

## The Private Cost of Public Queues for Medically Necessary Care, 2020

by Mackenzie Moir and Bacchus Barua

### SUMMARY

- One measure of the privately borne cost of wait times is the value of time that is lost while waiting for treatment.
- Valuing only hours lost during the average work week, the estimated cost of waiting for care in Canada for patients who were in the queue in 2019 was about \$2.1 billion. This works out to an average of about \$1,963 for each of the estimated 1,064,286 Canadians waiting for treatment in 2019.
- This is a conservative estimate that places no intrinsic value on the time individuals spend waiting in a reduced capacity outside of the work week. Valuing all hours of the week, including evenings and weekends but excluding eight hours of sleep per night, would increase the estimated cost of waiting to almost \$6.4 billion, or about \$5,972 per person.
- This estimate only counts costs that are borne by the individual waiting for treatment. The costs of care provided by family members (the time spent caring for the individual waiting for treatment) and their lost productivity due to difficulty or mental anguish are not valued in this estimate. Moreover, non-monetary medical costs, such as increased risk of mortality or adverse events that result directly from long delays for treatment, are not included in this estimate.

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## Introduction

In December 2019, the Fraser Institute released its 29th annual measurement of waiting times for medically necessary treatments in Canada (Barua and Moir, 2019). The study reported that the national median waiting time from specialist appointment to treatment was 10.8 weeks in 2019, which is 0.2 weeks shorter than in 2018. However, the total wait between referral from a general practitioner and receipt of treatment

was 20.9 weeks in 2019—longer than the 19.8 weeks reported in 2018.

However, the measurement of waiting times, or the examination of the absolute delay Canadians must endure in order to receive medically necessary care, is only one way of looking at the burden of waiting for health care. We can also calculate the privately borne cost of waiting: the value of the time that is lost while waiting for treatment.<sup>1</sup>

**Table 1: Estimated Number of Procedures for which Patients are Waiting after Appointment with Specialist, by Specialty, 2019**

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	5,409	4,041	452	627	3,669	2,318	688	369	—	186	17,760
Gynaecology	3,993	5,505	747	975	8,004	4,232	1,411	852	—	584	26,303
Ophthalmology	30,362	19,883	10,826	14,042	43,862	24,265	2,964	6,838	1,520	6,503	161,067
Otolaryngology	3,781	5,305	1,791	1,265	9,376	7,605	1,083	1,335	97	528	32,167
General Surgery	18,862	15,721	2,791	5,448	27,392	7,061	1,809	6,599	—	2,605	88,289
Neurosurgery	1,547	2,070	330	231	3,031	1,015	718	56	—	—	8,997
Orthopaedic Surgery	14,824	21,518	5,266	7,332	53,834	25,887	6,767	8,398	—	1,552	145,379
Cardiovascular Surgery	330	56	—	3	434	485	39	2	—	55	1,405
Urology	6,664	3,902	—	968	16,279	4,374	1,292	2,376	—	16	35,871
Internal Medicine	14,002	18,662	2,183	3,830	15,743	2,356	722	4,879	304	1,422	64,101
Radiation Oncology	69	33	4	3	430	249	—	45	3	8	845
Medical Oncology	301	79	32	—	1,291	309	16	32	7	14	2,082
Residual	66,051	77,752	22,151	30,286	163,522	62,459	14,478	24,342	3,255	15,727	480,022
<b>Total</b>	<b>166,195</b>	<b>174,529</b>	<b>46,573</b>	<b>65,008</b>	<b>346,867</b>	<b>142,616</b>	<b>31,987</b>	<b>56,123</b>	<b>5,186</b>	<b>29,201</b>	<b>1,064,286</b>
Proportion of Population	3.3%	4.1%	4.0%	4.8%	2.4%	1.7%	4.1%	5.8%	3.4%	5.6%	2.9%

Notes: a) Totals may not match sums of numbers for individual procedures due to rounding.

b) All data regarding oncology refer only to procedures done in hospitals. Most cancer patients are treated in cancer agencies. Therefore, the oncology data must be regarded as incomplete.

Source: Barua and Moir, 2019.

## The privately borne cost of waiting for care

One way of estimating the privately borne cost of waiting for care in Canada was originally developed by Steven Globerman and Lorna Hoye (1990).<sup>2</sup> They calculated the cost of waiting by estimating the amount of time that could not be used productively by a patient while waiting for treatment.

Globerman and Hoye's methodology is relatively straightforward. First, multiply the number of patients waiting for treatment by the wait times for those treatments in order to derive an estimate of the total number of weeks all patients will spend waiting for care. Then multiply this value by a measure of the proportion of time spent waiting for treatment that is rendered unproductive owing to the physical and emotional impact of an untreated medical condition. The monetary value of this lost productive time can then be projected.

In 2019, an estimated 1,064,286 Canadians were waiting for care after an appointment with a specialist (table 1). These Canadians were expected to wait, on average, for 10.8 weeks in order to receive medically necessary treatment. Of course, the wait times patients faced varied significantly across provinces and medical specialties (table 2). Multiplying the number of Canadians waiting in each of the 12 medical specialties in each of the 10 provinces by the weighted median wait time for that medical specialty in that province gives a rough estimate<sup>3</sup> of the total amount of time that Canadians waited for treatment in 2019: about 15.5 million weeks. This estimate is lower than the 16 million weeks estimated for 2018 due to a decrease in wait times for this segment and the estimated number of Canadians waiting for care (Barua and Moir, 2019; Barua and Jacques, 2019).

Globerman and Hoye's original estimate for the cost of waiting, which came from responses to a survey of physicians, used specialty-specific measures of the proportion of patients who were "experiencing significant difficulty in carrying on their work or daily duties as a result of their medical conditions" (1990: 26). The proportions they estimated ranged from 14% of patients in gynaecology to 88% in cardiovascular surgery, and averaged 41% overall (Globerman with Hoye, 1990; Esmail, 2009a). The estimates of lost productivity measured by Globerman and Hoye cannot necessarily be applied today because of advances in medicine and the medical system's ability to deal with pain and discomfort with pharmaceuticals. These advances may allow many Canadians who are suffering significant difficulties to function at a higher level today than they would have in 1990, or even to maintain their normal activity levels. For this reason, our estimation of the cost of waiting in 2019 is based on more recent data from Statistics Canada's Canadian Community Health Survey [CCHS]. Specifically, the survey's Health Services Access Subsample [HSAS] provides estimates for the number of patients whose lives were affected by the wait for non-emergency surgery. Using data from the most recent HSAS, Ren and Barua (2017) estimated that 13.2% of people were adversely affected by their wait for non-emergency surgery in 2013 (Statistics Canada, 2014). This percentage is below even the lowest specialty-specific measure estimated by Globerman and Hoye (1990).<sup>4</sup>

An assumption that 13.2% of people waiting for treatment in 2019 experienced significant difficulties in their daily lives as a result of their untreated medical condition, and thus lost productivity while waiting for treatment, results in an estimate that roughly 2.1 million weeks were "lost" while patients waited for treatment. However, because this estimate is based on the as-

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**Table 2: Median Patient Wait for Treatment after Appointment with Specialist, by Specialty, 2019 (in Weeks)**

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	32.9	26.1	15.3	17.8	8.3	8.8	20.9	14.0	—	10.3	15.3
Gynaecology	11.1	12.7	6.6	7.5	7.1	8.8	17.4	10.1	—	5.0	9.0
Ophthalmology	19.6	17.2	31.3	46.1	13.0	9.5	17.1	20.0	40.9	40.7	16.1
Otolaryngology	14.8	20.8	15.2	14.7	9.1	10.4	17.3	19.8	8.9	9.8	12.0
General Surgery	7.1	10.0	4.4	9.3	4.7	5.0	10.6	11.4	—	5.7	6.4
Neurosurgery	10.2	20.7	10.2	12.0	7.6	5.2	32.9	6.0	—	—	9.7
Orthopaedic Surgery	18.9	32.5	22.2	31.7	22.3	21.6	43.8	44.4	—	19.2	24.5
Cardiovascular Surgery (Urgent)*	1.4	1.0	—	2.0	0.8	1.2	1.0	1.4	—	4.2	1.1
Cardiovascular Surgery (Elective)	5.1	12.0	—	7.3	3.9	7.2	24.0	5.7	—	27.2	6.3
Urology	6.1	6.0	—	6.8	4.0	6.7	9.3	8.9	—	2.0	5.2
Internal Medicine	10.2	20.1	8.3	13.8	5.9	4.3	10.8	18.8	7.0	7.7	9.7
Radiation Oncology	4.9	2.8	2.5	2.0	2.0	3.8	—	4.9	2.5	1.6	2.6
Medical Oncology	3.9	1.5	1.5	—	2.0	2.0	1.0	1.5	5.0	1.3	2.1
Weighted Median	11.3	16.0	13.7	19.2	8.0	9.1	18.5	17.1	20.5	12.4	10.8

Note: To calculate the total weeks of waiting for care, only Cardiovascular Surgery (Urgent) was used.

Source: Barua and Moir, 2019.

**Table 3: Average of Average Hourly and Weekly Wages, by Province, January to December 2019**

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Nominal average hourly wage (\$)	27.64	31.39	27.62	25.22	28.33	26.65	23.48	23.72	22.77	26.38	27.83
Nominal average weekly wage (\$)	999.29	1,180.15	1,026.87	919.99	1,036.32	945.03	882.65	877.37	851.10	1,020.48	1,015.43

Notes:

a) Wages reported are earned wages or salaries including tips, commissions, and bonuses before taxes and other deductions for all occupations, both sexes, ages 15 and over.

b) The nominal average hourly/weekly wage is an average of the hourly/weekly wage of January to December.

c) Previous reports used wage information from Statistics Canada's CANSIM table 282-0069, which has been discontinued and replaced by table 14-10-0306-01 (formerly CANSIM 282-0151).

Source: Statistics Canada, 2020a; calculations by authors.

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**Table 4: Estimated Cost of Waiting for Medically Necessary Health Services from Specialist Appointment to Treatment, by Province and Specialty, 2019 (\$ thousands)**

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	23,499	16,410	940	1,353	4,190	2,559	1,674	599	—	260	51,484
Gynaecology	5,863	10,936	672	888	7,740	4,647	2,855	993	—	394	34,987
Ophthalmology	78,467	53,362	45,948	78,736	78,163	28,676	5,917	15,868	6,986	35,637	427,760
Otolaryngology	7,368	17,238	3,694	2,263	11,680	9,888	2,187	3,058	97	694	58,166
General Surgery	17,623	24,542	1,684	6,186	17,747	4,377	2,239	8,714	—	2,017	85,128
Neruosurgery	2,077	6,695	456	336	3,166	661	2,752	39	—	—	16,182
Orthopaedic Surgery	37,043	108,972	15,864	28,261	164,651	69,845	34,514	43,221	—	4,006	506,377
Cardiovascular Surgery	61	9	—	1	46	70	4	0	—	31	222
Urology	5,381	3,678	—	799	9,023	3,647	1,402	2,454	—	4	26,389
Internal Medicine	18,862	58,499	2,456	6,420	12,727	1,275	907	10,630	238	1,467	113,480
Radiation Oncology	44	14	2	1	118	116	—	26	1	2	324
Medical Oncology	154	19	6	—	355	77	2	5	4	2	625
Residual (using est. median data)*	98,683	194,288	41,014	70,473	178,775	71,180	31,234	48,275	7,486	26,193	767,601
<b>Total Cost</b>	<b>295,125</b>	<b>494,661</b>	<b>112,735</b>	<b>195,715</b>	<b>488,381</b>	<b>197,019</b>	<b>85,686</b>	<b>133,883</b>	<b>14,812</b>	<b>70,707</b>	<b>2,088,724</b>

\* The “residual” count is a count of the number of non-emergency procedures for which people are waiting in Canada that are not included in the Fraser Institute’s survey. The wait time used for calculating the residual cost is each province’s weighted median wait time for all specialties included in *Waiting Your Turn*.

Sources: Table 1; Table 2; Statistics Canada, 2014; calculations by authors.

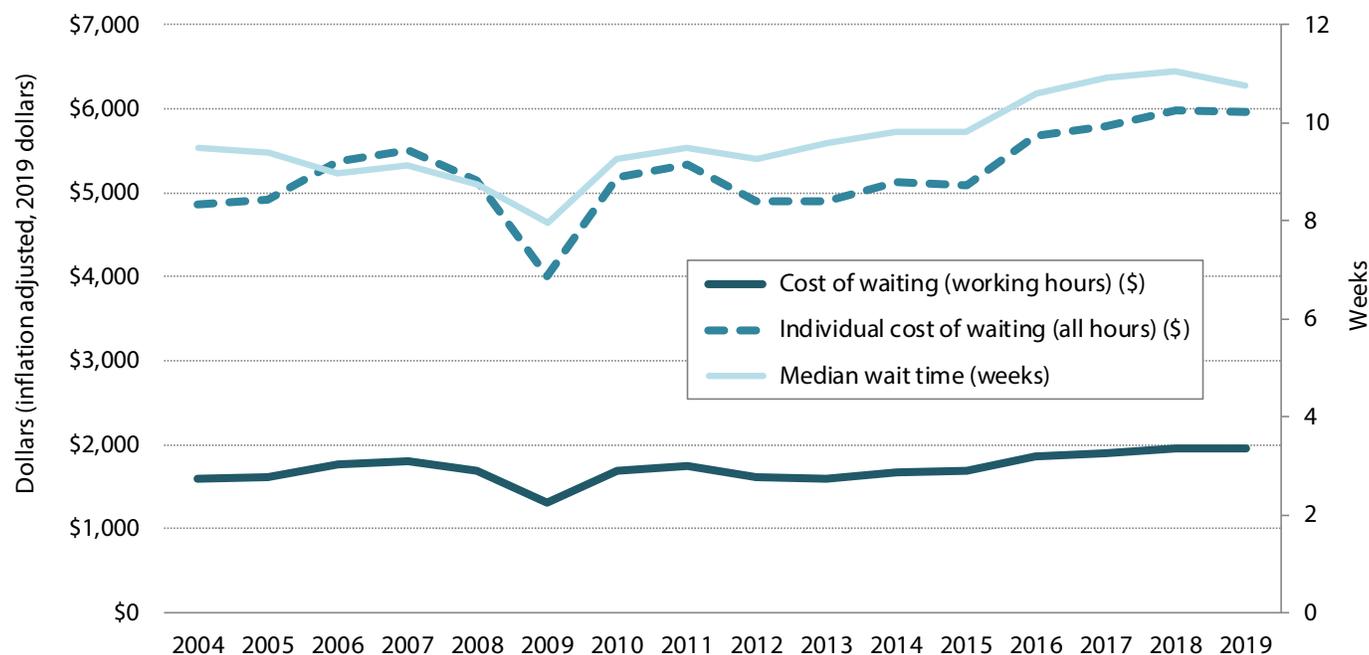
sumption that all individuals face the same wait time for treatment in each specialty/province combination, it is mathematically equivalent to assuming that 13.2% of the productivity of all Canadians waiting for care was lost to a combination of mental anguish and the pain and suffering that can accompany any wait for treatment. Multiplying this lost time by an estimate of the average weekly wage of Canadians in 2019 (given in table 3), which provides an estimate for the value of the lost time to each individual,<sup>5</sup> gives

an estimate of the cost of productive time that was lost while individuals waited for medically necessary treatments in 2019 (table 4).

The estimated cost of waiting for care in Canada for patients who were in the queue in 2019, according to calculations based on the methodology produced by Globerman and Hoye (1990), was almost \$2.1 billion—an average of about \$1,963 for each of the estimated 1,064,286 Canadians waiting for treatment in 2019. Alter-

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**Figure 1: Calculated Cost of Waiting per Patient and Median Wait for Treatment after Consultation with Specialist, 2004–2019**



Sources: Barua and Hasan, 2018; Barua and Jacques, 2019; Barua and Moir, 2019; Barua and Ren, 2015–2017; Esmail, 2005–2014; Statistics Canada, 2020a, 2020b; calculation by authors.

nately, that cost works out to roughly \$14,868 for each individual among the 13.2% of patients in the queue who were suffering considerable hardship while waiting for care.<sup>6</sup>

Compared to last year, the largest absolute changes to the total private cost of public queues were in British Columbia and Alberta. Specifically, British Columbia saw a \$210,497,000 (or 42%) drop in the total private cost of public queues, while Alberta experienced a \$92,085,000 (or 23%) increase from 2019 (table 4). In BC, this drop was driven by large reductions in the cost of waiting for procedures in Ophthalmology (-\$27,628,000 or -26%) and Orthopedic Surgery (-\$140,005,000 or -79%). Alberta, on the other hand, saw major

increases in the cost of Orthopaedic Surgery (\$20,034,000 or 23%), with the cost of Internal Medicine queues nearly tripling (\$38,991,000 or 200%). When compared to last year, Saskatchewan (at \$59,172,000 or 110%) and Newfoundland & Labrador (at \$31,181,000 or 79%) experienced the largest proportional increases in the total cost of public queues. In both Saskatchewan and Newfoundland & Labrador, these increases were primarily driven by growth in the cost of queues for Ophthalmology (\$39,678,000 or 633%, and \$32,913,000 or 1208%, respectively).<sup>7</sup>

Of course, this number is a conservative estimate of the private cost of waiting for care in Canada. It assumes that only those hours during the average work week should be counted

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as lost. It places no intrinsic value on the time individuals spend waiting in a reduced capacity outside of the working week. Valuing all hours of the week, including evenings and weekends but excluding eight hours of sleep per night, at the average hourly wage (given in table 3) would increase the estimated cost of waiting to almost \$6.4 billion or about \$5,972 per person.

This estimate only counts costs that are borne by the individual waiting for treatment. The costs of care provided by family members (in time spent caring for the individual waiting for treatment) and their lost productivity due to difficulty or mental anguish, are not valued in this estimate.<sup>8</sup> Non-monetary medical costs, such as increased risk of mortality or adverse events that result from long delays for treatment, are also not included in this estimate (Day, 2013). Moreover, we only estimate the cost of the wait time from specialist to treatment, and do not include the cost of the 10.1 week wait time from referral by a general practitioner to seeing a specialist,<sup>9</sup> or other delays in the care pathway.

From a historical perspective, the estimated \$1,963 private cost of waiting for treatment per patient in 2019 is 23% higher than the \$1,593 (inflation adjusted, 2019 dollars) estimated for 2004 (see figure 1) with minimal change from the \$1,961 estimated for 2018. If hours outside of the work week are included, the estimated \$5,972 private cost of waiting per patient in 2019 is 23% higher than the \$4,859 estimated for 2004 with minimal change from the \$5,974 estimated for 2018.

## Update in methodology

Editions of this report from 2005-2016 used a Statistics Canada finding that 11.0% of people

were adversely affected by their wait for non-emergency surgery in 2005 (Statistics Canada, 2006). Ren and Barua (2017) calculated a newer estimate of this figure (13.2%) based on raw data (weighted population estimates) contained in the 2014 Data Dictionary of the Canada Community Health Survey's (CCHS) Health Services Access Subsample (Statistics Canada, 2014).<sup>10</sup> This year's report also uses this more recent estimate. The two estimates are, however, not directly comparable because the 11.0% used in the past reports was calculated using data that "do not reflect the waiting times of those still waiting at the time of the survey" (Statistics Canada, 2006). By including those still waiting at the time of the survey, the updated estimate for 2005 would be 14.4%. This suggests that previous reports may have underestimated the cost of waiting for treatment.

This year's report therefore also contains Ren and Barua's (2017) revised estimates of the cost of waiting since 2004 based on updated estimates of the percent of patients whose life are affected by the wait for non-emergency surgery calculated using data from successive iterations of the Canada Community Health Survey's [CCHS] Health Services Access Subsample Data Dictionaries<sup>11</sup> (2003 to 2013).

## Conclusion

The rationing of health care in Canada through queues for medically necessary health services imposes direct costs on those waiting for care. The ability of individuals who are waiting to enjoy leisure time and earn an income to support their families is diminished by physical and psychological pain and suffering. In addition, friends and family may be asked to help those waiting for treatment, or may suffer similar re-

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ductions in their productive lives because of their own psychological pain.

In 2019, the estimated 1,064,286 Canadians who were waiting for treatment endured an estimated private cost of almost \$2.1 billion, and possibly substantially more, in lost productivity and leisure time.

## Notes

<sup>1</sup> The calculation here measures only the cost of the wait time from specialist to treatment, and does not include the cost of the 10.1 week wait time from referral by a general practitioner to seeing a specialist (Barua and Moir, 2019), or other delays in the care pathway. Thus, this estimate of the privately borne cost of waiting is an underestimate of the true privately borne cost of waiting.

<sup>2</sup> Globerman and Hoye employed this methodology in 1990 to develop an estimate of the cost of waiting for medically necessary treatment in the first measurement of waiting times in Canada published by the Fraser Institute. Follow-up examinations of the privately borne cost of queuing since 2004 published by the Fraser Institute also employ this methodology.

<sup>3</sup> This estimate includes the number of non-emergency procedures for which people are waiting that were not included in the survey, reported as the “residual” number of procedures for which people are waiting. For the purposes of calculation, it is assumed that the wait time for these procedures is the same as the weighted median for the 12 specialties in the province in question. For further details on how this number is calculated, see Barua and Moir, 2019.

<sup>4</sup> Statistics Canada’s findings are based on the percentage of survey respondents who reported that “waiting for non-emergency surgery affected their life.” Globerman and Hoye’s estimate measures the number of patients who “experienced significant difficulty carrying on their work or daily duties as a result of their medical conditions.” Notably, in 2013, 11% of those who reported being affected by their wait reported a loss of income, while 21% experienced loss of work. At the same time, 45% experienced worry, anxiety, and stress, 54% experienced pain, and 42% experienced

problems with activities of daily living (Statistics Canada, 2014; calculations by Ren and Barua, 2017). The methodology employed here for the estimate of the private cost of waiting attempts to measure much more than just lost work or lost income. Rather, it estimates lost productivity in total, including lost on-the-job productivity, lost enjoyment of life, inability to play sports, etc. In other words, the private cost of waiting for care estimated here values the amount of time Canadians spend waiting for care during which these individuals are unable to participate fully in their lives.

<sup>5</sup> Though extending this value of time to all individuals may seem questionable (given that some children and retired seniors will be included in the number of patients in the queue), one need only understand that the lost leisure or ability to concentrate that these individuals endure must have some value. Since seniors are enjoying increasing opportunities to engage in part-time employment, their labour/leisure trade off will be such that the last unit of leisure a senior citizen enjoys is equal in value to the last unit of work he or she undertakes. Seniors who choose not to work are clearly placing a higher value on their leisure time than the labour market will offer for their labour. For children, the value of their leisure (which can potentially be viewed as time for personal growth) or productivity at school (which can be viewed as an investment for the future) is assumed to be, for simplicity, not significantly different from that of a working adult. Furthermore, as there are likely to be few children waiting for treatment, any variation from the value of time for adults is not likely to have a marked effect on the average calculation.

<sup>6</sup> Globerman and Hoye estimated the cost of queuing for medically necessary care to be about \$2,900 per patient in 1989. In 2019 dollars, this works out to approximately \$5,273.

<sup>7</sup> The large changes in the total cost of waiting for care in these provinces also reflect significant changes in the estimated cost of waiting for residual procedures. These are based on the wait times for treatment (after specialist consultation) weighted across 12 specialties in each province. While British Columbia saw a reduction in the cost of residual procedures (-\$50,805,000 or -34%), Alberta (\$36,147,000 or 23%) and Saskatchewan (\$22,828,000 or 126%) both saw significant increases this year.

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<sup>8</sup> In 2013, 13% of individuals whose lives were affected by the wait times for treatment reported an increased dependence on family or friends based on the *CCHS 2013 Subsample Data Dictionary* (Statistics Canada, 2014; calculations by Ren and Barua, 2017).

<sup>9</sup> In 2013, approximately 19.4% of individuals who visited a specialist indicated that waiting for the visit affected their life (Statistics Canada, 2014; calculations by Ren and Barua, 2017).

<sup>10</sup> Ren and Barua (2017) estimated the rate using (population weighted) responses to WTM\_28 in the CCHS 2013 *Subsample Data Dictionary* (Statistics Canada, 2014). Due to the changes made by CCHS over time, the variable name may vary depending on the edition; however, the concept has stayed the same.

<sup>11</sup> The subsample (which includes estimates for all 10 provinces) on access to health care services (ACC) and waiting times (WTM) has been conducted within the CCHS every odd year from 2001 to 2013. For even years, Ren and Barua (2017) calculated an average based on the preceding and following year. For example, in 2012, they took an average of the rate in 2011 (14.8%) and 2013 (13.2%) to get the 14.0%. In 2015, the HSAS subsample was discontinued. The authors therefore use the 13.2% from the 2013 edition for all subsequent calculations.

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As the researchers have worked independently, the views and conclusions expressed in this paper do not necessarily reflect those of the Board of Directors of the Fraser Institute, the staff, or supporters.

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