

## The Private Cost of Public Queues for Medically Necessary Care, 2015 edition

by Bacchus Barua and Feixue Ren

### 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 2014 was \$1.2 billion. This works out to an average of about \$1,289 for each of the estimated 937,345 Canadians waiting for treatment in 2014.

■ 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, in-

cluding evenings and weekends but excluding eight hours of sleep per night, would increase the estimated cost of waiting to almost \$3.7 billion, or about \$3,929 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.

## Introduction

In November 2014, the Fraser Institute released its 24th annual measurement of waiting times for medically necessary treatments in Canada (Barua and Fathers, 2014). This most recent measurement shows that the national median waiting time from specialist appointment to treatment increased from 9.6 weeks in 2013 to 9.8 weeks in 2014.

But 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>

## 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 Hoyer (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 Hoyer'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 2014, an estimated 937,345 Canadians were waiting for care after an appointment with a specialist (table 1). These Canadians waited, on average, 9.8 weeks for treatment, though those wait times varied significantly when broken down by province and medical specialty (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 of the total amount of time that Canadians waited for treatment in 2014: about 12.3 million weeks. This estimate is larger than the 11.8 million weeks estimated for 2013 due to an increase in both wait times and in the number of Canadians waiting for care (Barua and Fathers, 2014; Esmail, 2014).

Globerman and Hoyer'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%

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<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 wait time from referral by a general practitioner to seeing a specialist, 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 Hoyer 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.

**Table 1: Estimated Number of Procedures for which Patients are Waiting after Appointment with Specialist, by Specialty, 2014**

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL
Plastic Surgery	3,278	4,855	82	234	3,034	2,497	397	347	26	574
Gynaecology	3,379	2,978	1,276	723	8,610	4,853	484	614	144	750
Ophthalmology	13,709	10,777	2,299	6,294	36,407	30,646	1,419	4,446	394	798
Otolaryngology	5,238	4,312	1,017	683	11,628	3,949	923	1,067	108	—
General Surgery	12,816	11,775	2,887	3,413	22,954	35,937	1,151	6,137	980	—
Neurosurgery	2,453	1,429	273	—	2,406	173	—	340	—	—
Orthopaedic Surgery	27,150	11,102	2,777	9,584	46,056	18,791	3,780	9,356	629	1,190
Cardiovascular Surgery	312	188	—	49	560	607	42	3	—	20
Urology	4,956	2,580	199	502	13,003	7,637	1,240	4,706	547	1,184
Internal Medicine	11,089	16,589	2,259	3,499	13,212	37,333	966	942	—	4,158
Radiation Oncology	66	57	8	—	208	164	30	33	—	6
Medical Oncology	185	111	—	35	355	381	30	29	7	17
Residual	59,559	52,452	10,020	19,533	122,186	86,447	8,104	21,775	2,141	14,235
<b>Total</b>	<b>144,189</b>	<b>119,204</b>	<b>23,098</b>	<b>44,549</b>	<b>280,621</b>	<b>229,415</b>	<b>18,565</b>	<b>49,795</b>	<b>4,976</b>	<b>22,932</b>
Proportion of Population	3.1%	3.0%	2.1%	3.5%	2.1%	2.8%	2.5%	5.3%	3.4%	4.4%
Canada:	Total number of procedures for which patients are waiting in 2014							937,345		
	Percentage of Population							2.7%		

Note: Totals may not match sums of numbers for individual procedures due to rounding.

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 Fathers, 2014.

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, this author's estimation of the cost of

waiting in 2014 uses a Statistics Canada finding that 11.0% of people were adversely affected by their wait for non-emergency surgery in 2005 (Statistics Canada, 2006). This percentage is below even the lowest specialty-specific measure estimated by Globerman and Hoye (1990).<sup>3</sup>

<sup>3</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

**Table 2: Median Patient Wait for Treatment after Appointment with Specialist, by Specialty 2014 (in Weeks)**

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	21.1	36.8	5.0	7.5	7.6	11.8	11.6	13.2	9.8	28.0	14.9
Gynaecology	8.5	7.3	9.7	5.9	7.3	7.1	5.6	5.9	8.0	7.8	7.4
Ophthalmology	10.8	10.3	7.2	22.5	11.2	8.1	9.1	12.8	16.0	8.0	10.1
Otolaryngology	18.8	17.1	10.3	7.7	11.2	6.5	10.6	13.1	10.9	—	11.4
General Surgery	7.0	11.3	5.1	6.3	4.3	9.5	5.8	12.5	15.7	—	7.1
Neurosurgery	17.0	14.0	7.4	—	6.3	3.8	—	14.0	—	—	9.6
Orthopaedic Surgery	35.1	18.2	12.4	43.1	20.6	16.7	26.4	56.9	23.3	18.1	23.3
Cardiovascular Surgery (Urgent)*	1.7	1.7	—	1.9	1.2	1.5	2.2	1.5	—	1.9	1.4
Cardiovascular Surgery (Elective)	7.6	7.2	—	11.2	3.9	7.9	6.0	6.8	—	11.4	6.3
Urology	5.2	5.5	1.1	4.9	3.6	5.0	10.2	22.5	38.0	8.1	5.0
Internal Medicine	9.4	23.8	7.9	9.5	4.5	17.9	14.7	4.0	—	27.6	11.3
Radiation Oncology	4.3	3.5	1.8		2.0	2.8	1.5	4.5	—	2.4	2.5
Medical Oncology	3.7	2.1	—	2.5	1.1	2.2	1.7	1.6	4.0	1.0	1.7
Weighted Median	11.6	13.4	7.0	13.9	7.4	9.8	10.9	16.4	17.6	14.2	9.8

\*Only Cardiovascular Surgery (Urgent) was used to calculate the total weeks of waiting for care in this study.

Source: Barua and Fathers, 2014.

difficulty carrying on their work or daily duties as a result of their medical conditions.” Notably, in a 2003 survey of Canadians, only 13% of those who reported being affected by their wait in the Statistics Canada study reported a loss of income, while 14% experienced loss of work. At the same time, 60% experienced worry, anxiety, and stress, 51% experienced pain, and 31% experienced problems with activities of daily living (Sanmartin et al., 2004). In a more recent Statistics Canada survey, 49% of those who were affected by their wait for care experienced worry, anxiety, and stress, 51% experienced pain, and 36% experienced problems with activities of daily living (Statistics Canada, 2006). 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, in-

An assumption that 11.0% of people waiting for treatment in 2014 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 1.35 million weeks were “lost” while patients waited for treatment. However, because this estimate is based on the assumption that all individuals face the same wait time for treatment in each specialty/province combination, it is

ability 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.

**Table 3: Average of Average Hourly and Weekly Wages, by Province, January to December 2014**

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Nominal average hourly wage	\$24.28	\$28.12	\$25.32	\$22.32	\$24.82	\$23.06	\$20.83	\$21.94	\$20.36	\$24.74	\$24.51
Nominal average weekly wage	\$882.21	\$1,081.76	\$949.38	\$813.50	\$907.16	\$814.35	\$781.47	\$811.62	\$759.27	\$966.50	\$897.48

Note: 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.

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

Source: Statistics Canada, 2015a; calculations by author.

mathematically equivalent to assuming that 11.0% 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 2014 (given in table 3), which provides an estimate for the value of the lost time to each individual,<sup>4</sup> gives

<sup>4</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

an estimate of the cost of productive time that was lost while individuals waited for medically necessary treatments in 2014 (table 4).

The estimated cost of waiting for care in Canada for patients who were in the queue in 2014, according to calculations based on the methodology produced by Globerman and Hoyer (1990), was \$1.2 billion—an average of about \$1,289 for each of the estimated 937,345 Canadians waiting for treatment in 2014. Alternately, that cost works out to roughly \$11,718 for each individual among the 11.0% of patients in the queue who were suffering considerable hardship while waiting for care.<sup>5</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 as lost. It places no intrinsic value on the time individuals spend waiting in a reduced

of time for adults is not likely to have a marked effect on the average calculation.

<sup>5</sup> Globerman and Hoyer estimated the cost of queuing for medically necessary care to be about \$2,900 per patient in 1989. In 2014 dollars, this works out to approximately \$4,854.



**Table 4: Estimated Cost of Waiting for Medically Necessary Health Services from Specialist Appointment to Treatment, by Province and Specialty, 2014 (\$ thousands)**

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	\$6,715	\$21,273	\$43	\$156	\$2,305	\$2,649	\$396	\$410	\$21	\$1,707	\$35,676
Gynaecology	\$2,795	\$2,574	\$1,298	\$380	\$6,274	\$3,097	\$231	\$325	\$96	\$621	\$17,692
Ophthalmology	\$14,373	\$13,190	\$1,733	\$12,654	\$40,559	\$22,157	\$1,108	\$5,084	\$527	\$679	\$112,065
Otolaryngology	\$9,532	\$8,767	\$1,095	\$472	\$13,013	\$2,310	\$844	\$1,250	\$98	—	\$37,382
General Surgery	\$8,672	\$15,802	\$1,546	\$1,926	\$9,817	\$30,551	\$573	\$6,870	\$1,282	—	\$77,039
Neruosurgery	\$4,036	\$2,383	\$210	—	\$1,518	\$59	—	\$426	—	—	\$8,633
Orthopaedic Surgery	\$92,462	\$23,991	\$3,607	\$36,964	\$94,741	\$28,092	\$8,581	\$47,558	\$1,225	\$2,295	\$339,517
Cardiovascular Surgery	\$50	\$38	—	\$8	\$67	\$80	\$8	\$0	—	\$4	\$256
Urology	\$2,523	\$1,688	\$23	\$220	\$4,713	\$3,446	\$1,090	\$9,443	\$1,737	\$1,013	\$25,896
Internal Medicine	\$10,087	\$47,072	\$1,860	\$2,986	\$5,990	\$59,713	\$1,221	\$340	—	\$12,205	\$141,472
Radiation Oncology	\$27	\$24	\$1	—	\$41	\$41	\$4	\$14	—	\$2	\$155
Medical Oncology	\$66	\$28	—	\$8	\$39	\$75	\$4	\$4	\$2	\$2	\$229
Residual (using est. mean data)	\$66,992	\$83,444	\$7,357	\$24,287	\$90,068	\$75,921	\$7,605	\$31,905	\$3,152	\$21,518	\$412,250
<b>Total Cost</b>	<b>\$218,331</b>	<b>\$220,276</b>	<b>\$18,773</b>	<b>\$80,063</b>	<b>\$269,147</b>	<b>\$228,192</b>	<b>\$21,665</b>	<b>\$103,628</b>	<b>\$8,140</b>	<b>\$40,045</b>	<b>\$1,208,261</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*.

Source: Table 1; Table 2; Statistics Canada, 2006; calculations by authors.

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 \$3.7 billion or about \$3,929 per person.

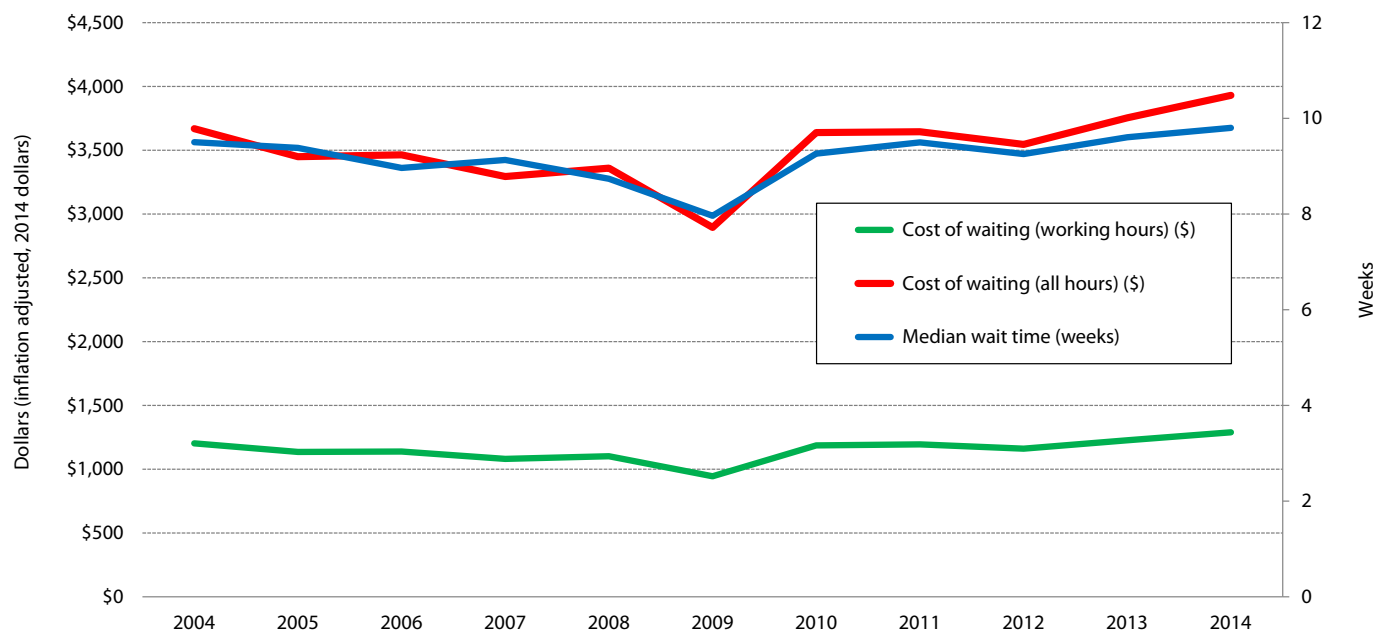
This estimate only counts costs that are borne by the individual waiting for treatment. The costs of care provided by family members (in time spent caring for the individual waiting for treatment) and their lost productivity due to difficulty or mental anguish, are not valued

in this estimate.<sup>6</sup> Moreover, non-monetary medical costs, such as increased risk of mortality or adverse events that result from long delays for treatment, are not included in this estimate (Day, 2013).

Looking historically, the estimated private cost of waiting for treatment per patient in 2014 is 7% higher than the \$1,202 (inflation adjusted,

<sup>6</sup> A 2003 Statistics Canada survey found that 20.2% of individuals whose wait times affected their lives reported increased dependence on family or friends (Sanmartin et al., 2004).

**Figure 1: Calculated Cost of Waiting per Patient and Median Wait for Treatment after Consultation with Specialist, 2004—2014**



Sources: Statistics Canada, 2015b; Esmail, 2006-2014; calculations by authors.

2014 dollars) estimated for 2004 (see figure 1) and is 5% higher than the estimated cost of \$1,226 in 2013.<sup>7</sup> If the cost of hours outside of the work week is included, the estimated cost for 2014 is again 7% higher than \$3,668 estimated for 2004 and 5% higher than the \$3,753 estimated for 2013. Further, while both wait times and the estimated private cost of waiting generally moved downward between 2004 and 2009, deteriorations in both since then have resulted in an overall lack of improvement since 2004.

<sup>7</sup> In addition to adjustment for inflation (to 2014 dollars), figures for 2005 and 2006 have been revised using the 11.0% estimate for lost time in the queue rather than the 9.8% estimate used previously.

## 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 reductions in their productive lives because of their own psychological pain.

In 2014, the estimated 937,345 Canadians who were waiting for treatment endured an estimated private cost of more than \$1.2 billion, and possibly substantially more, in lost productivity and leisure time.

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