

# Northern Saskatchewan Health Indicators

Health Status: Chronic Disease

# 2023

Population Health Unit

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Refer to A Guide to the Reports: Understanding the Presentation of Data for an explanation of the variety of ways data is presented.

Suggested reference: Quinn B, Irvine J. Northern Saskatchewan Health Indicators, Health Status: Chronic Disease. Athabasca Health Authority and Saskatchewan Health Authority, Population Health Unit, La Ronge, 2023.

Copies of this document and related reports can be downloaded from the Population Health Unit website [www.pophealthnorthsask.ca](http://www.pophealthnorthsask.ca)

## KEY MESSAGES

For the purpose of this report, northern Saskatchewan refers to North East networks 1 and 2, and North West network 1 within the Saskatchewan Health Authority (SHA), as well as the Athabasca Health Authority (AHA). For a full description of geographical area making up northern Saskatchewan boundaries, and boundaries for northern Networks and Small Area Geographies (SAG's) please see the Community Characteristics Report "Geographical and Political Profile".

### *Chronic Disease*

The Ministry of Health uses the infrastructure and case definitions of the Canadian Chronic Disease Surveillance System (CCDSS) to calculate the Saskatchewan chronic disease prevalence estimates for residents of Saskatchewan living on and off-reserve. Prevalence is the total number of people known to be living with a disease at any time during a specific period and is influenced by both the number of new cases occurring (incidence) and the duration of a disease (survival). Prevalence is a way of assessing the overall burden of disease such as chronic diseases in a population. One of the components of this methodology is that chronic diseases are estimated for specific age categories. For example, asthma and diabetes are estimated for the population aged 1 year and older, hypertension (HTN), ischemic heart disease (IHD), osteoarthritis, and stroke are estimated for those aged 20 years and older, and chronic obstructive pulmonary disease (COPD) and heart failure are estimated for those aged 35 and 40 years and older, respectively. All disease counts were rounded to the nearest 10 for privacy and rate stability precautions.

In 2020/21 there were approximately 3,390 and 2,430 individuals aged 1 year and older living with diabetes and asthma, in northern Saskatchewan. There were an additional 4,590 living with hypertension, 2,430 with osteoarthritis, 1,470 with IHD and 600 with stroke in individuals 20 years and older. There were also 1,560 individuals aged 35 years and older, 490 individuals aged 40 years and older and 110 individuals aged 65 years and older in northern Saskatchewan living with COPD, Heart Failure, and Dementia-Alzheimer's, respectively.

Compared to the province, the crude rates of most chronic diseases in northern Saskatchewan were lower than provincial rates, although diabetes, COPD and heart failure were similar. This is not surprising as compared to the north, the province has a much older population and chronic diseases are more common in the older age groups. However, the age-standardized (age-std) rates, which control for the impact of age, indicate a significantly higher risk of many chronic diseases in most of the northern geographies.

### *Asthma*

The provincial age-std prevalence rate of asthma was 11.3% and significantly higher than all of the northern networks and SAG's. The Creighton SAG had the highest rate in the north at 7.8%, while AHA had the lowest rate of 4.4%.

### *Chronic obstructive pulmonary disease (COPD)*

The provincial age-std rate of COPD was 10.5%, which was significantly lower than AHA (18.2%) and the Ile a la Crosse (13.9%) and La Loche (18.0%) SAG's, while being similar to the La Ronge (11.4%) Creighton (11.2%), and Pelican Narrows (9.3%) SAGs.

### ***Dementia-Alzheimer's***

Due to small numbers, age-std rates of Dementia-Alzheimer's were highly variable, especially at the SAG level. Rates for AHA, NW1.1 and NE2.1 were suppressed because of such low numbers whereas rates in North East 1 network (4.7%) and North West 1 network (5.9%) were similar to the provincial rate of 5.5%. The rate in North East network 2 (3.0%) was significantly lower than the province.

### ***Diabetes***

The provincial age-std prevalence rate of diabetes was 8.5%, which was significantly lower than rates in the AHA (12.1%) and the Ile a la Crosse (14.7%), Pelican Narrows (16.5%), and La Ronge (14.0%) SAG's, while being similar to the Creighton (9.4%) and La Loche (8.0%) SAG's.

### ***Ischemic heart disease (IHD)***

The provincial age-std rate of IHD was 7.5%, which was significantly lower than rates in the AHA (10.5%) and the Ile a la Crosse (9.9%), Pelican Narrows (12.1%), and La Ronge (8.6%) SAG's, while being similar to the Creighton (6.5%) and La Loche (7.7%) SAG's.

### ***Heart failure***

Saskatchewan's age-std rate of heart failure was 4.1%, which was significantly lower than AHA (7.4%) and the Ile a la Crosse (5.8%), Pelican Narrows (6.5%), and La Loche (6.2%) SAG's, while being similar to the Creighton (4.6%) and La Ronge (4.7%) SAG's.

### ***Hypertension (HTN)***

Close to 1 in 4 Saskatchewan adults aged 20 years and above have hypertension (26.3%). Comparatively, the Ile a la Crosse SAG had a significantly higher rate (28.4%) of hypertension, while the AHA (21.9%) and the Pelican Narrows (22.3%), La Loche (21.8%) and La Ronge (24.6%) SAG's had significantly lower rates and the Creighton SAG (25.9%) had a similar rate.

### ***Osteoarthritis***

The age-std prevalence rate of osteoarthritis in Saskatchewan adults aged 20 years and over was 13.6%. In the north, the AHA (20.0%) and the La Loche (17.8%) and Creighton (16.8%) SAGs had significantly higher rates, while the La Ronge (12.2%) and Pelican Narrows (11.4%) SAGs had significantly lower rates and the Ile a la Crosse SAG (12.6%) had a similar rate, compared to the province.

### ***Stroke***

The prevalence rate of stroke in those aged 20 years and over in Saskatchewan was 3.1%. The age-std rate in the Ile a la Crosse (4.2%), Pelican Narrows (4.2%), and La Ronge SAGs (3.8%) were significantly higher than the province, while the rate in the Creighton (2.4%), and La Loche SAG (2.4%) and the AHA (1.9%) were considered similar.

# HEALTH STATUS

## Chronic Disease

Figure 1: Disease counts, for selected chronic diseases, northern Saskatchewan, 2020/21

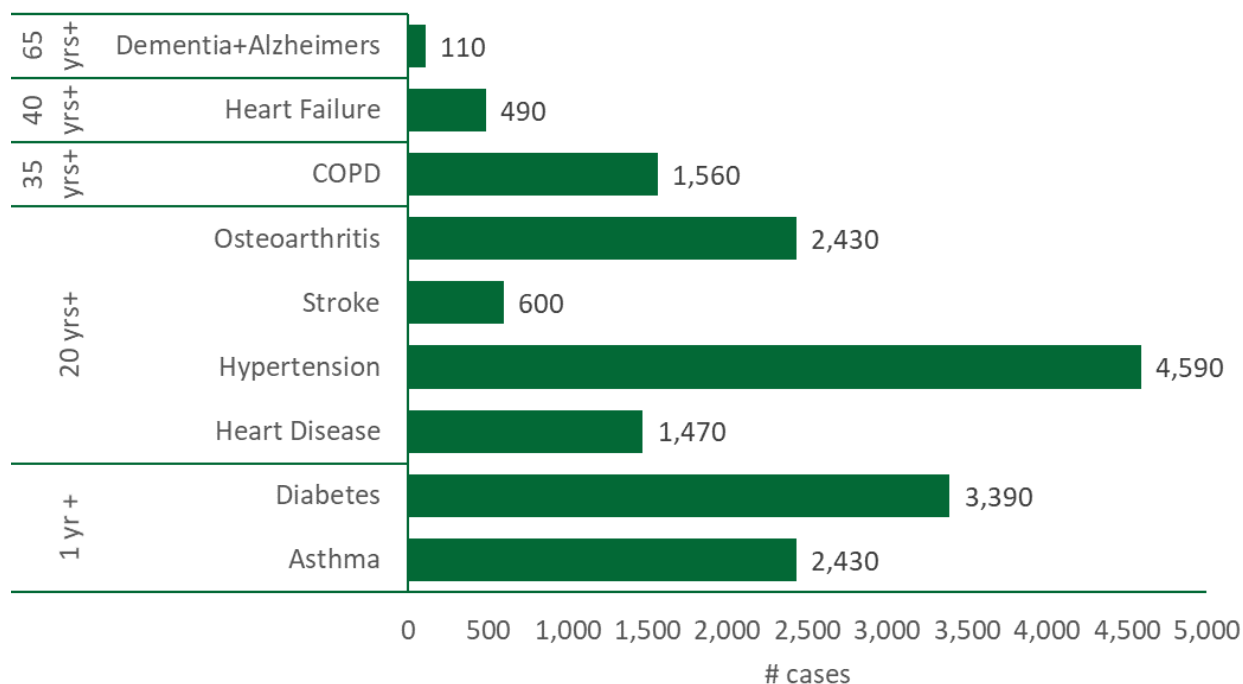
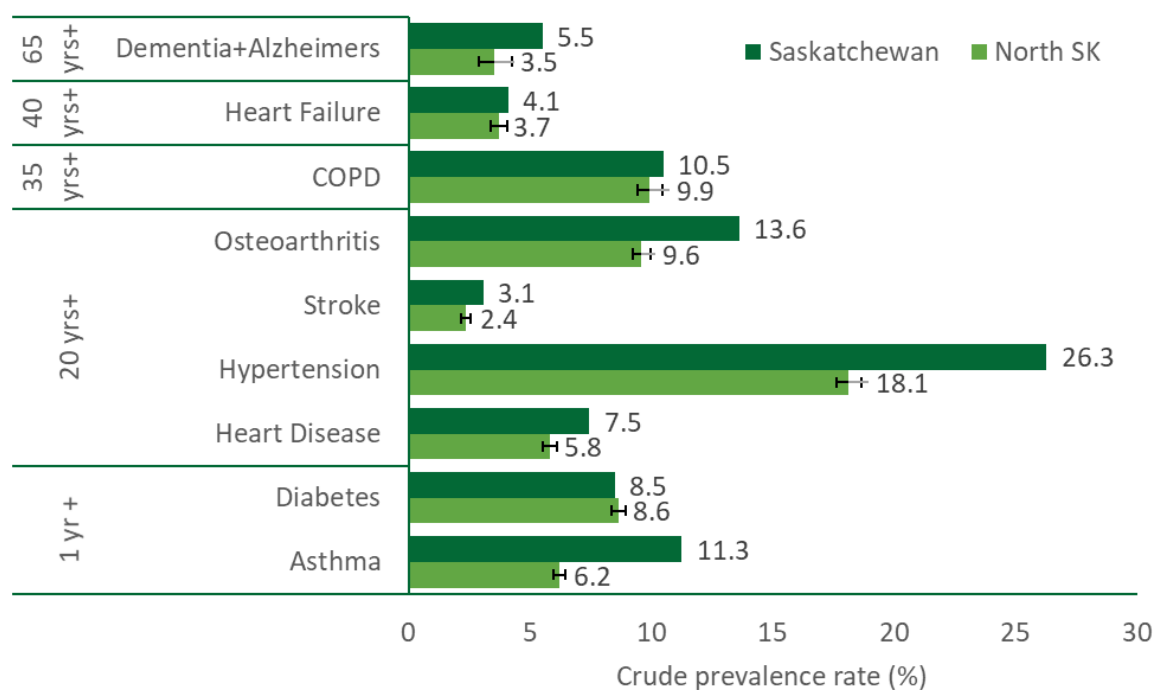
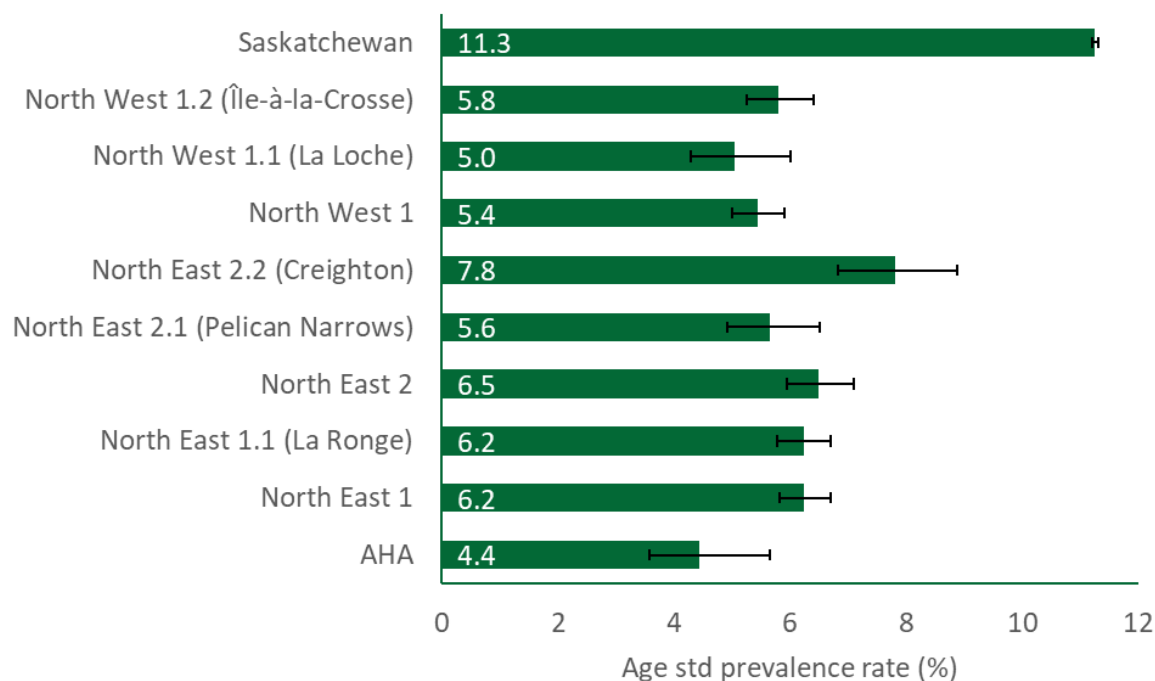


Figure 2: Crude prevalence rates (%), selected chronic diseases by age groups, northern Saskatchewan and Saskatchewan, 2020/21



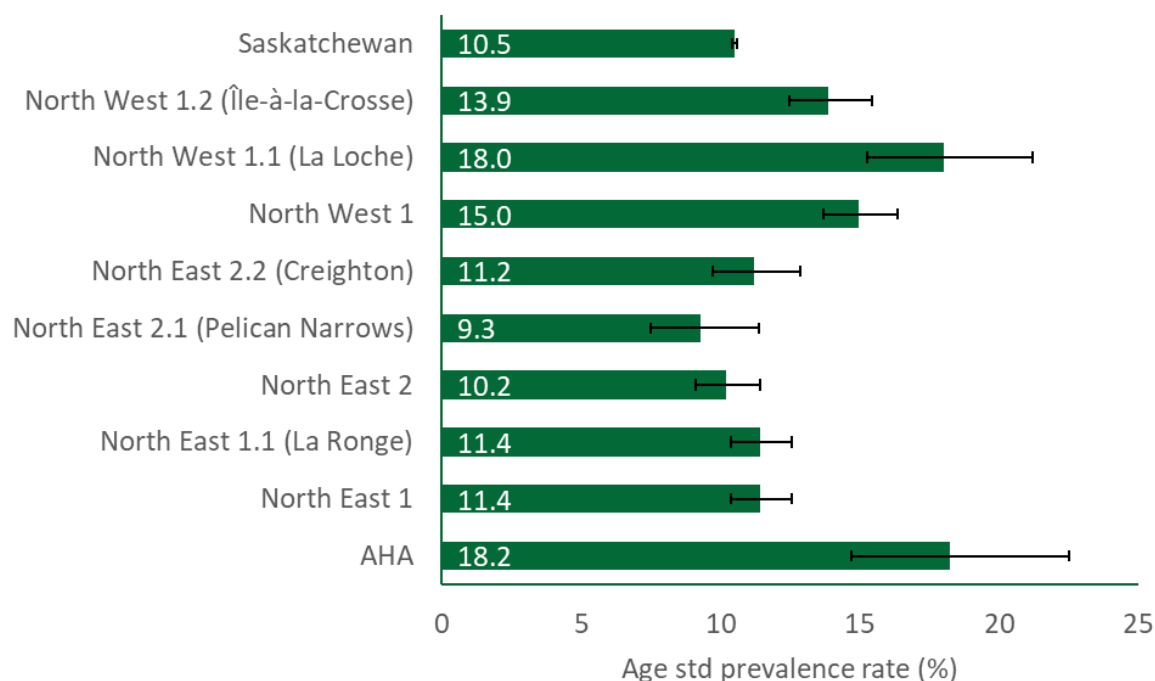
## Asthma

**Figure 3: Age-standardized asthma prevalence rate (%), by northern Saskatchewan health network, SAG, Athabasca Health Authority and Saskatchewan, 2020/21**



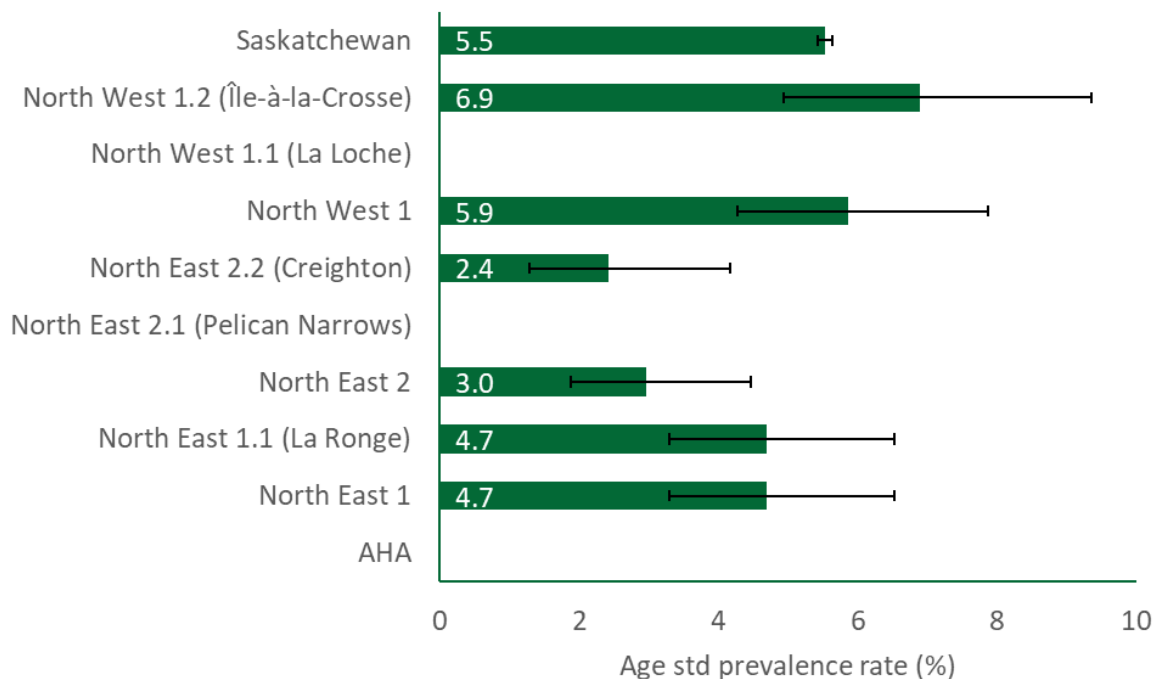
## COPD

**Figure 4: Age-standardized COPD prevalence rate (%), northern Saskatchewan health network, SAG, Athabasca Health Authority and Saskatchewan, 2020/21**



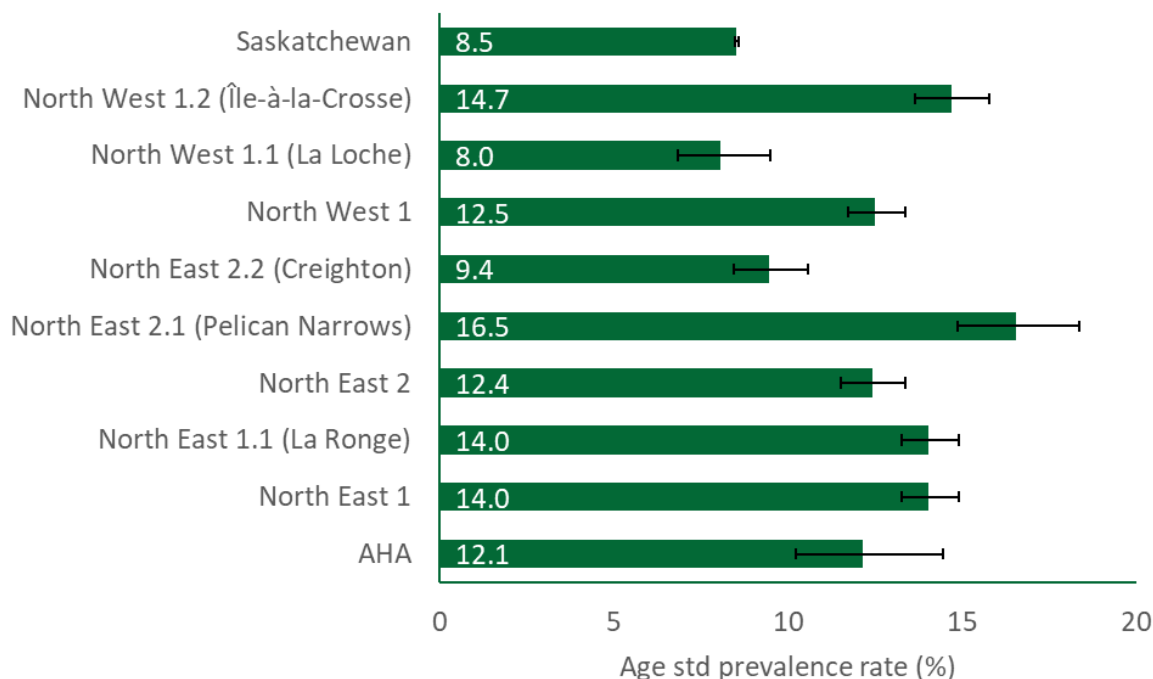
## Dementia-Alzheimer's

**Figure 5: Age-standardized Dementia-Alzheimer's prevalence rate (%), northern Saskatchewan health network, SAG, Athabasca Health Authority and Saskatchewan, 2020/21**



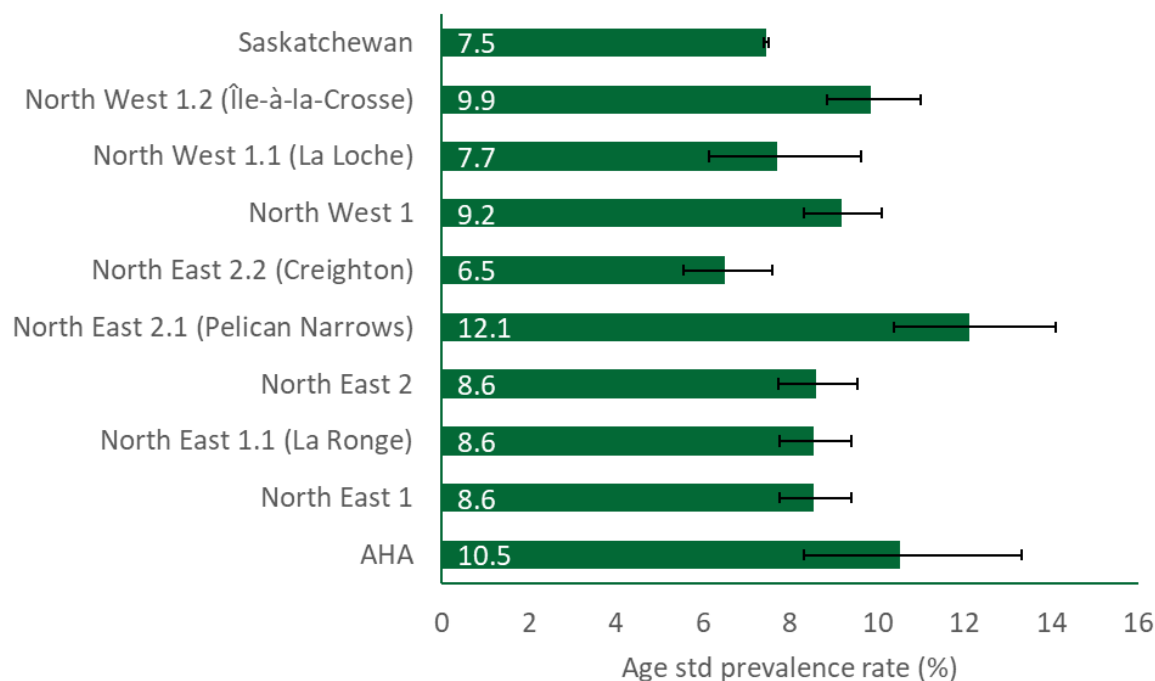
## Diabetes

**Figure 6: Age-standardized diabetes prevalence rate (%), by northern Saskatchewan health network, SAG, Athabasca Health Authority and Saskatchewan, 2020/21**



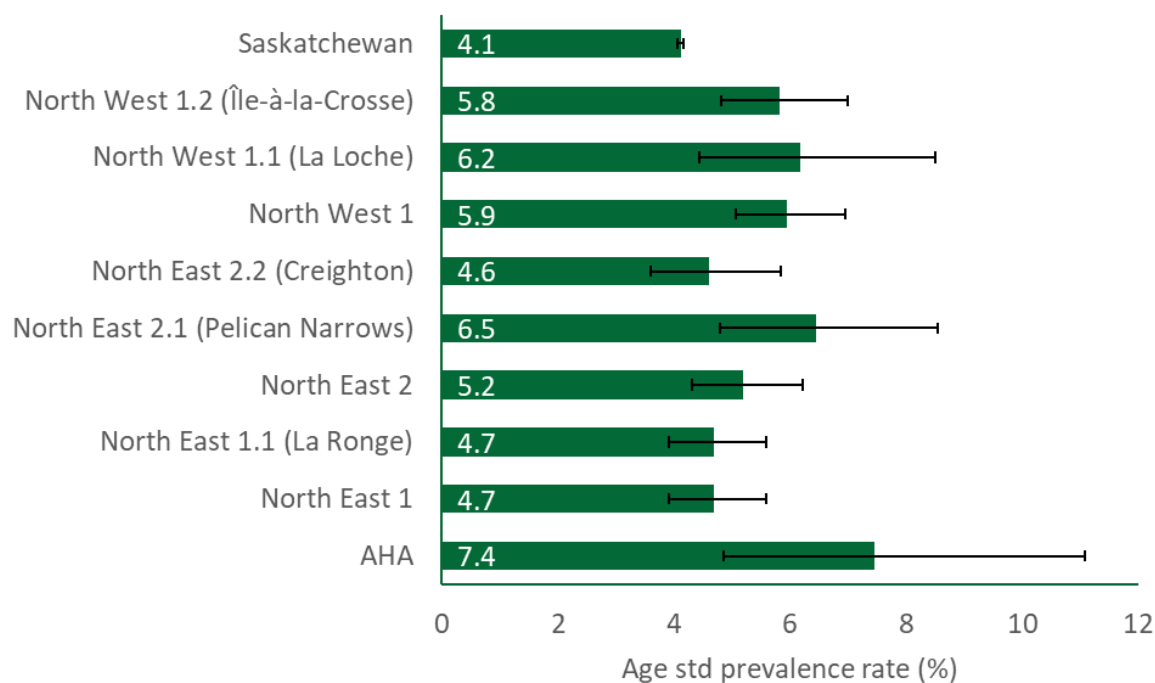
## Ischemic Heart Disease

**Figure 7: Age-standardized IHD prevalence rate (%), by northern Saskatchewan health network, SAG, Athabasca Health Authority and Saskatchewan, 2020/21**



## Heart failure

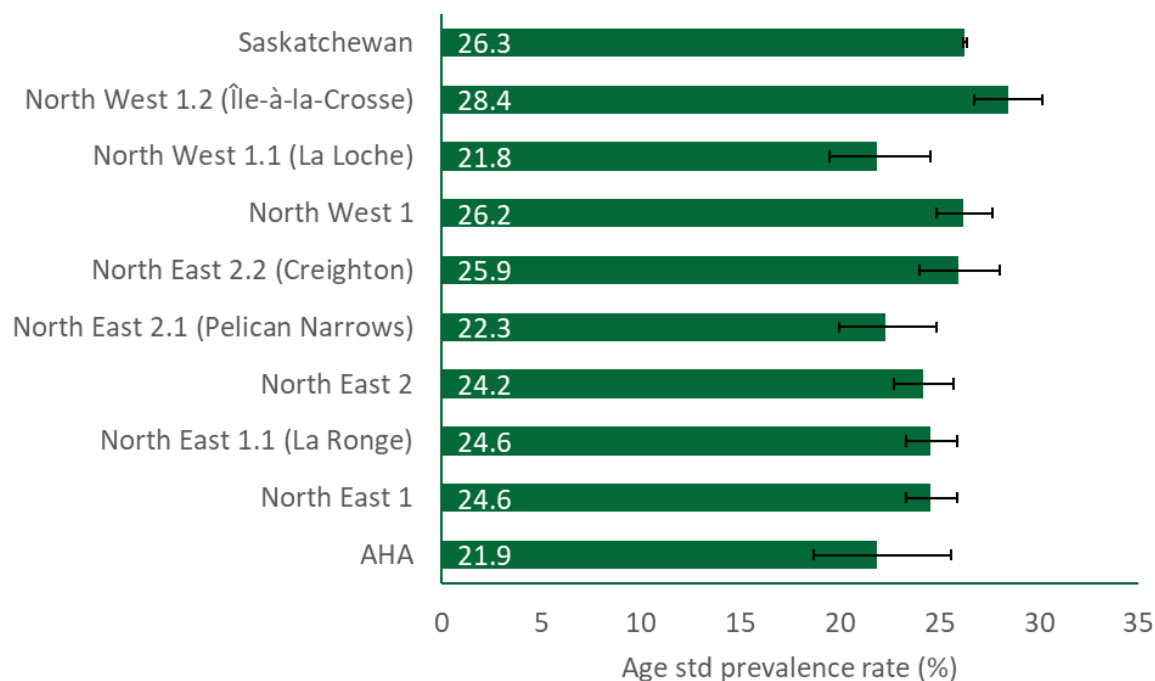
**Figure 8: Age-standardized heart failure prevalence rate (%), by northern Saskatchewan health network, SAG, Athabasca Health Authority and Saskatchewan, 2020/21**





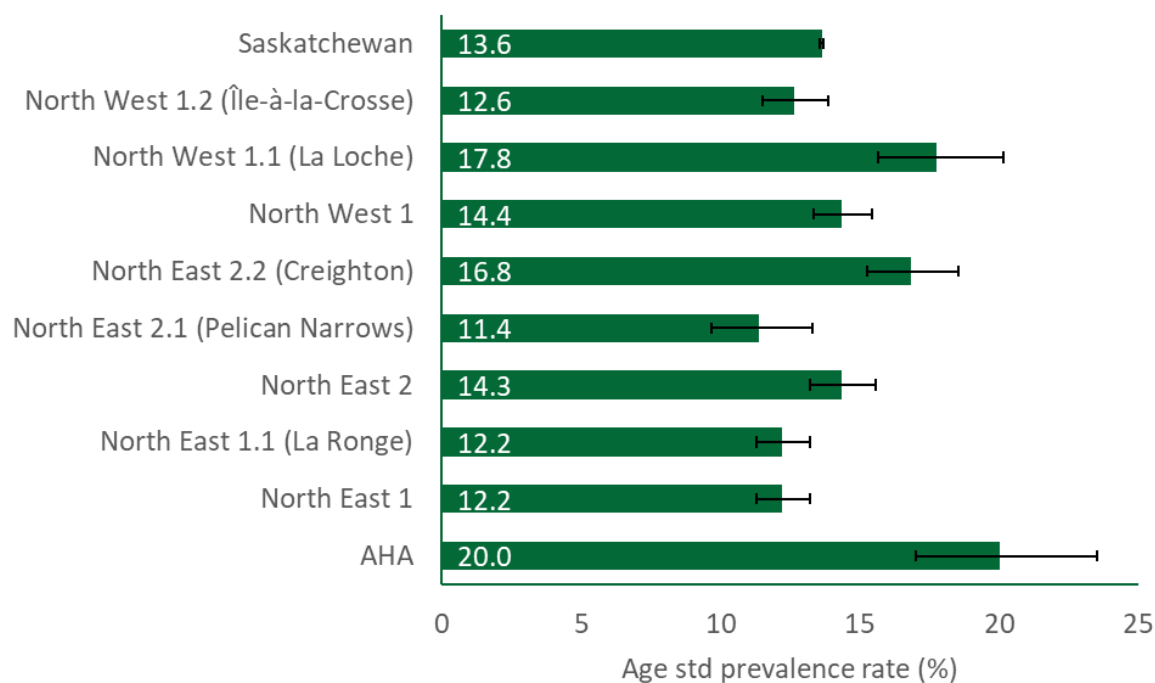
## Hypertension

**Figure 9: Age-standardized hypertension prevalence rate (%), by northern Saskatchewan network and Saskatchewan, 2020/21**



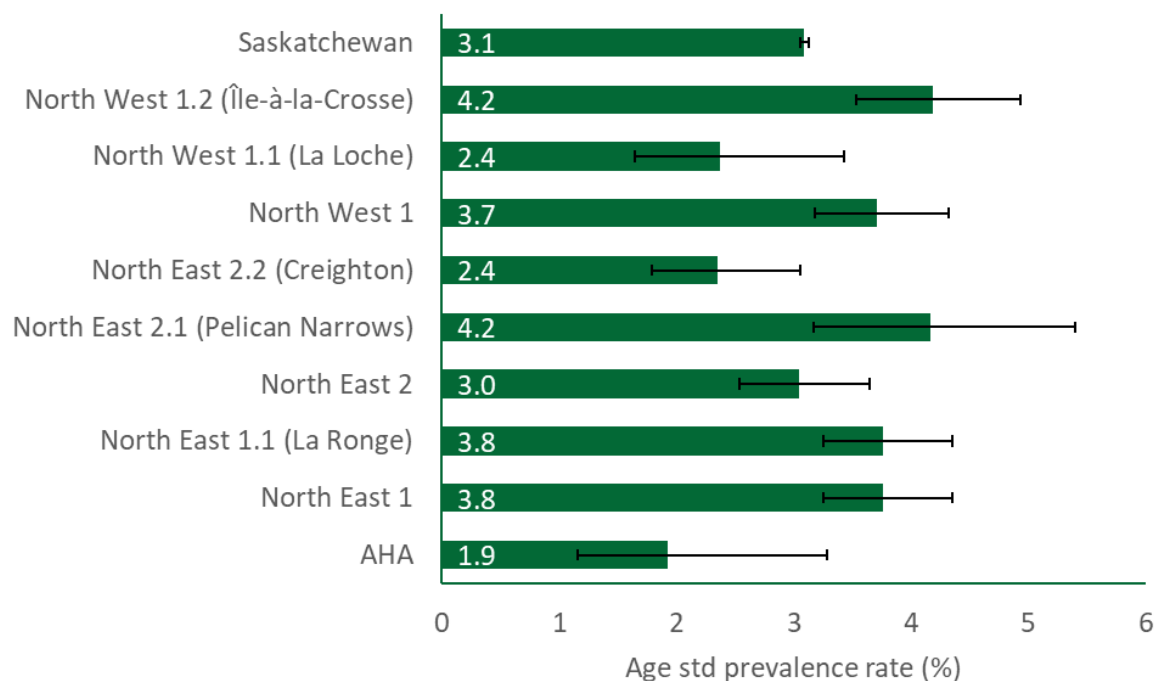
## Osteoarthritis

**Figure 10: Age-standardized Osteoarthritis prevalence rate (%), by northern Saskatchewan health network, SAG, Athabasca Health Authority and Saskatchewan, 2020/21**



## Stroke

**Figure 11: Age-standardized stroke prevalence rate (%), by northern Saskatchewan health network, SAG, Athabasca Health Authority and Saskatchewan, 2020/21**



# APPENDIX A – DATA NOTES

## Data Sources

**Chronic disease prevalence estimates 2020/21** – The Ministry of Health uses the infrastructure and case definitions of the Canadian Chronic Disease Surveillance System (CCDSS), which is supported by the Public Health Agency of Canada), to calculate the Saskatchewan chronic disease prevalence estimates. This method is based on linkage of administrative data sources including: Person Health Registry System (PHRS) which includes all residents eligible for Saskatchewan health benefits; hospital services which include data on inpatient separations for patients treated in hospitals; and medical services which include physician and nurse practitioner service claims. Diagnoses are coded on the hospital files according to the ICD-10-CA or ICD-9 system, depending on the year. Diagnoses on the medical services files are coded according to ICD-9 system in all years. Ascertainment of chronic disease cases in the CCDSS starts with the 1995/96 fiscal year. For each disease there is a specified definition of the number of hospital admissions or medical service visits in a specific time period for specific ICD9/10CA codes (see Appendix C).

Prevalence is the total number of people known to be living with a disease at any time during a specific period and is influenced by both the number of new cases occurring (incidence) and the duration of a disease (survival). In this methodology, chronic diseases are estimated for specific age categories. For example, asthma and diabetes are estimated for the population aged 1 year and older, hypertension (HTN), ischemic heart disease (IHD), osteoarthritis, and stroke are estimated for those aged 20 years and older, and chronic obstructive pulmonary disease (COPD) and heart failure are estimated for those aged 35 and 40 years and older, respectively. All disease counts were rounded to the nearest 10 for privacy and rate stability precautions. Age-adjustments were done using the 2020/21 Saskatchewan population as a reference. Adjustment was done via the direct method, using 15-year age groups to age 85 years and older. To facilitate comparisons, 95% confidence intervals (CIs) of all age-standardized prevalence estimates were calculated for values greater than zero.

The administrative data used in this methodology do not capture people with unreported chronic disease, or who do not access the healthcare system. A reported ICD code is assumed to be diagnostic and not a differential diagnosis. The case definitions do not include services provided in emergency departments or hospital-based outpatient clinics. Persons with physician-diagnosed chronic conditions may not be captured if they receive their care in a setting where services are not billed on a fee-for-service basis. Services delivered by physicians in salaried or contractual arrangements are not captured if the service information is not submitted through “shadow billing”. Most salaried/contractual physicians in northern Saskatchewan 'shadow bill' but the completeness may be variable across the north. In addition, nurse practitioners at SHA affiliated sites submit shadow billing but nurse practitioners at First Nations clinics and Registered Nurses with Additional Authorized Practice (RNAAP's) at SHA and First Nations clinics do not submit. This might result in some underreporting of chronic conditions for residents of northern Saskatchewan. Any system which tracks lifelong diseases over many years on an individual basis will tend to accumulate false positives. This is because a case, once identified, is carried forward from year to year. As different proportions of true cases are missed and of false positives are included for each disease, all counts are rounded to nearest 10 to reflect imprecision of estimates. Provincial

administrative data exclude full-time members of the Canadian Forces and inmates of federal correctional facilities, and prior to April 1, 2013 Royal Canadian Mounted Police, whose health benefits are covered by federal jurisdiction.

### Data Notes

**Presentation of Data (e.g. numbers of death, crude rates, age-standardized rates)** – For a full description of crude rates, age-adjusted rates, and raw numbers, please refer to “A Guide to the Reports – Understanding the Presentation of Data” report on the Population Health Unit website:

[http://www.populationhealthunit.ca/mrws/filedriver/Health\\_Indicator\\_reports/A\\_Guide\\_to\\_the\\_Reports\\_Understanding\\_the\\_Presentation\\_of\\_Data.pdf](http://www.populationhealthunit.ca/mrws/filedriver/Health_Indicator_reports/A_Guide_to_the_Reports_Understanding_the_Presentation_of_Data.pdf)

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## APPENDIX C – CASE DEFINITIONS

Disease	Age group	Criteria
Asthma	1 yr +	An individual must have EITHER: <ul style="list-style-type: none"> <li>• one or more inpatient hospital separations with a diagnosis of ICD-9 code 493 or ICD-10-CA codes J45, J46 in any field of the hospital service record; OR</li> <li>• two or more medical claims with a diagnosis of ICD-9 493 within two years.</li> </ul>
Diabetes	1 yr +	An individual must have EITHER: <ul style="list-style-type: none"> <li>• one or more inpatient hospital separations with an ICD-9 code 250 or ICD-10-CA code E10 to E14, in any field of the hospital service record; OR</li> <li>• two or more medical claims with a diagnostic code ICD-9 250 within two years.</li> </ul> <p>These diagnostic codes include both type 1 and type 2 diabetes. The case definition does not include temporary gestational diabetes. Therefore, the case criteria exclude females aged 10 to 54 diagnosed with diabetes 120 days preceding or 180 days after any pregnancy-related hospital visit (as identified by a set of obstetric diagnostic codes). The diabetes case definition applies to individuals one year of age and older.</p>
Heart Disease	20 yrs+	An individual must have: <ul style="list-style-type: none"> <li>• one or more inpatient hospital separations with a diagnosis of ICD-9 codes 410-414 or ICD-10-CA codes I20-I25; OR</li> <li>• a percutaneous coronary intervention (PCI), or a coronary artery bypass grafting (CABG) procedure with Canadian Classification of Diagnostic, Therapeutic and Surgical Procedures (CCP) codes 48.02, 48.03, 48.11- 48.19 or Canadian Classification of Health Intervention (CCI) codes 1.IJ.50, 1.IJ.54, 1.IJ.57.GQ, 1.IJ.76 in any procedure field of the hospital service record; OR</li> <li>• two or more medical claims with a diagnosis of ICD-9 codes 410-414 within one year.</li> </ul>
Hypertension	20 yrs+	An individual must have EITHER: <ul style="list-style-type: none"> <li>• one or more inpatient hospital separations with a diagnosis of ICD-9 codes 401, 402, 403, 404, 405 or ICD-10-CA codes I10, I11, I12, I13, I15, selected in any field of the hospital separation records; OR</li> <li>• two or more physician claims with a diagnostic code ICD-9 401-405 within two years.</li> </ul> <p>These diagnostic codes include both essential and secondary hypertension. The case definition does not include temporary pregnancy-induced hypertension. Therefore, the case criteria exclude females aged 10 to 54 diagnosed with hypertension 120 days preceding or 180 days after any pregnancy-related hospital visit (as identified by a set of obstetric diagnostic codes). The hypertension case definition applies to individuals 20 years of age and older.</p>

Disease	Age group	Criteria
Stroke	20 yrs+	<p>An individual has EITHER:</p> <ul style="list-style-type: none"> <li>• one or more inpatient hospital separations with a diagnosis of ICD-9 codes 325, 362.3x, 430, 431, 432.9, 433.x1 (ICD-9-CM), 434 (or ICD-9-CM 434.x1), 435.x, 436, 437.6 or ICD-10-CA codes G08, G45.x (exclude G45.4), H34.0, H34.1, I60.x, I61.x, I62.9, I63.x, I64, I67.6 in any field of the hospital separation record; OR</li> <li>• two or more medical claims with a diagnosis of ICD-9 code 325, 430, 431, 434, 435, 436 within one year.</li> </ul>
Osteoarthritis	20 yrs+	<p>An individual has EITHER:</p> <ul style="list-style-type: none"> <li>• one or more inpatient hospital separations with a diagnosis of ICD-9 codes 715 or ICD-10-CA codes M15-M19 in any field of the hospital separation record; OR</li> <li>• two or more physician claims (separated by at least 1 day) of ICD-9 codes 715 within five years.</li> </ul>
COPD	35 yrs+	<p>An individual must have EITHER:</p> <ul style="list-style-type: none"> <li>• one or more inpatient hospital separations with a diagnostic code ICD-9 491, 492, 496 or ICD-10-CA J41-J44 in any field of the hospital service record; OR</li> <li>• one or more medical claims with a diagnostic code ICD-9 491, 492, 496.</li> </ul>
Heart Failure	40 yrs+	<p>An individual must have EITHER:</p> <ul style="list-style-type: none"> <li>• one or more inpatient hospital separations with a diagnosis of ICD-9 code 428 or ICD-10-CA code I50 in any field of the hospital service record; OR</li> <li>• two or more medical claims with a diagnosis of ICD-9 code 428 within one year.</li> </ul>
Dementia-Alzheimers	65 yrs+	<p>An individual has EITHER:</p> <ul style="list-style-type: none"> <li>• one or more inpatient hospital separations with a diagnosis of ICD-9 codes 046.1, 290.0, 290.1, 290.2, 290.3, 290.4, 294.1, 294.2, 331.0, 331.1, 331.5 (or 331.82 in ICD-9-CM) or ICD-10-CA codes G30, F00, F01, F02, F03 in any field of the hospital separation record; OR</li> <li>• three or more physician claims of ICD-9 codes 290, 331, 298 within two years, with at least 30 days between each claim, OR</li> <li>• one dementia drug prescription or more.</li> </ul>