

Rapid

Review



NORTH AMERICAN
OBSERVATORY
on Health Systems and Policies

Health System Performance in Yukon Compared to Northern Canada

A Rapid Review Prepared for Yukon Government

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Introduction and Background

There are many ways the national and international literature, and governments, define the “North” in Canada (i.e., arctic or circumpolar). For this rapid review, we define the north to include the northern regions of provinces and the three territories.

There are a variety of federal services that apply to northern communities, beyond the territorial north. For example, depending on where they live, northerners in the three territories and selected communities in seven provinces are eligible for certain tax benefits through the Canada Revenue Agency (Government of Canada, 2004). Similarly, federal programs designed to subsidize the cost of healthy food in isolated northern communities are implemented in communities in seven provinces as well as in the three territories (Government of Canada, 2014). The remoteness of these regions, the high proportion of Indigenous populations, the nuances of administration in cross-provincial Indigenous territories, and geographic similarities constitute only a few of the reasons why the larger northern context should be considered when assessing health system performance in the northern Canadian context.

Given the significant disparities in health and health system performance between the north and the rest of Canada, (Chatwood & Marchildon, 2016; Young & Chatwood, 2011) this review compares Yukon’s performance with other northern regions.¹ To do so we relied on the methods used by Young, Chatwood, Ng, Young, & Marchildon (2019a). Figure 1 maps the regions that constitute northern Canada. By comparing Yukon with other northern territories and regions, this review identifies areas of strength and areas where there is room for improvement.



Figure 1. Map of 18 northern regions in Canada

¹ The northern regions include: Labrador, Saguenay (QC), Côte-Nord (QC), Nord (QC), Nunavik (QC), Baie-James (QC), Northwestern (ON), Porcupine (ON), Thunder Bay (ON), Northern (MB), Mamawetan (SK), Keewatin (SK), Athasbasca (SK), North Zone (AB), Northwest (BC), North-Interior (BC), Northeast (BC), the Northwest Territories, Nunavut, and Yukon.

Methods

Northern Regions

This rapid review compares Yukon’s healthcare context with the provincial north as well as the two other territories. Our approach permits this wider comparison of Yukon to northern provincial regions as it may exhibit more similar sociodemographic, economic, administrative, and geographic features than it does to those found in the Northwest Territories and Nunavut.

The selection of the 15 northern regions shown in Figure 1 above was based upon 2018 boundaries defined by Statistics Canada, and conceptually developed in recent research (Young, Chatwood, et al., 2019a; Young, Marchildon, et al., 2019b). Each of the three territories is considered a region on its own, while provincial regions are broken into several distinct areas and are defined and administered by different government departments and agencies. Regional health authorities (RHAs) are examples of such northern administrative regions, with the full list of 18 regions described in Table 1. In addition to each individual region, Statistics Canada also categorized regions into “peer groups” based on sociodemographic characteristics deemed to be determinants of population health status (Government of Canada, 2015). For this review, four peer groups have been chosen encompassing the 18 northern regions to be used in this analysis. For some indicators, data in British Columbia (BC) are only available at the health authority level. Maps for BC are included in Appendix D which identify the health authorities included in the north of that province.

Table A1. List of regions

Province/ Territory	Statistics Canada Code	Region	Short Name	Peer Group
Newfoundland and Labrador	1014	Labrador-Grenfell RHA	Labrador [NL]	E
Québec	2402	Région du Saguenay-Lac-Saint-Jean	Saguenay [QC]	C
	2409	Région de la Côte-Nord	Côte-Nord [QC]	C
	2410	Région du Nord-du-Québec	Nord [QC]	C
	2417	Région du Nunavik	Nunavik [QC]	F
	2418	Région des Terres-Cries-de-la-Baie-James	Baie-James [QC]	F
Ontario	3549	Northwestern Health Unit	Northwestern [ON]	C
	3556	Porcupine Health Unit	Porcupine [ON]	C
	3562	Thunder Bay District Health Unit	Thunder Bay [ON]	C
Manitoba	4604	Northern Regional Health Authority	Northern [MB]	F
Saskatchewan	4711	Mamawetan Churchill River RHA	Ma-Ke-At [SK]	F
	4712	Keewatin Yatthé RHA		
	4713	Athabasca Health Authority		
Alberta	4835	North Zone	North Zone [AB]	I
British Columbia	5951	North West HSDA	Northwest [BC]	C
	5952	Northern Interior HSDA	N-Interior [BC]	C
	5953	Northeast HSDA	Northeast [BC]	I
Yukon	6001	Yukon	Yukon	I
Northwest Territories	6101	Northwest Territories	NWT	I
Nunavut	6201	Nunavut	Nunavut	F

Health System Performance Framework

We used the Canadian Institute for Health Information (CIHI) health system performance framework to select our indicators (CIHI, 2013). This framework was intended to be a unifying pan-Canadian framework and is comprised of four interrelated quadrants:

1. *The social determinants of health*
2. *Health system inputs and characteristics*
3. *Health system outputs*
4. *Health system outcomes*

Each quadrant also comprises performance dimensions, described in greater depth in Figure 2. This rapid review used this framework to guide our selection of health system indicators.

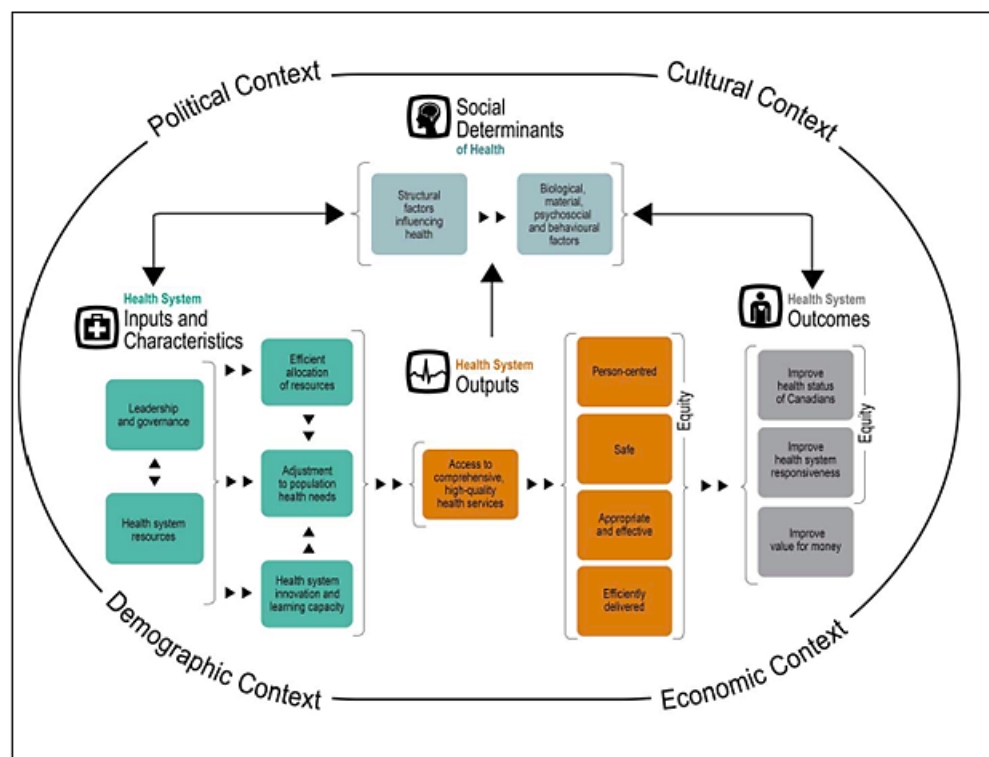


Figure 2. CIHI health system performance measures framework

Data Sources

The data sources and selection choices for indicators are drawn from Young et al. (2019a; 2019b), which include data from two publicly accessible electronic resources:

- Statistics Canada's compendium of health indicators, derived from the census, health surveys (particularly the Canadian Community Health Survey, or CCHS), and vital statistics (Statistics Canada. Government of Canada, 2019). Two health regions (Baie-James [QC] and Nunavik [QC]) do not participate in the CCHS.
- CIHI's health indicators interactive tool (CIHI, n.d.a), which provides data derived from healthcare administrative databases. Definitions of the indicators and sources of the data are stored in CIHI's indicatory library (CIHI, n.d.b).

These indicators were selected based on the following criteria (Young et al. 2019a; 2019b):

- Data are available for at least 16 of the 18 northern regions;
- Data are available for at least 1 year within the 5-year period of 2010-14; and
- Data derives from the region of residence and not where the services are delivered.

Limitations

A composite average was generated from all datapoints for the northern regions to present the indicators as a "Northern Average". This average is generated from only those northern regions for which there are valid data points available. A guide to interpreting these visualizations is in Appendix B and the description of the data tables used to populate these visualizations are found in Appendix C.

Analytic Overview

We compare performance in Yukon with other northern regions based on the following considerations:

1. Areas where Yukon is performing well relative to other northern regions;
2. Areas where Yukon is performing poorly relative to other northern regions; and
3. Indicators related to mental health and addictions.

The selected indicators fall under one of the four “quadrants” used in CIHI’s Health System Performance Measurement Framework:

1. **Social Determinants of Health**
 - A. Employment Status (%)
 - B. Heavy Drinking (%)
2. **Health Systems Inputs and Characteristics**
 - A. General/Family Physicians per 100,000
 - B. Specialist Physicians per 100,000
 - C. Hospital Beds per 100,000
3. **Health Systems Outputs**
 - A. Mental Illness Readmissions (%)
 - B. Multiple Mental Illness Hospitalizations (%)
 - C. High Hospital Users (%)
 - D. Ambulatory Care Sensitive Conditions per 100,000
4. **Health Systems Outcomes**
 - A. Hospitalizations Caused Entirely by Alcohol per 100,000
 - B. Self-Injury Hospitalizations per 100,000
 - C. Suicides per 100,000
 - D. Potentially Avoidable Mortality per 100,000

The definitions for each of these indicators can be found in Appendix A.

Social Determinants of Health

Employment status/rate (%)

On average, Yukon has a relatively high employment rate. Between 2011 and 2016, employment grew modestly from 82.8% to 83.3% and was on average highest among the northern regions over this period, as shown in Figure 3. Overall, employment in the northern regions shrunk slightly from 74.21% to 73.15% throughout this same period (Figure 17 in Appendix B).

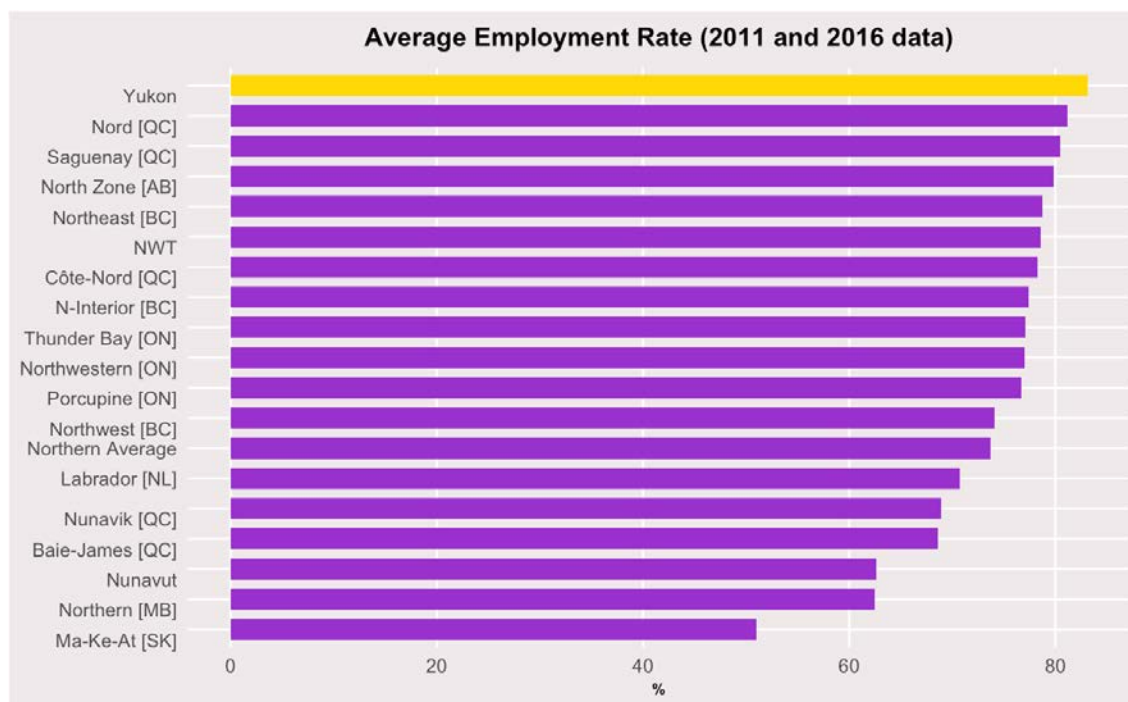


Figure 3. Average employment rate

Heavy drinking (%)

The rate of heavy drinking in Yukon is among the highest among the northern regions (Figure 4); despite a slight reduction between 2013/14 and 2015/16 (see Figure 19 in Appendix B). Among northern regions, Yukon had the second highest rate in 2013 (30.1%), and has since improved with respect to this indicator, lowering the rate to 23.2%. On average, the percentage of heavy drinkers in the northern regions increased between 2013 and 2015 (23.06% in 2013 to 24.59% in 2015) but decreased in Yukon from 30.1% to 23.2% (Figure 19 in Appendix B).

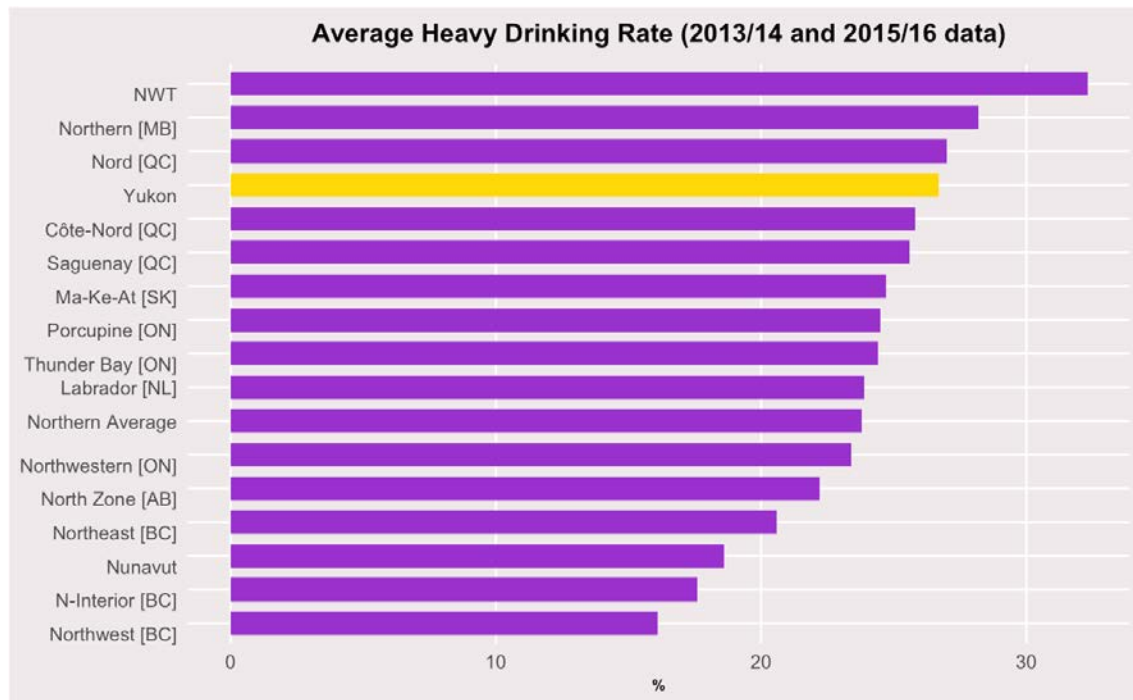


Figure 4. Average heavy drinking rate

Health Systems Inputs and Characteristics

General/Family physicians per 100,000 persons

Generally, Yukon has a large supply of family physicians relative to other northern regions, with an average of 169 per 100,000 population across all reporting years. Between 2010 and 2016, all northern regions except for Nunavut and Yukon experienced a growth in the number of general and family physicians (Figure 21 in Appendix B).

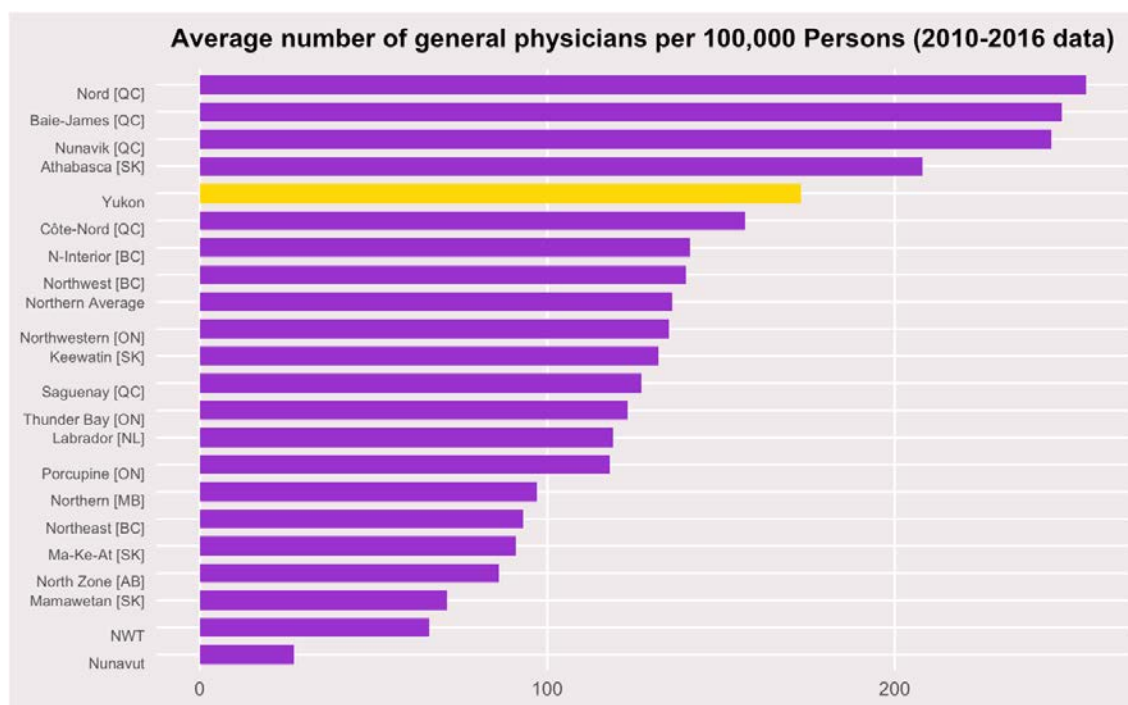


Figure 5. Average number of general physicians per 100,000 persons

Specialist physicians per 100,000 persons

There is considerable variation in the supply of specialists across the north. As shown in Figures 6 and 22 in Appendix B, the northern region with the highest density of specialists – Thunder Bay – has 75 more specialists per 100,000 persons than Yukon (29), almost four times as many. By contrast, the Ma-Ke-At region in Saskatchewan has on average three specialists per 100,000 persons. Unlike family physicians, the density of specialists in Yukon is in the low- to mid-range, with numbers roughly stable around 29 between 2010 and 2016, as shown in Figure 21 in Appendix B. By comparison, the Northern Average for this indicator has increased steadily over the same time frame. However, Yukon is one of only two (the other being Northwest Territories) northern regions to have experienced a decrease between 2010 and 2016 (Figure 22 in Appendix B).

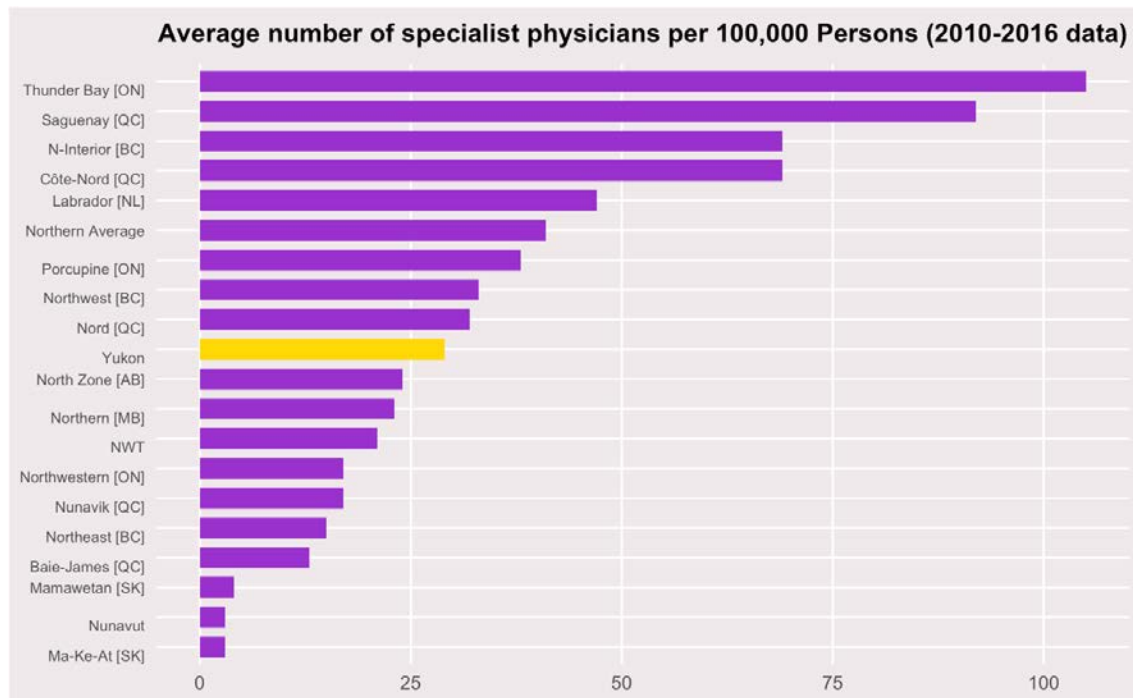


Figure 6. Average number of specialist physicians per 100,000 persons

Hospital beds per 100,000 persons

Relative to other regions, there are fewer hospital beds per capita in Yukon. There were only data available for one year for this indicator with Yukon having one of the lowest densities of staffed beds in 2016, with only five northern regions having lower densities. Four northern regions have lower physician/system resources than Yukon: Nunavut (97), Baie-James (117), Northeast BC (140), and the Ma-Ke-At region (169). The inflow/outflow ratio was 0.83 on average in Yukon over the period 2010-16, compared to the Northern Average of 0.75 over this time period. This result suggests that in spite of the low density of hospital beds, there are relatively fewer residents who leave Yukon to be hospitalized than the average of all other northern regions.

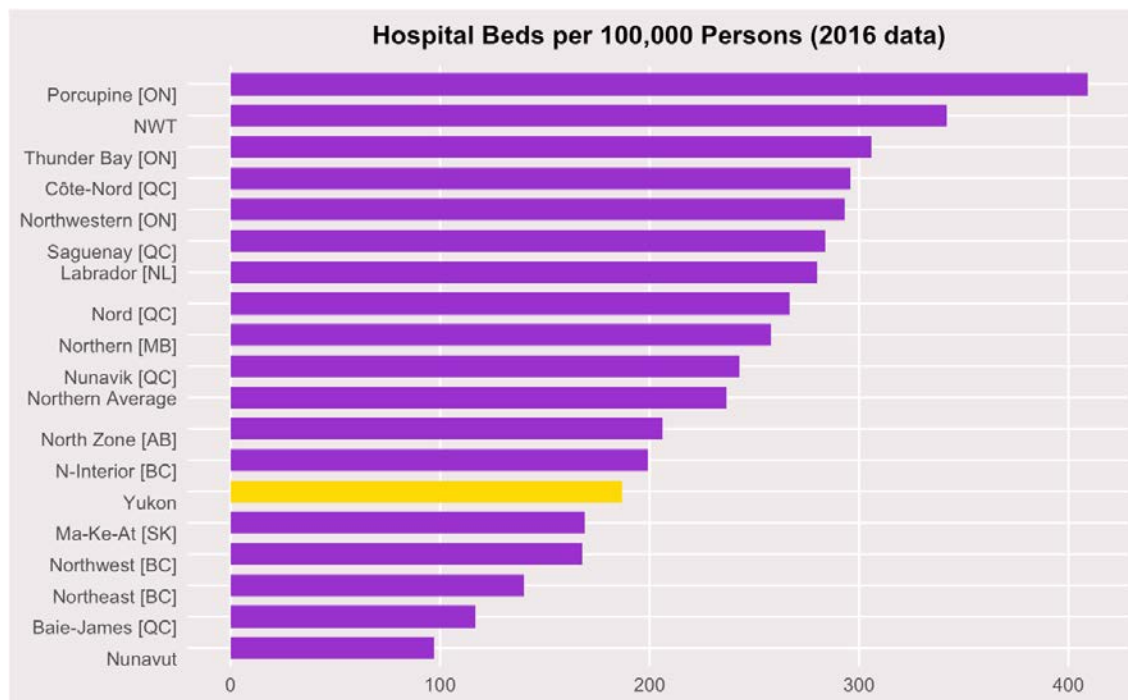


Figure 7. Hospital beds per 100,000 persons

Health Systems Outputs

Mental illness readmissions (%)

This indicator measures the risk-adjusted rate of readmission to hospital within 30-days of discharge for a mental illness; it provides insights into the level of continuity of care in a region's mental health services. The results suggest that there is room for improvement in access to mental health supports in the community in Yukon, although Yukon has been comparable to the Northern Average between 2010 and 2016. On average, Yukon had readmission rates of 11% – the same as three other northern regions. This is somewhat lower than the Northern Average (11.6%), while the highest rate among the northern regions is 13.4% (Porcupine, ON). Within the northern regions, the proportion of mental health readmissions was relatively stable between 2010 and 2016 (11.7% in 2010 to 12% in 2016). The readmission rate in Yukon grew from around 10% in 2010 to 14.5% in 2016 – a 45% increase, and the second highest among reporting regions (as shown in Figure 26 in Appendix B). Labrador had the highest growth rate for this period of a nearly 60% increase between 2010 and 2016; by contrast, the rate declined in the Northwest Territories by more than 25%.

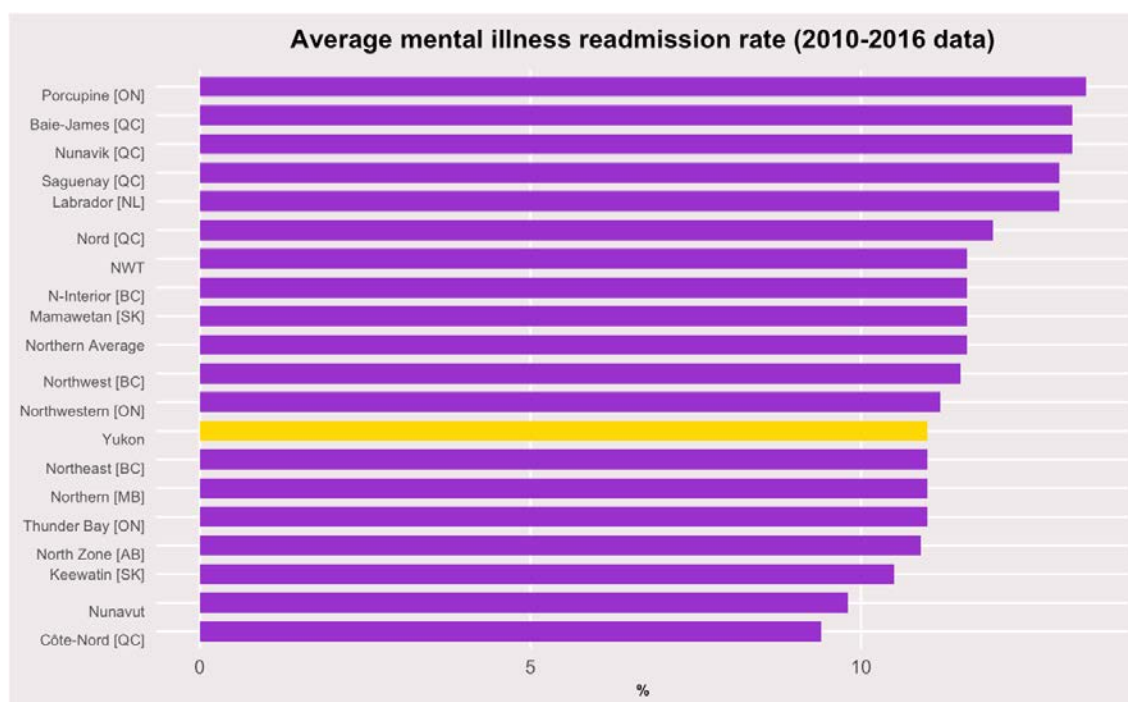


Figure 8. Average mental illness readmission rate

Additional indicators of hospital readmissions (obstetrical, medical, surgical, and pediatric) paint a mixed picture of performance for Yukon. While Yukon performed about average for mental illness readmissions (11% compared to a Northern Average of 11.6%), medical readmissions (14.6% compared to 15.4%), pediatric readmissions (5.6% compared to 7.1%), and surgical readmissions (6.6% compared to 8.6%), it performs relatively less well in obstetrical readmissions (2.6% compared to 2.2%).

Multiple mental illness hospitalizations (%)

The multiple mental illness hospitalization rate measures the number of individuals who have had at least three hospitalizations for mental illness in a single year, divided by individuals who have had at least one hospitalization. This indicator is related to the 30-day readmission rate for mental illness, but it measures hospitalizations over a longer time frame. There was a lower rate (8.9%) of multiple mental illness hospitalizations in 2010-2016 in Yukon compared with the Northern Average (11.3%) and compared with almost all of the other northern health regions. This rate has been stable over time in Yukon (9.8% in both 2010 and 2016), unlike for the average across northern regions which shows a slight decline (from 12% in 2010 to 11.3% in 2016). Among reporting northern regions, Yukon had one of the lowest values for this indicator both in 2010 (9.8%) and 2016 (9.8%) as shown in Figure 28 in Appendix B. The numbers suggest that although the Yukon has one of the lowest rates, there has been less progress towards lowering this percentage over time when compared with other northern health regions.

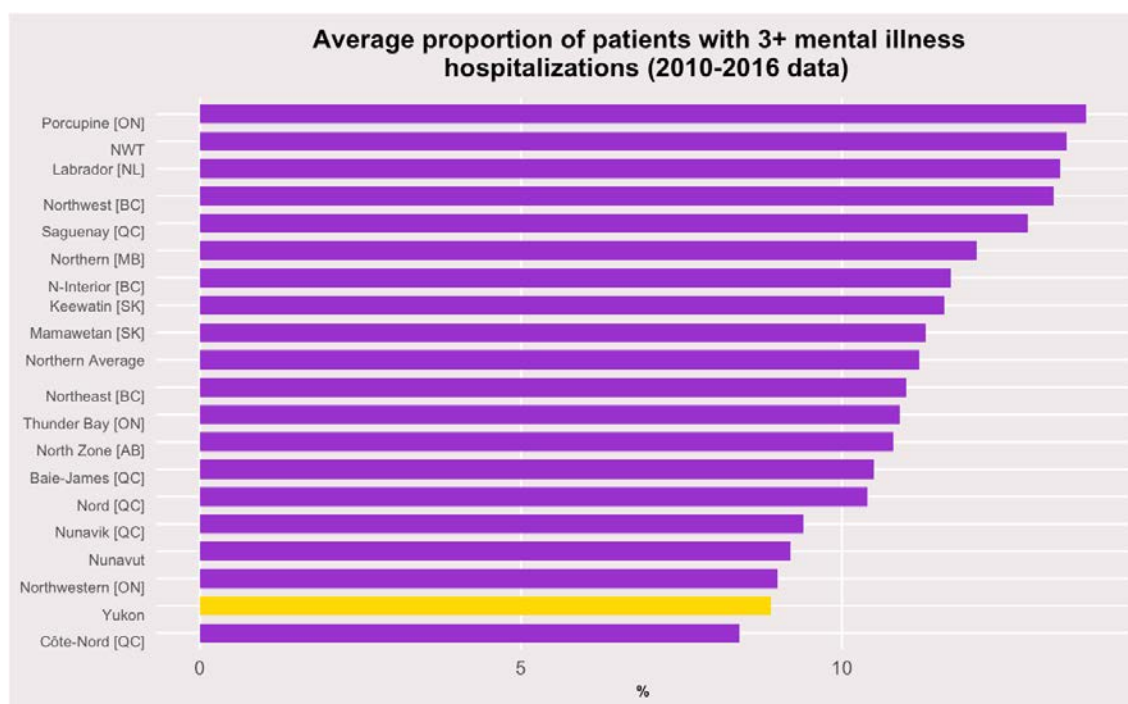


Figure 9. Average proportion of patients with 3+ mental illness hospitalizations

High hospital users (%)

Yukon performs in the middle of the other northern regions with a rate of high hospital users at 4.5%, compared to the highest (Baie-James, QC) with a rate of 6.4% and the lowest (Nunavut) with a rate of 3.2%. For regions with available data, the proportion of hospitalized patients that are high hospital users ranges from about 4% and 7% for all regions in all years. There was very little change in this indicator between 2014 and 2017 across regions in general, as most experienced between –20% and +20% change (as a percentage of 2014 levels) over the two years. Yukon had one of the lower rates (4.5%) at the beginning of this period but experienced one of the higher rates of growth (5.0%) between 2014 and 2017, as shown in Figure 30 in Appendix B.

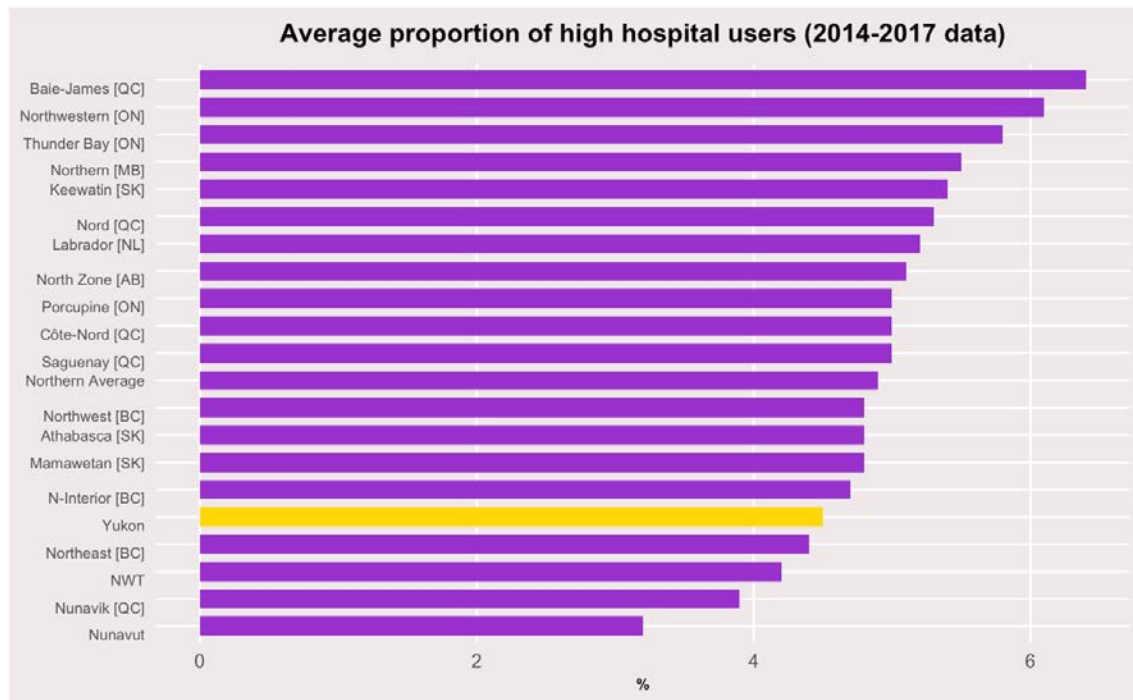


Figure 10. Average proportion of high hospital users

Ambulatory care sensitive conditions per 100,000

This indicator reports a measure of the number of acute care hospitalizations where appropriate ambulatory care prevents or reduces the need for hospitalizations, as defined by CIHI. In this instance, higher performing regions will have lower rates, while the more poorly performing regions will report higher rates. Between 2010 and 2014, Yukon had a fairly low rate relative to the other northern regions (551, compared to the Northern Average of 841), although this is another indicator in which all of the northern regions performed worse than the Canadian average. Limiting comparison of Yukon's performance to the Northern context, it is evident that Yukon is a relatively high performer in this indicator, with only four regions performing better on average between 2010 and 2014 (see also Figure 31 in Appendix B).

Figure 32 in Appendix B shows that over this time period, Yukon experienced a decline in this indicator – a sign of progress, as the rate decreased from 604 to 494. Most of the northern regions experienced similar declines over this period, except for Northeast [BC] which experienced a small increase, and Athabasca [SK] which increased from 2,201 to 2,780.

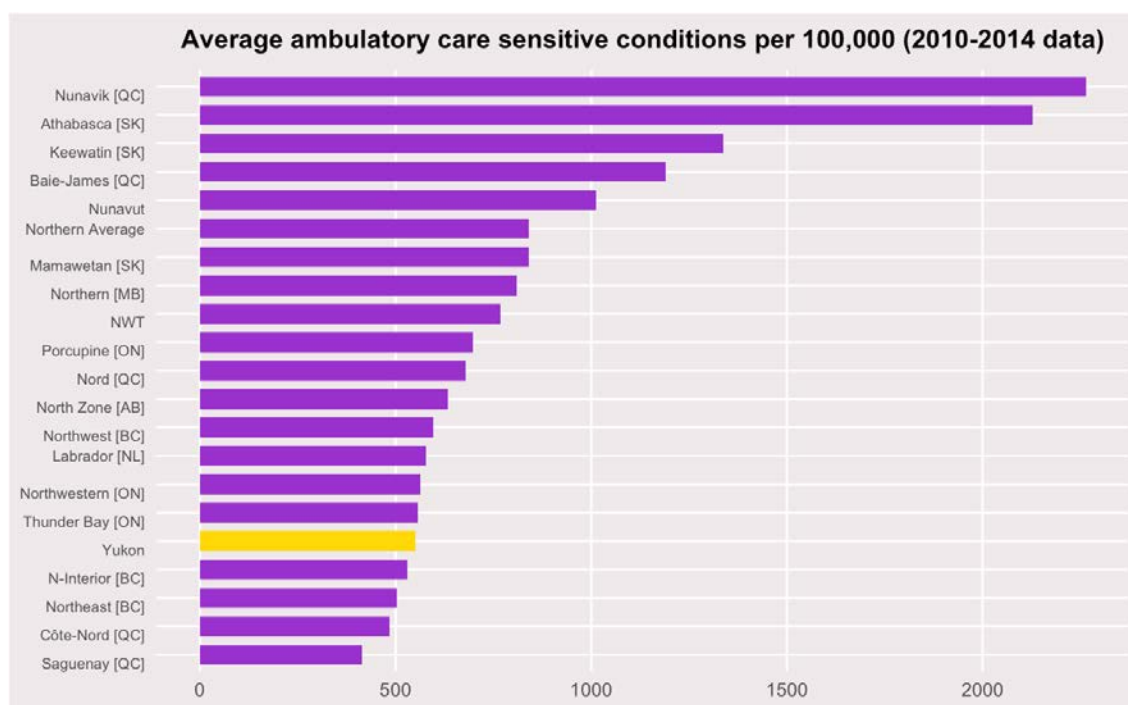


Figure 11. Average ambulatory care sensitive conditions, per 100,000

Health Systems Outcomes

Hospitalizations caused entirely by alcohol per 100,000

Alcohol-related hospitalizations in Yukon are comparable to other northern regions. Most experienced fewer than 1,500 hospitalizations per 100,000 between 2015 and 2017, with Nunavik being an outlier, with more than 3,000 in 2015 and 4,000 in 2017 (shown in Figure 34 in Appendix B). Over this same period most regions experienced a growth in such hospitalizations, including Yukon (from 679 to 843 between 2015 and 2017). The high number of hospitalizations caused by alcohol within Nunavik increases the Northern Average and thus should be interpreted with that in mind.

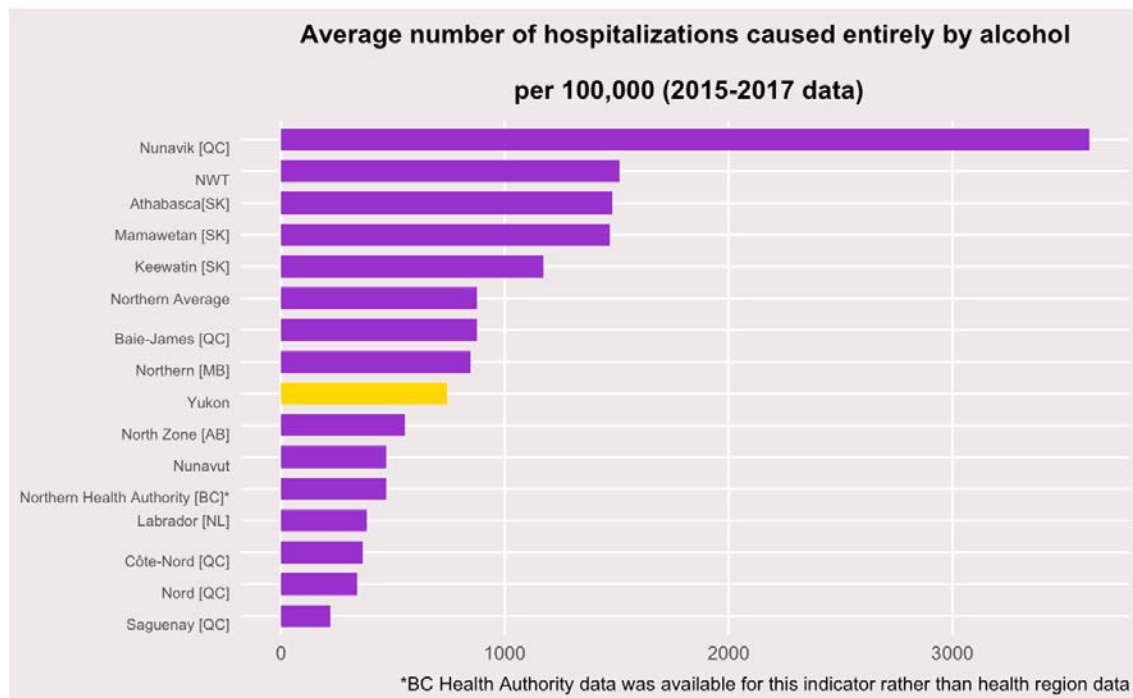


Figure 12. Average number of hospitalizations caused entirely by alcohol, per 100,000

Self-injury hospitalizations per 100,000

The rate of self-injury hospitalization, which measures hospital stays from deliberate bodily injury or harm, has been steadily increasing in nearly all regions over this time, with the exception of Keewatin, Nord (QC), and Northern Manitoba (see also Figure 35 in Appendix B). Yukon has consistently had relatively higher rates of self-injury related hospitalizations with rates of 163 in 2010 and 224 in 2016. On average throughout this time period, Nunavik had the highest rate (538), while Northeast BC had the lowest (74). Yukon also had among the highest growth rate for self-injury hospitalizations between 2010 and 2016, with the rate per 100,000 increasing 37.5% from 163 in 2010 to 224 in 2016 (shown in Figure 37 in Appendix B). For context, the rate of self-injury hospitalizations grew in 14 regions, while it declined in only three regions.

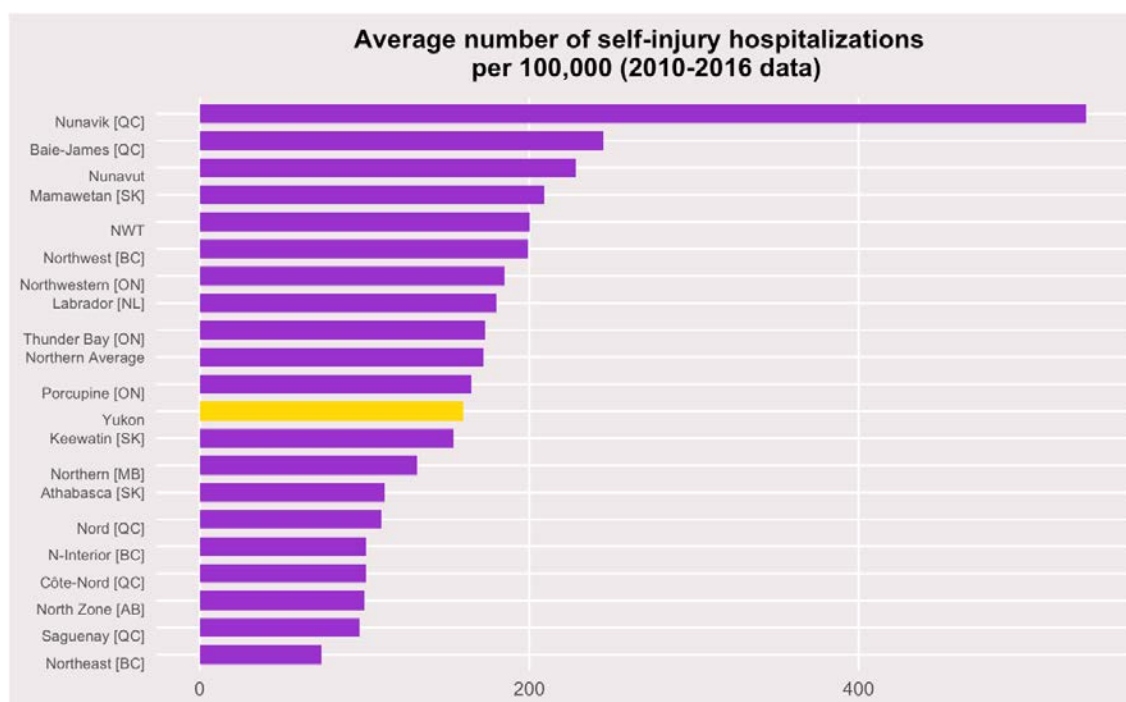


Figure 13. Average number of self-injury hospitalizations, per 100,000

Suicides per 100,000

The only available data for this indicator is from 2011, when Yukon had a relatively low rate of suicides per 100,000 persons compared to other northern regions (Figures 14 and 37 in Appendix B). The northern regions have clustered roughly between 14 and 26 suicides per 100,000 persons, with Yukon falling towards the lower end of this range. Yet there are two regions with exceptionally high rates: Nunavik and Nunavut have rates of 70.4 and 59.7 respectively, roughly four-times higher than Yukon. All northern regions have rates that surpass the Canadian average.

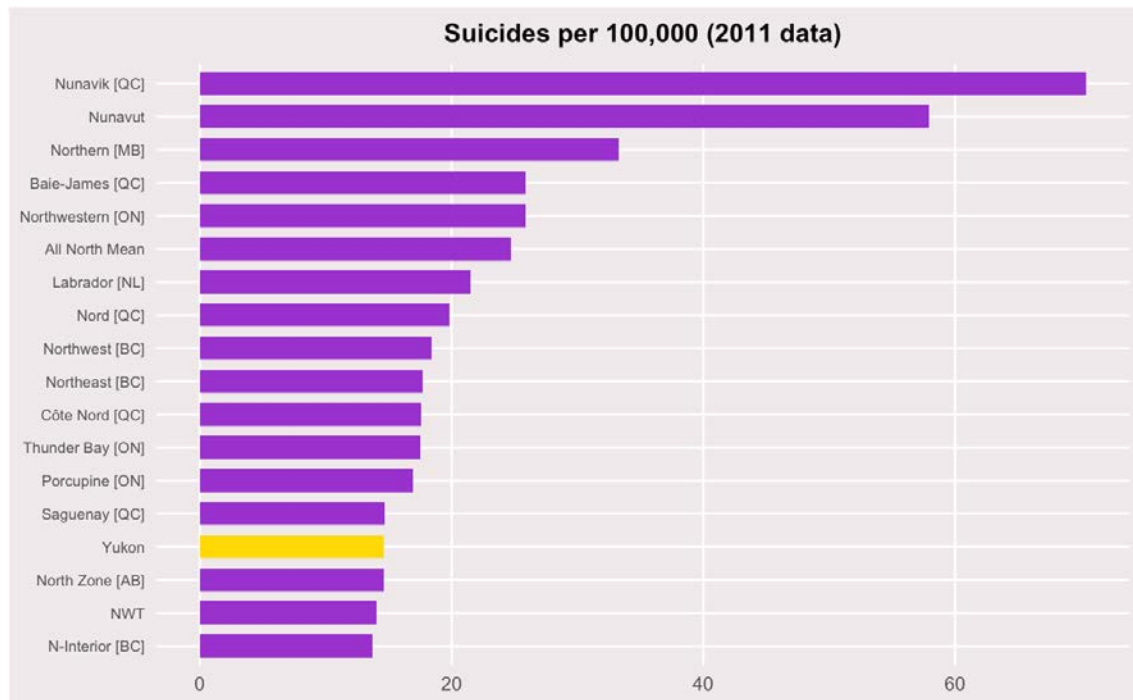


Figure 14. Suicides, per 100,000

Potentially avoidable mortality per 100,000

Potentially avoidable mortality refers to a subset of causes of death under age 75 that are considered potentially treatable or preventable with effective public health and acute care interventions. Yukon has a low level of potentially avoidable mortality compared to most northern regions. Although the most recent data available was from 2015, Yukon's average between 2010 and 2015 for this indicator was 306.1 – somewhat lower than the Northern Average (327.4) and substantially lower than Nunavik, which had the highest average at 575.5. Figure 38 in Appendix B shows that over this time period, Yukon experienced a substantial decline in potentially avoidable mortality – a sign of progress, as the rate decreased from 281 to 214.

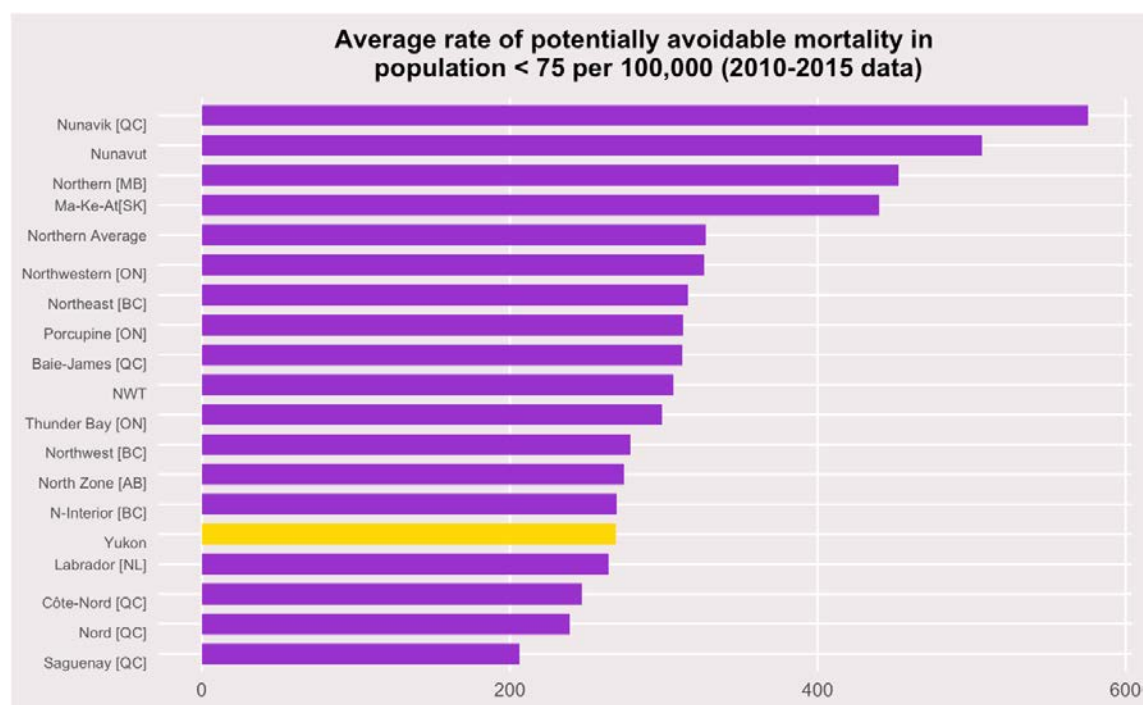


Figure 15. Average rate of potentially avoidable mortality in population <75, per 100,000

Conclusion

This rapid review draws on a selection of indicators of health system performance to compare Yukon to other northern regions of Canada. In doing so, we identify areas where Yukon has been performing well relative to the other northern regions, and areas where it has been performing relatively less well. One of the advantages of this approach is that Yukon can be better contextualised as part of the provincial and territorial north that includes northern provincial regions which, for some purposes, are more comparable in terms of population, geography, and system structures.

With respect to the social determinants of health, Yukon has performed relatively well compared to other northern regions between 2009 and 2016, as demonstrated by high employment rates, annual income, and levels of post-secondary education. For example, while the Northern Average employment rate declined between 2011 and 2016, Yukon experienced an increase in employment rates. During the same period, however, Yukon experienced consistently high rates of heavy drinking that exceed most other northern regions. Smoking rates in Yukon are below the Northern Average, though they have not remained stable over time in spite of a decline seen in Canada as whole.

With respect to health system inputs and characteristics, Yukon has a relatively low supply of specialist physicians and hospital beds, alongside a high supply of GPs relative to other regions. Measures of health system outputs paint a similar picture in terms of utilization, e.g., with lower-than-average mental illness, pediatric, surgical, and medical readmission rates as well as lower-than-average high hospital users. Rates of multiple mental illness hospitalizations and ambulatory care sensitive conditions are also low compared to other northern regions, suggesting a relatively high performance in terms of health systems outputs.

In terms of health system outcomes, Yukon's performance is in the middle of the pack among northern regions in indicators such as rates of suicide, self-injury hospitalizations, and alcohol-related hospitalizations. Using an aggregate health system sensitive indicator – potentially avoidable mortality – shows that Yukon has been doing relatively well overall. Though it is important to note that for all of these health indicators, there is generally higher performance for Canada as a whole than in the north, as well as considerable diversity across northern Canadian regions.

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