

# Healthcare in Canada's North: Are We Getting Value for Money?

## Services de santé dans le Nord canadien : y a-t-il optimisation des ressources?



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### Abstract

*Objective:* To determine if Canadians are getting value for money in providing health services to our northern residents.

*Method:* Secondary analyses of data from Statistics Canada, the Canadian Institute of Health Information and territorial government agencies on health status, health expenditures and health system performance indicators.

*Results:* Per capita health expenditures in Canada's northern territories are double that of Canada as a whole and are among the highest in the world. The North lags behind the rest of the country in preventable mortality, hospitalization for ambulatory care sensitive conditions and other performance indicators.

*Discussion:* The higher health expenditure in the North is to be expected from its unique geography and demography. If the North is not performing as well as Canada, it is not due to lack of money, and policy makers should be concerned about whether healthcare can be as good as it could be.

## Résumé

*Objectif :* Déterminer s'il y a optimisation des ressources dans la prestation des services de santé pour les citoyens du Nord canadien.

*Méthode :* Analyses secondaires des données sur l'état de santé, les dépenses de santé et les indicateurs de rendement du système de santé provenant de Statistique Canada, de l'Institut canadien d'information sur la santé et des organismes gouvernementaux territoriaux.

*Résultats :* Les dépenses de santé par personne dans les territoires du Nord canadien sont le double de celles du Canada dans l'ensemble et elles figurent parmi les plus élevées au monde. Le Nord canadien est en retard sur le reste du pays pour ce qui est de la mortalité évitable, de l'hospitalisation pour des états de santé pour lesquels les soins ambulatoires seraient préférables et pour d'autres indicateurs du rendement.

*Discussion :* On peut s'attendre à des dépenses de santé élevées dans le Nord canadien en raison du contexte géographique et démographique particulier. Si le rendement n'y est pas aussi efficace que dans le reste du Canada, ce n'est pas à cause d'un manque d'argent; les responsables de politiques devraient se demander si les services de santé y sont aussi efficaces qu'ils le devraient.

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## Introduction

Increasing healthcare costs in Canada over the past several decades have been hotly debated by policy makers, researchers and practitioners over its extent, causes and solutions (Marchildon and Di Matteo 2015). Total health expenditures accounted for 11% of GDP in Canada in 2014, and healthcare spending by provincial governments as a proportion of all provincial government expenditures ranged from 43% in British Columbia to 30% in Québec (CIHI 2015). This spending potentially crowds out other public goods and services, which could have an impact on redressing disparities in the social determinants of health.

In the three northern territories, health expenditures are considerably higher on a per capita basis than the Canadian average, yet, in terms of population health outcomes, the North lags far behind that of the South, while considerable health disparities persist between the Aboriginal and non-Aboriginal populations (Young and Chatwood 2011). Because of the North's unique demography and geography and differences in constitutional status for its governments, it is often excluded from broader debates on healthcare in Canada, for example, in a recent review of how provinces compare internationally in "bending the cost curve" (Marchildon and Di Matteo 2015).

This paper addresses healthcare in Canada's North using currently available data to determine if Canadians are getting value for money. The term "value for money" has a more

specific meaning than common usage when it is used in the context of health system performance. It measures the level of achievement in health status, system responsiveness and equity (“value”) relative to the financial, human and technical resources (“money”) used (CIHI 2013).

We restrict our purview to the three northern territories of Yukon, Northwest Territories (NWT) and Nunavut. While “northern conditions” also prevail in the remote regions of some provinces, extracting sub-provincial regional data is difficult. Our comparator is Canada as a whole. From an equity perspective, the whole of Canada represents what is achievable with current resources, which should be a policy aspiration if not goal. We are motivated by the need to inform policy makers, providers and consumers with evidence in designing strategies to improve health system performance and, ultimately, the health of the residents in the North.

## Methods

We reviewed publicly accessible databases and documents from Statistics Canada, the Canadian Institute of Health Information (CIHI) and territorial government departments. Data were extracted and reorganized for tabular or graphical presentation. Where appropriate, 95% confidence intervals of selected indicators were included, as published by the reporting agencies. We have performed additional analyses on a merged Canadian Community Health Survey data set (for the period 2007–2014), using the Statistics Canada microdata files accessed from the branch regional data centre located at the Institute for Circumpolar Health Research in Yellowknife.

## Results

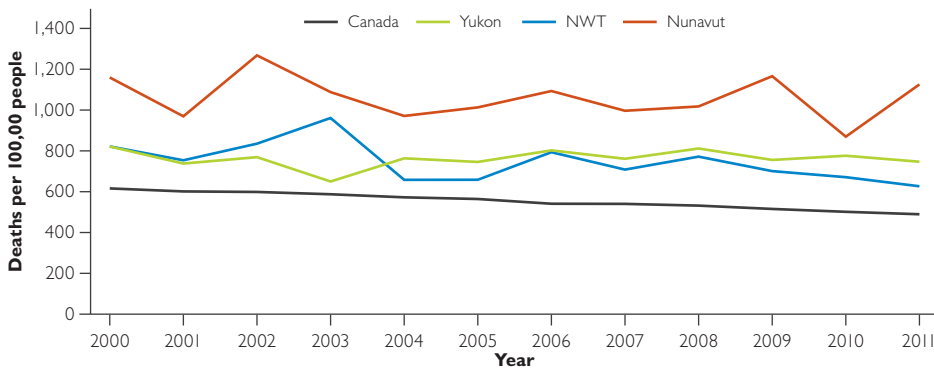
### *Characterizing the North*

The combined population of the three territories accounts for 0.3% of the total population of Canada, with only 110,000 people spread thinly over about 40% of the land mass of the country (Statistics Canada 2012). Aboriginal people (First Nations, Inuit and Métis) constitute approximately 25% of the population of Yukon, 50% of the population of NWT and 85% of Nunavut. About 45% of the total population of the North reside in the three territorial capitals of Whitehorse, Yellowknife and Iqaluit. About 75% of the population of these three cities are non-Aboriginal (Statistics Canada 2013), although the proportion varies considerably among them. Despite its small population, the North matters for the reason that northerners are Canadians, and their health and healthcare should be the concern of all Canadians, particularly in a national system that purports to provide universal access to a prescribed set of medically necessary health services.

The population distribution highlights the fact that there are, in reality, two healthcare contexts in the North: one that is urban, similar to that which exists in much of southern Canada, and the other consists of a network of health centres in small remote communities staffed by nurses and community health representatives, supported by occasional visiting physicians (Marchildon and Chatwood 2012; Marchildon and Torgerson 2013). This network is bound together by the transportation, e-health and telecommunication systems.

The North generally fares worse than Canada as a whole in most health status indicators. The health gap is widest in Nunavut, smallest in Yukon, with NWT in between, differences which reflect in part the health disparity gap between Aboriginal and non-Aboriginal Canadians nationally. The Nunavut–Canada gap is also strongly influenced by geographical factors, especially as none of Nunavut’s communities are accessible by roads. Figure 1 shows that the disparity in age-standardized mortality rate from all causes has not been reduced over the period 2000–2011 (Statistics Canada 2016a).

**FIGURE 1.** Age-standardized\* mortality rate from all causes, the three territories compared to Canada, 2000–2011



\*Age-standardized to the 1991 Canadian population.  
Source: Figure drawn from data in Statistics Canada’s CANSIM Table 102-0552.

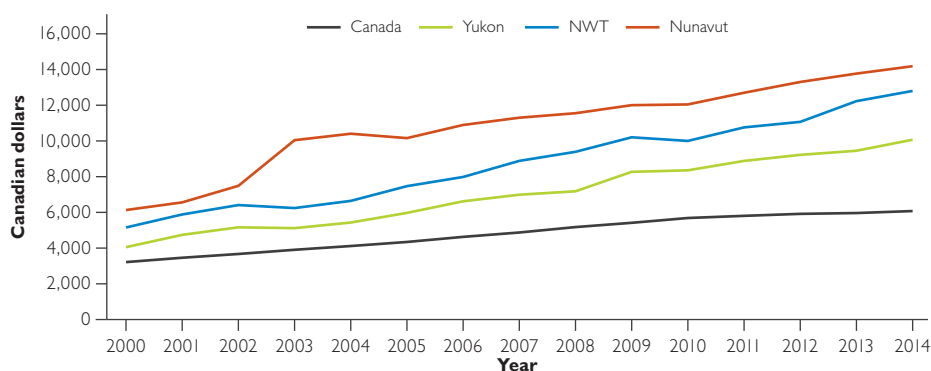
Of increasing concern are emerging chronic diseases and injuries (including youth suicide) in the Aboriginal population, part of the health transition that has been observed in many populations undergoing rapid social, economic and lifestyle changes (Peters 2013; Young and Bjerregaard 2008). Territory-wide data obscure the considerable disparity that exists between the Aboriginal and non-Aboriginal populations within the North, which has been well documented in the research literature. However, official territorial government health data are usually not disaggregated into First Nation, Métis, Inuit and non-Aboriginal population sub-groups (Northwest Territories Health and Social Services 2011; Yukon Health and Social Services 2013). Often, Nunavut data, because of the overwhelming proportion of Inuit in the population, are used as surrogate for Inuit data.

*Is healthcare too expensive?*

In 2014, per capita total health expenditures in current dollars reached \$10,060 in Yukon, \$12,791 in NWT and \$14,174 in Nunavut, a ratio of 1.7, 2.1 and 2.3 times, respectively, compared with the Canadian national average of \$6,069 (CIHI 2015). The trend is upward and more pronounced than the Canadian average (Figure 2).

If one compares per capita total health expenditures in the three territories with all the countries in the world (WHO 2016), Nunavut and NWT would exceed even the US, the highest-ranked country in the world, with Yukon following close behind it.

**FIGURE 2.** Trend in per capita total health expenditures, the three territories compared to Canada, 2000–2014, in current Canadian dollars



Source: Figure drawn from data in the Canadian Institute of Health Information's *National Health Expenditures Trends 1975–2015* report.

For the period 2010–2014, total health expenditures accounted for 13% of Yukon's GDP, 11% of NWT's and 21% of Nunavut's, compared to 11% in Canada (CIHI 2015). Provincial/territorial (P/T) government health expenditures as a percentage of total P/T government expenditures was 17% in Yukon, 18% in NWT and 23% in Nunavut. This was lower than the Canadian average of 35% (CIHI 2015), even though the per capita health expenditures in dollars were higher.

Because of their large Aboriginal population, direct health expenditures by the federal government were substantially higher in the territories than elsewhere in Canada. However, the territorial governments are still the main source of healthcare financing, accounting for 66%, 69% and 80% of total health expenditures in Yukon, NWT and Nunavut, respectively. Direct federal health expenditures did not exceed 15% in any of the three territories (CIHI 2015).

Table 1 compares the distribution of health expenditures by use of funds between the territories and Canada. With the exception of drugs, the territories exceed Canada in all other categories. As in Canada, hospital care accounts for the highest proportion of health expenditures in the territories. Of note is the several-fold increase in "other health spending," which includes medical transportation (CIHI 2015).

As medical transportation is not separately reported in the CIHI report, we reviewed the territorial finance departments' budget documents. The NWT Department of Health and Social Services' actual expenditures for "medical travel" (which includes emergency evacuations, non-emergency travel and patient escorts) almost doubled from \$9.96 million in 2004/2005 to \$19.52 million in 2013/2014 (Northwest Territories Finance, various years). At no time during this decade did medical travel exceed 6% of the total operation and maintenance budget of the department. Nunavut, with 78% of the population of NWT, spent about three times as much on medical travel during the same period, given the much greater reliance on air travel in Nunavut relative to the NWT. During this period, medical travel accounted for between 15% and 20% of the Nunavut health department's budget (Nunavut Finance, various years).

**TABLE 1.** Total health expenditures by use of funds in the three territories compared to in the whole of Canada, mean 2010–2014 period

Territory	Hospitals	Other institutions	Physicians	Other professionals	Drugs	Capital	Public health	Admin.	Other health spending	Total
<b>Per capita expenditures (\$)</b>										
Yukon	2,284.30	1,734.80	958.80	692.90	746.00	418.50	1,367.10	387.10	808.30	9,397.70
NWT	4,547.80	908.50	1,144.10	659.70	697.10	1,006.60	915.00	475.50	1,350.40	11,704.70
Nunavut	4,657.20	1,273.40	1,527.10	573.90	662.30	734.50	1,352.60	1,100.20	1,597.20	13,478.40
Canada	1,757.80	615.70	887.70	584.30	955.10	279.80	316.80	178.60	359.30	5,935.10
<b>Ratio territory/Canada</b>										
Yukon	1.3	2.8	1.1	1.2	0.8	1.5	4.3	2.2	2.2	1.6
NWT	2.6	1.5	1.3	1.1	0.7	3.6	2.9	2.7	3.8	2.0
Nunavut	2.6	2.1	1.7	1.0	0.7	2.6	4.3	6.2	4.4	2.3
<b>Percentage distribution</b>										
Yukon	24.3	18.5	10.2	7.4	7.9	4.5	14.5	4.1	8.6	100.0
NWT	38.9	7.8	9.8	5.6	6.0	8.6	7.8	4.1	11.5	100.0
Nunavut	34.6	9.4	11.3	4.3	4.9	5.4	10.0	8.2	11.9	100.0
Canada	29.6	10.4	15.0	9.8	16.1	4.7	5.3	3.0	6.1	100.0

Source: Table based on data in the Canadian Institute of Health Information's *National Health Expenditure Trends 1975–2015* report.

Is too much being spent overall on healthcare in the North? On a per capita basis, healthcare is more expensive in the North relative to Canada, and, indeed, the countries of the world. Healthcare, however, does not yet pose a stress to the economy of the North or overall government program expenditures. The higher expenditure in the North relative to the Canadian average is to be expected from the need to deliver services to widely scattered, small communities. For Canada as a whole, spending proportionately more on a numerically small population with high levels of health needs and geographical barriers to healthcare access can be “justified” on social policy grounds. Elsewhere, we have argued for the need for the Canada Health Transfer to take into account “unavoidable” cost factors imposed by demographic and geographical characteristics of the population served (Marchildon and Mou 2013).

### *How is the health system performing?*

The more important question is whether northerners receive adequate value for the comparatively large amount of money being expended on healthcare. We shall focus on a few key indicators for which data are available for the North.

A well-performing health system is expected to have fewer potentially avoidable deaths from either preventable and/or treatable causes than a health system that is not (CIHI 2016a). Table 2 compares the age-standardized rates of total, preventable and treatable causes of mortality between the territories and Canada in two three-year periods (CIHI 2016b). The rates for the territories are significantly higher than Canada's, with the exception of Yukon, for which the rate of treatable mortality comes close to Canada's. Among the three territories, Yukon and NWT do not differ significantly from each other, whereas Nunavut is significantly higher. The gap between the North and Canada is wider for preventable than for treatable mortality. This would suggest that the North is performing better in delivering treatment services (which are also provided by tertiary referral centres in the provinces) than in addressing population-level health determinants and public health interventions. For the territories, there were no statistically significant differences between the two time periods, whereas that of Canada had declined. As CIHI's database on ambulatory care sensitive conditions (ACSC) for the territories did not extend further back beyond 2006, we were not able to establish longer time trends.

**TABLE 2.** Age-standardized\* rate of avoidable mortality from preventable and treatable causes in the three territories compared to whole of Canada, mean (95% CI) 2006–2008 and 2009–2011 periods

	Period	Canada, mean (95%CI)	Yukon, mean (95%CI)	NWT, mean (95%CI)	Nunavut, mean (95%CI)
Total	2006–2008	185 (184, 186)	270 (235, 306)	269 (234, 305)	438 (373, 504)
	2009–2011	171 (171, 172)	234 (204, 265)	239 (206, 271)	434 (374, 494)
Preventable	2006–2008	119 (119, 120)	185 (156, 214)	176 (147, 204)	318 (262, 374)
	2009–2011	111 (111, 112)	177 (150, 204)	159 (133, 186)	333 (280, 386)
Treatable	2006–2008	66 (65,66)	86 (65, 106)	94 (72, 116)	120 (86, 155)
	2009–2011	60 (60,61)	58 (43, 73)	80 (61, 98)	101 (72, 131)

CI = confidence interval. \*Age-standardized to the 1991 Canadian population.

Source: Table based on data from the Canadian Institute of Health Information's health indicators interactive database; a list of causes of avoidable mortality is provided in the indicator library.

A more specific performance indicator for primary care services is the rate of hospitalizations for ACSC. These are conditions where appropriate primary care services would have reduced the need for hospitalization (CIHI 2016a). Throughout the period, 2001–2013, all three territories have age-standardized rates of ACSC hospitalization rates exceeding that of Canada, and is highest in Nunavut, averaging three times higher than the Canadian average (CIHI 2016b). There are few comparative data on ACSC among Aboriginal populations. One study showed that ACSC rates among First Nations in Manitoba were about three times higher than all Manitobans; moreover, communities with better access to primary care services reported lower ACSC rates (Lavoie et al. 2010). That study did not separate out First Nations in northern Manitoba. Furthermore, direct comparison with the territorial rates cannot be made, as the diagnostic codes used in defining ACSC were different.

Access to physician services is tracked by surveys such as the Canadian Community Health Survey (CCHS) (Young et al. 2015). The proportion of individuals in the population who had a regular doctor and who had contact with a medical doctor in the past 12 months was lower in Nunavut and NWT than Canada as a whole, while that of Yukon is comparable (Statistics Canada 2016b), reflecting the different degrees of urbanization among the territories and the nurse-based system of primary care outside the capital cities. The disparities between Aboriginal and non-Aboriginal people are most pronounced in Nunavut and least in Yukon (Table 3). Recognizing that use of physician services can be expected to be lower in the nurse-based northern systems, we analyzed a merged 2007–2014 data set of CCHS. By identifying respondents who had contact with a family doctor OR a nurse in the preceding 12 months, the gap between Aboriginal and non-Aboriginal respondents was narrowed but not erased. In Nunavut, the proportion was increased from 44% to 65%, still much lower than the non-Aboriginal rate in that territory or the Canadian rate.

**TABLE 3.** Access to physician services by Aboriginal identity groups in the three territories compared to in the whole of Canada, 2007–2010 period\*

	Canada	Yukon			NWT					Nunavut			
	Total	First Nations	Métis	Non-Aboriginal	Total	First Nations	Métis	Inuit	Non-Aboriginal	Total	Inuit	Non-Aboriginal	Total
Contact with a medical doctor													
%	79.9	78.7	66.6	81.5	80.4	59.0	64.7	59.1	74.0	67.5	44.3	76.2	51.9
95% CI	(79.7, 80.2)	(74.4, 83.0)	(53.4, 79.8)	(79.4, 83.6)	(78.5, 82.3)	(54.3, 63.7)	(52.7, 76.8)	(45.8, 72.4)	(71.0, 77.1)	(64.9, 70.1)	(40.1, 48.5)	(69.7, 82.7)	(48.3, 55.4)
Have a regular doctor													
%	84.7	74.4	68.8	78.5	77.2	24.0	33.9	24.1	52.2	39.8	8.9	24.5	12.5
95% CI	(84.5, 85.0)	(68.0, 80.7)	(56.1, 81.6)	(75.3, 81.6)	(74.4, 80.1)	(18.0, 30.1)	(24.5, 43.3)	(10.4, 37.7)	(48.8, 55.5)	(37.4, 42.3)	(6.6, 11.1)	(19.1, 29.9)	(10.4, 14.6)

95% CI = 95% confidence interval.

\*Data suppression for Inuit in Yukon and First Nations/Métis in Nunavut due to small population. Data refer to population aged 12 and above who have (a) contact with a medical doctor or (b) a regular doctor in the previous 12 months.

Source: Table based on data from Statistics Canada’s Canadian Community Health Survey, merged 2007–2013 data set, retrieved from CANSIM Table 105-0512.

According to the CCHS, the proportion of the population who were very and somewhat satisfied with the health services they receive was in the 80%+ range in Yukon, NWT and Canada. However, the proportion in Nunavut was significantly lower (Statistics Canada 2016c). A high level of patient satisfaction was also reported by surveys conducted internally by the NWT Department of Health and Social Services (NWT Health and Social Services 2009).

Indicators such as wait times for medical procedures are not routinely computed for the territories. In response to gaps on performance measures identified in recent auditor general



reports, Yukon and NWT have begun to develop performance frameworks to address comprehensive needs for measurement (NWT Health and Social Services 2015; Yukon Health and Social Services 2014).

Given the high proportion of “outflow” – territorial residents receiving healthcare out of their territory of usual residence (CIHI 2010) – performance indicators do not refer exclusively to the system that exists within the territories, but encompass institutions and providers in other parts of southern Canada to which northern patients are referred.

## Discussion

The answers to the two questions we pose: “Is healthcare too expensive?” and “How is the health system performing?” suggest that there is considerable room for improvement in obtaining greater value for public money. We can also lay to rest the notion that, if the northern healthcare system is not performing as well as Canada as a whole, it is due to the lack of money. Policy makers should be more concerned about whether healthcare can be as good as it could be given the relatively high level of expenditures.

There is considerable opportunity to improve the effectiveness of direct public health interventions judging by substantially higher preventable mortality in the North. The causes of mortality with the greatest impact on life expectancy (Peters 2013) also point to the need for strategies that go beyond the healthcare system, for example, tackling long-standing issues of food security (Council of Canadian Academies 2014), housing (Kohen et al. 2015), income, education, employment and other social determinants of health (Inuit Tapiriit Kanatami 2014). Within the healthcare system, there are technological and human resource solutions to improve efficiency, for example, optimizing medical travel and promoting the use of remote presence technologies (Mendez et al. 2013). Given the high proportion of Aboriginal people in the population, the improving cultural responsiveness of the health system will reduce barriers to access that are not due to geographical isolation.

An important limitation of our study is that we only managed to find a limited set of health system performance indicators for the North. Even when indicators exist, its applicability to the northern situation is debatable (for example, measures of the health workforce, given the reliance on short-term locums). It is clear that more northern-specific evidence is needed, and the development of performance measure frameworks by territorial health departments is an encouraging sign. In addition, it would be helpful to assemble and then compare the results of these measures with the northern regions of Canadian provinces – an exercise that would also be of benefit to provincial governments.

Broadening comparisons with the northern regions of Canadian provinces would allow decision-makers to pinpoint areas in which there is the greatest divergence between healthcare investments and health system outcomes. Focusing remedial measures on these “hot spots” would likely generate the greatest benefit in the short term and, eventually, could trigger broader system changes to improve healthcare to geographically dispersed, high-needs populations.

Unfortunately, there are serious constraints in making comparisons between the territories and the northern regions of the provinces. Foremost is the complete unavailability of health expenditure data and the limited availability of some health outcomes and health system performance indicators, largely restricted to data on mortality and survey-based risk factor prevalence.

Although CCHS contains a large set of healthcare variables, many of these are not consistently collected or not at all in the North (Young et al. 2015). The CCHS is further limited by the fact that it sampled from only 92% of Yukon's, 96% of NWT's and 71% of Nunavut's population prior to 2013. The coverage in Nunavut increased to 92% post-2013 (Young et al. 2015).

Regardless of data availability, we maintain that comparing the North with all of Canada is important from a policy perspective. In Canada, the locus for policy change is at the level of provincial and territorial governments, and their health ministries are the de facto stewards of 13 provincial/territorial health systems within a highly decentralized federation. The provinces and territories, not health regions, are responsible for determining the policies, programs and other instruments that are best designed to improve health outcomes in the most resource-efficient way possible. They are also democratically accountable for all expenditures and need to balance health expenditures against all other needed public investments. Territorial decision-makers should not be satisfied with achieving parity with the similarly disadvantaged northern regions of provinces. For this reason, we consider it important to compare the three territorial health systems with the provincial systems in the rest of Canada.

There is yet another comparison that we could make – that is, comparing the Canadian North with other circumpolar regions, where both health system input and output data are available, thus introducing the international dimension. We have previously presented evidence for the relevance and usefulness of such comparisons (Young and Chatwood 2015). The comparison between Nunavut and Greenland, on both sides of Davis Strait, is particularly instructive, as they are highly comparable in terms of demography, geography and health status, but vastly different in their healthcare organization and health expenditures level.

While different levels of governments (as well as the private sector) contribute resources to healthcare for northerners, it is the three territorial governments, which are under a fiduciary obligation to their residents to organize their health systems in as efficient a way as possible in order to extract additional value for money. The northern health system is part of a Canadian health system, despite its considerable divergence from provincial norms. Canadians should be informed about the strengths and weaknesses of the northern system, despite its very small share of the national population, and contribute to its improvement.

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