases of dementia (2012/13) based on case definition criteria

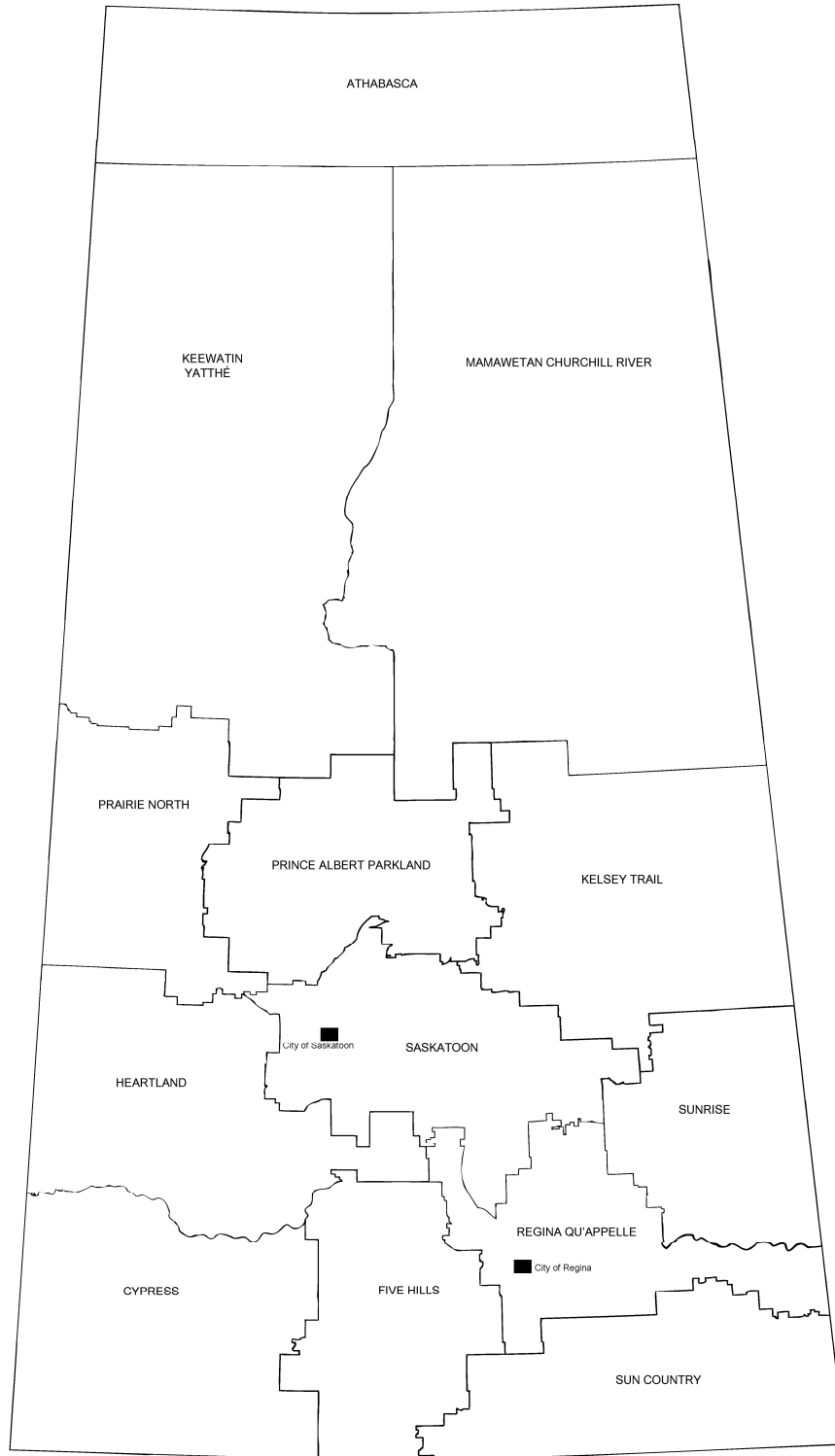


Figure A2 Saskatchewan health regions

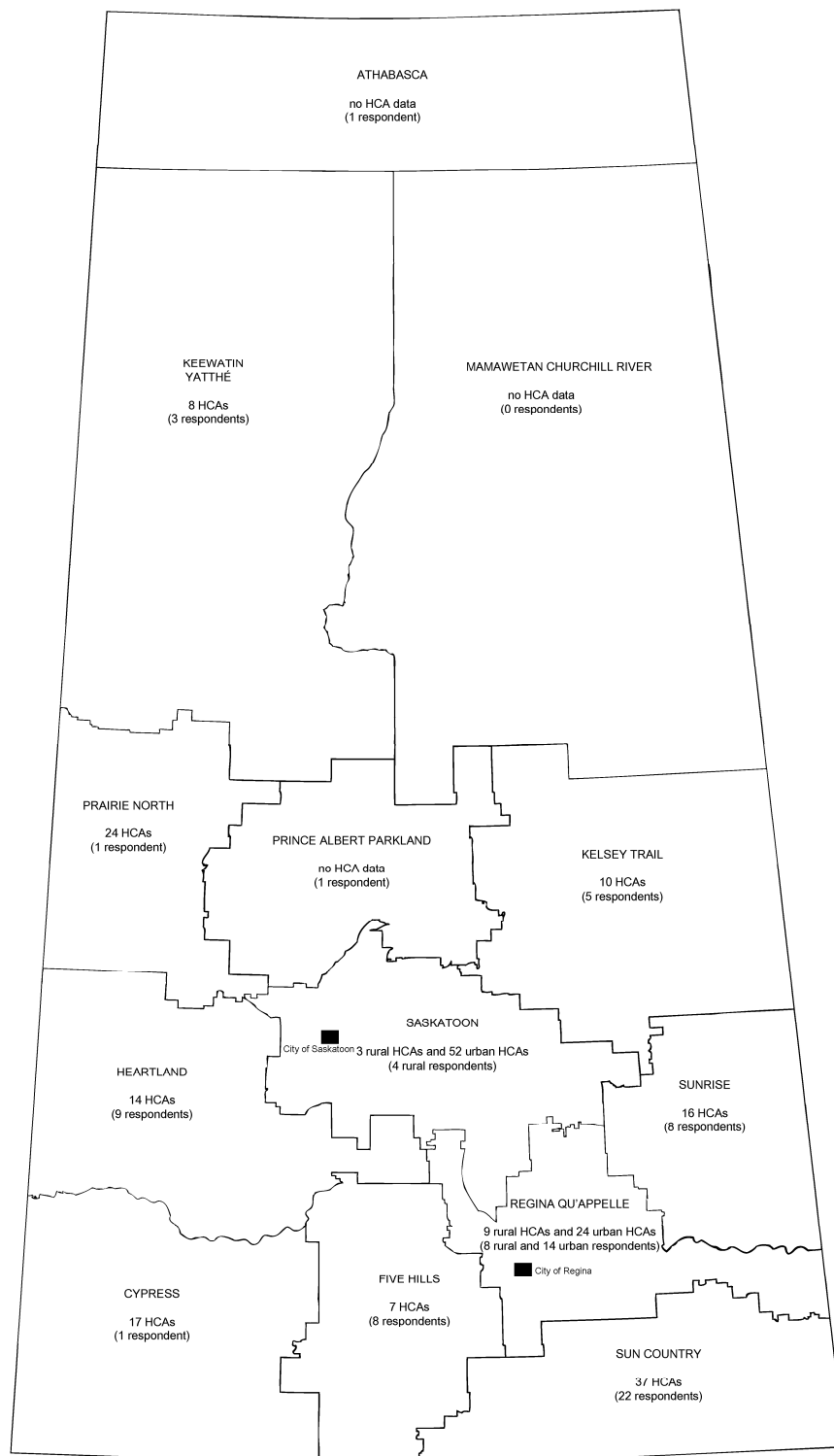


Figure A3 Number of Home Care Assessors (HCAs) and Environmental Scan respondents by health region, Saskatchewan, 2013





