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

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by Nadeem Esmail

### Main Conclusions

- The measurement of waiting times, or the examination of the absolute delay Canadians must endure in order to receive medically necessary care, is one way of examining 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.
- The estimated cost of waiting for care in Canada for patients who were in the queue in 2012 was \$982 million—an average of about \$1,129 for each of the estimated 870,462 Canadians waiting for treatment in 2012.
- This is a conservative estimate; it assumes that only those hours during the average work week should be counted as lost and 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 slightly more than \$3 billion, or about \$3,447 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.

### About the author



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## Introduction

In December 2012, the Fraser Institute released its 22<sup>nd</sup> annual measurement of waiting times for medically necessary treatments in Canada (Barua and Esmail, 2012). This most recent measurement shows that the national median waiting time from specialist appointment to treatment decreased from 9.5 weeks in 2011 to 9.3 weeks in 2012.

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 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

**Table 1: Estimated Number of Procedures for which Patients are Waiting after Appointment with Specialist, by Specialty, 2012**

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL
Plastic Surgery	4,925	3,470	1,823	1,035	4,180	2,517	795	668	24	148
Gynaecology	3,367	4,453	1,036	1,324	9,836	7,742	1,002	805	95	856
Ophthalmology	17,229	10,434	5,242	7,658	27,309	24,887	1,841	7,269	474	963
Otolaryngology	6,211	3,456	1,212	1,088	11,220	3,933	764	660	162	1,060
General Surgery	9,813	10,407	3,222	7,685	24,134	33,612	1,875	4,837	187	1,903
Neurosurgery	1,243	1,391	269	—	3,407	752	393	249	—	34
Orthopaedic Surgery	16,701	7,412	3,725	3,294	39,845	22,180	4,246	9,017	1,150	1,113
Cardiovascular Surgery	369	115	67	7	470	88	9	61	—	11
Urology	5,415	2,177	3,708	559	15,388	9,920	1,065	7,655	127	1,954
Internal Medicine	6,792	6,742	2,563	3,222	13,050	29,424	278	1,745	0	4,203
Radiation Oncology	52	42	15	—	191	238	72	—	4	3
Medical Oncology	100	122	—	—	537	217	33	42	0	32
Residual	46,041	37,938	16,188	21,430	106,983	78,936	9,454	24,816	1,518	11,006
Total	118,258	88,159	39,070	47,302	256,550	214,444	21,828	57,824	3,741	23,286
Proportion of Population	2.59%	2.33%	3.69%	3.78%	1.92%	2.69%	2.89%	6.12%	2.56%	4.56%
Canada: Total number of procedures for which patients are waiting in 2012								870,462		
Percentage of Population								2.52%		

Note: Totals may not match sums of numbers for individual procedures or specialties 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 Esmail, 2012.

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 2012, an estimated 870,462 Canadians were waiting for care after an appointment with a specialist (table 1). These Canadians waited, on average, 9.3 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 2012: about 10.6 million weeks. This estimate is smaller than that for 2011 of 11.8 million weeks due to a decrease in both wait times and in the number of Canadians waiting for care (Barua and Esmail, 2012; Esmail, 2012).

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% in cardiovascular surgery, and averaged 41% overall (Globerman with Hoyer, 1990; Esmail, 2009a). However, the estimates of lost productivity measured by Globerman

**Table 2: Median Patient Wait for Treatment after Appointment with Specialist, by Specialty, 2012 (in Weeks)**

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	29.3	26.2	56.2	24.9	9.4	10.8	22.9	27.0	6.5	7.6	17.2
Gynaecology	7.2	10.3	7.7	10.3	8.0	10.3	10.8	6.2	4.7	8.5	8.8
Ophthalmology	13.6	11.3	17.3	39.5	8.0	7.9	12.1	23.6	17.8	7.9	10.5
Otolaryngology	22.0	13.7	12.3	11.1	11.0	6.6	8.4	7.4	20.5	32.0	11.6
General Surgery	5.5	9.9	6.8	14.9	4.7	8.4	9.9	9.5	2.7	6.1	7.0
Neurosurgery	10.5	14.0	8.6	—	9.7	5.0	21.2	9.5	—	2.2	9.5
Orthopaedic Surgery	21.7	12.8	18.6	16.3	17.9	19.3	27.9	52.7	42.7	16.2	19.6
Cardiovascular Surgery (Urgent)	1.7	1.0	1.5	0.3	0.9	0.2	0.4	1.5	—	1.0	0.8
Cardiovascular Surgery (Elective)	5.9	5.1	12.1	14.6	3.5	3.2	2.6	4.9	—	3.6	4.4
Urology	5.4	4.9	15.5	4.4	4.3	6.2	8.1	25.7	6.4	12.8	6.3
Internal Medicine	6.1	10.6	8.8	9.4	4.4	15.3	5.2	7.3	0.5	23.5	8.8
Radiation Oncology	3.0	2.3	4.0	—	2.0	4.1	4.8	—	2.4	2.1	2.9
Medical Oncology	2.1	2.2	—	—	1.8	1.2	1.8	3.0	0.1	2.0	1.7
Weighted Median	9.8	10.5	12.4	15.4	7.0	9.3	12.5	17.6	12.4	11.8	9.3

Source: Barua and Esmail, 2012.

**Table 3: Average of average hourly and weekly wages\*, by province, January to December 2012**

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
<b>Nominal average hourly wage</b>											
	\$23.58	\$26.69	\$24.11	\$21.36	\$24.21	\$22.19	\$20.03	\$20.90	\$19.80	\$23.10	\$23.65
<b>Nominal average weekly wage</b>											
	\$854.38	\$1,022.31	\$904.25	\$779.01	\$888.43	\$786.34	\$752.82	\$769.13	\$732.75	\$894.41	\$866.53

\*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.

Source: Statistics Canada, n.d.; calculations by author.

**Table 4: Calculated cost of waiting for medically necessary health services from specialist appointment to treatment, by province and specialty, 2012 (\$ thousands)**

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	\$13,568	\$10,229	\$10,195	\$2,207	\$3,824	\$2,344	\$1,508	\$1,527	\$12	\$110	\$45,523
Gynaecology	\$2,293	\$5,169	\$790	\$1,165	\$7,677	\$6,909	\$893	\$424	\$36	\$717	\$26,072
Ophthalmology	\$22,004	\$13,249	\$9,029	\$25,889	\$21,418	\$16,965	\$1,848	\$14,493	\$680	\$744	\$126,321
Otolaryngology	\$12,817	\$5,325	\$1,481	\$1,039	\$12,058	\$2,244	\$529	\$413	\$267	\$3,338	\$39,511
General Surgery	\$5,106	\$11,569	\$2,193	\$9,832	\$11,060	\$24,476	\$1,531	\$3,886	\$40	\$1,148	\$70,842
Neurosurgery	\$1,232	\$2,196	\$232	\$—	\$3,218	\$324	\$692	\$201	\$—	\$7	\$8,103
Orthopaedic Surgery	\$34,063	\$10,674	\$6,903	\$4,588	\$69,809	\$37,038	\$9,819	\$40,187	\$3,955	\$1,774	\$218,809
Cardiovascular Surgery	\$58	\$13	\$10	\$0	\$43	\$2	\$0	\$8	\$—	\$1	\$134
Urology	\$2,768	\$1,204	\$5,709	\$209	\$6,507	\$5,281	\$713	\$16,614	\$65	\$2,463	\$41,532
Internal Medicine	\$3,873	\$8,044	\$2,247	\$2,602	\$5,611	\$39,028	\$120	\$1,079	\$0	\$9,725	\$72,329
Radiation Oncology	\$15	\$11	\$6	\$—	\$37	\$84	\$29	\$—	\$1	\$1	\$183
Medical Oncology	\$19	\$30	\$—	\$—	\$92	\$23	\$5	\$11	\$0	\$6	\$187
Residual*	\$42,608	\$44,679	\$19,905	\$28,327	\$72,703	\$63,654	\$9,765	\$36,854	\$1,517	\$12,804	\$332,817
<b>Total cost</b>	<b>\$140,423</b>	<b>\$112,393</b>	<b>\$58,700</b>	<b>\$75,857</b>	<b>\$214,056</b>	<b>\$198,373</b>	<b>\$27,453</b>	<b>\$115,695</b>	<b>\$6,574</b>	<b>\$32,839</b>	<b>\$982,363</b>

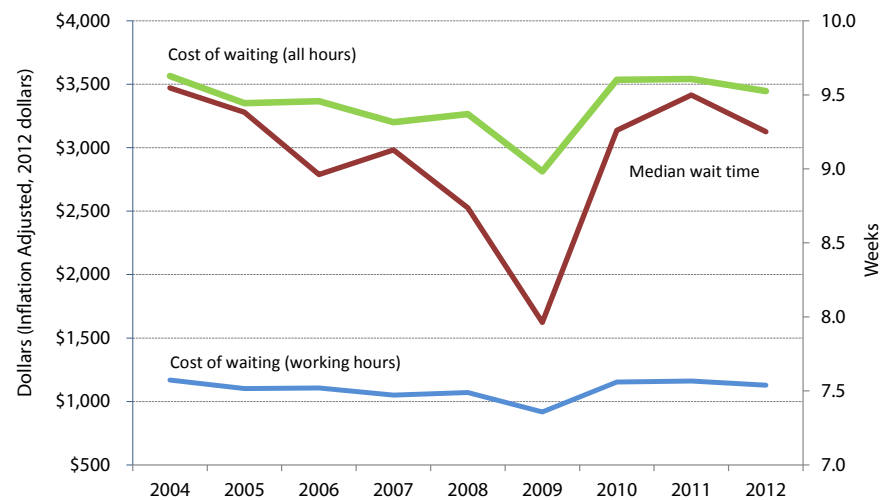
\*The “residual” count is a count of the number of non-emergency procedures for which people are waiting in Canada that are not included in the Fraser Institute’s survey. The wait time used for calculating the residual cost is each province’s weighted median wait time for all specialties included in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

Source: Barua and Esmail, 2012; Statistics Canada, n.d.; calculations by author.

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 2012 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>

An assumption that 11.0% of people waiting for treatment in 2012 experienced significant difficulties in their daily lives as a result of their medical condition, and thus lost productivity while waiting for treatment, results in an estimate that roughly 1.2 million<sup>4</sup> 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 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 accompany any wait for treatment. Multiplying this lost time by an estimate of the average weekly wage of Canadians in 2012 (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 the

**Figure 1: Estimated cost of waiting per patient and median wait for treatment after consultation with specialist, 2004–2012**



Source: Esmail (various years); Esmail and Hazel (2008); Barua et al. (2012); Statistics Canada (n.d.); calculations by author.

Note: Historical cost estimates have been updated from previously published figures using the most recent wage figures from Statistics Canada. In addition, estimates for 2004, 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.

productive time that was lost while individuals waited for medically necessary treatment in 2012 (table 4).

The estimated cost of waiting for care in Canada for patients who were in the queue in 2012, according to calculations based on the methodology produced by Globerman and Hoye (1990), was \$982 million—an average of about \$1,129 for each of the estimated 870,462 Canadians waiting for treatment in 2012. Alternatively, that cost works out to roughly \$10,260 for each individual among the 11.0% of patients in the queue who were suffering considerable hardship while waiting for care.<sup>6</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 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 slightly more than \$3 billion, or about \$3,447 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>7</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 (Esmail, 2009a).

Looking historically, the estimated private cost of waiting for treatment per patient in 2012 is not far from the \$1,169 (inflation adjusted, 2012 dollars) estimated for 2004 (see figure 1) and is 3% below the estimated cost of \$1,161 in 2011.<sup>8</sup> If the cost of hours lost outside of the work week is included, the estimated cost for 2012 is again not far from the \$3,566 estimated for 2004, and 3% below the estimated cost of \$3,542 in 2011. Further, while both wait times and the estimated private cost of waiting generally moved downward between 2004 and 2009, deteriorations in both between 2009 and 2012 have resulted in an overall lack of improvement since 2004.

## 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 2012, the estimated 870,462 Canadians who were waiting for

treatment endured an estimated private cost of at least \$982 million, and possibly substantially more, in lost productivity and leisure time. That cost was, on a per-patient basis, slightly less than the cost in 2011 and not far from the cost in 2004.

## Notes

- 1 The calculation here measures only the cost of the wait time from specialist to treatment, and not 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.
- 2 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.
- 3 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 Hoyer's estimate measures the number of patients who "experienced significant difficulty carrying on their work or daily duties as a result of their medical condition." 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, 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. Also, this estimate does not necessarily assume that 11.0% of individuals are losing all of their productivity while 89.0% are completely unaffected. Rather, the estimates are constructed in such a way that the lost productivity can be 100% for 11.0% of patients, or 11.0% for 100% of patients, or any combination thereof.

4 1.162 million.

5 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 tradeoff 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.

- 6 Globerman and Hoyer estimated the cost of queuing for medically necessary care to be about \$2,900 per patient in 1989. In 2012 dollars, this works out to approximately \$4,718.
- 7 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).
- 8 In addition to adjustment for inflation (to 2012 dollars), figures for 2004, 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.

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