

## Health Care Costs

### Overview

A desired outcome common to many charitable programs is a reduction in the use of public health care services among individuals who, without a charity's help, may have experienced persistent or deteriorating health conditions. Depending on the program, its effect on individuals' health may lead to a reduced likelihood or frequency of emergency department or outpatient hospital or health clinic visits, or of overnight stays in a hospital or long-term care facility. We consider in this paper the costs to the public health care system of these types of patient services, beginning with emergency department visits.

### Public Cost of Emergency Department Visits

We estimate the average province-specific cost per emergency department visit using data from Canadian Institute for Health Information (CIHI). In 2018/19, the direct cost of a typical emergency department visit in Canada was \$158, while the full cost – if administration and ancillary services and diagnostic imaging are included – was \$304<sup>1</sup>. Dawson & Zinck (2009) report direct costs per emergency department visit across provinces and territories<sup>2</sup>. Cost data are available for all provinces and territories except Northwest Territories, Nunavut, Prince Edward Island, and Quebec; we estimate the costs for these provinces or territories by taking a population-weighted average of available provincial or territorial data. We adjust upwards these province-specific numbers by the ratio of the full cost of an emergency department visit in Canada to only the direct cost of a visit ( $\$304 / \$158 = 1.9$ ). Thereby do we estimate province-specific full costs per emergency department visit.

#### *Physicians Costs*

The full costs per emergency department visit still do not, actually, include all costs incurred by an emergency department visit. Notably, the costs related principally to physicians' salaries are not included. We use data from CIHI's Patient Cost Estimator to determine, by province or territory, what percentage of total hospital costs are comprised of costs related to physicians' salaries<sup>3</sup>. Hospital and physicians cost data go back to 2015 and are available through 2019. Hospital cost data are consistently available for all provinces and territories except Nunavut, while physicians cost data are generally available only for Alberta, British Columbia, Manitoba, Nova Scotia, Ontario, and Saskatchewan. For these provinces we calculate the shares of combined hospital and physicians costs that are made up of physicians costs by dividing physicians costs by combined hospital and physicians costs; for all other provinces or territories we estimate these shares by taking a population-weighted average of the available data. Annual percentage-physicians costs data from 2015 through 2019 are averaged for each province. We calculate updated province-specific total costs per emergency department visit by dividing our foregoing cost values by one minus the percentage of combined costs that are related to physicians costs. All values are inflated to 2022 CAD. We present in Table I our estimates of the public cost per emergency department visit.

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<sup>1</sup> *Hospital spending: Focus on the emergency department*. (2020). Canadian Institute for Health Information.

<sup>2</sup> Dawson, H., & Zinck, G. (2009). ED spending in Canada: A focus on the cost of patients waiting for access to an in-patient bed in Ontario. *Healthcare Quarterly*, 12(1), 25-28.

<sup>3</sup> *Patient cost estimator*. (n.d.). Canadian Institute for Health Information. <https://www.cihi.ca/en/patient-cost-estimator>

**Table I – Public Cost per Emergency Department Visit (\$)**

Canada	425
Alberta	344
British Columbia	393
Manitoba	329
New Brunswick	313
Newfoundland	284
Northwest Territories	424
Nova Scotia	276
Nunavut	424
Ontario	491
Prince Edward Island	424
Quebec	424
Saskatchewan	424
Yukon	238

## Public Cost of a Hospital Stay

We estimate using CIHI's Patient Cost Estimator the typical costs per hospital stay for all health conditions, for conditions related to substance use, and for conditions related to mental illness. CIHI provides cost and length per stay data for hundreds of different health conditions, disaggregated by province and year (as mentioned earlier, from 2015 through 2019). Total cost per stay data, including physicians costs, are available for the provinces earlier mentioned – Alberta, British Columbia, Manitoba, Nova Scotia, Ontario, and Saskatchewan. For all other provinces or territories we estimate total costs per stay by dividing hospital costs by one minus our estimates for the percentage of total costs that are related to physicians. For each year from 2015 through 2019 and for each province or territory, we estimate an average condition-neutral cost per hospital stay by weighting the costs specific to different health conditions by the number of cases of hospitalization for each condition. We repeat this process for length of stay data. We then estimate, for each province or territory, their average costs per stay and lengths per stay from 2015 through 2019. We mirror this process for conditions related to substance use and conditions related to mental illness, except that in either case we narrow our analysis to limited numbers of applicable conditions<sup>4</sup>.

Elsewhere CIHI reports, presumably based on its own calculations, province-specific, condition-neutral costs and lengths per hospital stay<sup>5</sup>. These data do not match ours that we calculated directly from the raw CIHI data, and we wonder whether this is not because we weighted condition-specific costs and lengths of stay by the volume of cases of each condition, whereas perhaps CIHI did not. At any rate, we use both our calculated figures and CIHI's data to calculate average condition-neutral and province-specific costs and

<sup>4</sup> Substance use: case mix groups 698 (Substance Abuse with Acute Intoxication), 702 (Substance Abuse with Withdrawal and Delirium), 703 (Substance Abuse with Residual/Late Onset/Psychotic Disorder), 708 (Substance Abuse, with Other State), and 778 (Poisoning/Toxic Effect of Drug). Mental illness: case mix groups 678 (Schizotypal/Delusional Disorder), 683 (Disorder of Adult Personality Behaviour), 684 (Obsessive Compulsive Disorder), 686 (Anxiety Disorder), 689 (Bipolar Disorder), 691 (Bipolar Disorder, Severe Depression), 693 (Depressive Episode), 694 (Mood [Affective] Disorder), 697 (Mixed Disorder of Conduct/Emotion), and 707 (Schizophrenia/Schizoaffective Disorder).

<sup>5</sup> *Cost of a standard hospital stay*. (n.d.). Canadian Institute for Health Information. [https://yourhealthsystem.cihi.ca/hsp/inbrief?lang=en#!/indicators/015/cost-of-a-standard-hospital-stay;/mapC1;mapLevel2;trend\(C1\);trendCity\(69f906868590225f8ba1f93b3650d9f930013e3a\);/](https://yourhealthsystem.cihi.ca/hsp/inbrief?lang=en#!/indicators/015/cost-of-a-standard-hospital-stay;/mapC1;mapLevel2;trend(C1);trendCity(69f906868590225f8ba1f93b3650d9f930013e3a);/); Hospital stays in Canada. (n.d.). Canadian Institute for Health Information. <https://www.cihi.ca/en/hospital-stays-in-canada>

lengths of stay. As CIHI did not report for itself cost and length of stay data for substance use or mental illness conditions specifically, we use only in these cases our own calculated values. Finally, we calculate province-specific per diem costs per stay for all conditions, conditions related to substance use, and conditions related to mental illness by dividing, in each case, costs per stay by length per stay data. We present in Table II our estimates of total costs per stay, lengths of stay, and per diem costs per stay for all conditions, and substance use and mental illness conditions specifically.

**Table II –Inpatient Costs and Lengths of Stay, Select Conditions**

	all conditions			substance use			mental illness		
	cost per hospital stay (\$)	length of stay (days)	per diem cost per hospital stay (\$)	cost per hospital stay (\$)	length of stay (days)	per diem cost per hospital stay (\$)	cost per hospital stay (\$)	length of stay (days)	per diem cost per hospital stay (\$)
Canada	8,567	5.9	1,454	5,919	3.8	1,571	12,350	10.9	1,137
Alberta	10,609	5.9	1,812	8,369	4.3	1,959	17,432	13.3	1,315
British Columbia	8,537	6.0	1,427	5,458	3.5	1,567	12,992	12.0	1,083
Manitoba	8,333	7.0	1,197	5,722	4.9	1,162	13,475	16.1	835
New Brunswick	7,781	6.4	1,224	5,344	4.2	1,272	11,108	12.9	861
Newfoundland	8,603	6.5	1,332	5,621	3.6	1,550	11,415	10.8	1,061
Northwest Territories	12,841	4.6	2,801	8,843	3.0	2,939	23,384	9.3	2,515
Nova Scotia	8,602	6.6	1,297	5,322	5.7	930	10,866	14.9	730
Nunavut	8,585	4.2	2,021	5,919	3.8	1,571	12,350	10.9	1,137
Ontario	7,850	5.4	1,466	5,561	3.1	1,770	10,882	6.2	1,751
Prince Edward Island	8,566	6.9	1,246	6,070	4.8	1,258	12,027	12.5	964
Quebec	8,208	6.5	1,263	5,752	4.2	1,357	11,800	15.2	777
Saskatchewan	9,105	5.3	1,719	5,544	4.1	1,349	13,551	12.0	1,127
Yukon	8,273	4.6	1,784	6,493	2.8	2,286	14,412	5.6	2,570

## Public Cost of an Outpatient Visit

We use data from multiple sources to estimate the cost of an outpatient visit to a hospital or health clinic. World Health Organization (WHO) provides inpatient and outpatient cost data for most countries in the world<sup>6</sup>. The costs of outpatient visits are separated by the type of hospital or facility patients are served by: health centres with no beds, health centres with beds, primary care hospitals, secondary care hospitals, and tertiary care hospitals. For every type of facility, there is provided an average cost per visit. Collecting these data for Canada and for each type of facility, and inflating the values to 2022 CAD, we calculate average costs per outpatient visit by averaging the data for each type of facility. Moses et al. (2019) provides data for each country on the unit cost per outpatient visit<sup>7</sup>. In Canada, the cost per outpatient visit, in 2017 USD, is \$157. We adjust for exchange rate and inflation to get \$229. Averaging the two estimates, we get a cost per outpatient of \$154.

This is the result for Canada as a whole. We then estimate province-specific costs per outpatient visit by multiplying the overall Canadian cost by the ratio of each province's or territory's inpatient cost per day to that of Canada as a whole. We present in Table III the resulting province-specific estimates of the cost per outpatient visit.

<sup>6</sup> WHO-CHOICE estimates of cost for inpatient and outpatient health service delivery. (2021). World Health Organization.

<sup>7</sup> Moses, M. W. et al. (2019). Funding and services needed to achieve universal health coverage: Applications of global, regional, and national estimates of utilisation of outpatient visits and inpatient admissions from 1990 to 2016, and unit costs from 1995 to 2016. *Lancet Public Health*, 4, 49-73.

**Table III – Cost per Outpatient Visit (\$)**

Canada	154
Alberta	191
British Columbia	151
Manitoba	126
New Brunswick	129
Newfoundland	141
Northwest Territories	296
Nova Scotia	137
Nunavut	213
Ontario	155
Prince Edward Island	132
Quebec	133
Saskatchewan	181
Yukon	188