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The Private Cost of Public Queues, 2012 edition

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 2011 was \$1.08 billion—an average of about \$1,144 for each of the estimated 941,321 Canadians waiting for treatment in 2011.
- 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 almost \$3.29 billion, or about \$3,490 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 2011, the Fraser Institute released its 21st annual measurement of waiting times for medically necessary treatments in Canada (Barua et al., 2011). This most recent measurement shows that the national median waiting time from specialist appointment to treatment increased from 9.3 weeks in 2010 to 9.5 weeks in 2011.

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.¹

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).² 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, 2011

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	
Plastic Surgery	3,573	8,066	706	834	5,090	4,192	597	3,859	—	—	
Gynaecology	5,129	5,058	1,305	809	9,404	6,979	1,039	610	131	1,300	
Ophthalmology	11,897	36,015	3,979	5,614	29,979	48,029	2,155	7,117	348	1,932	
Otolaryngology	3,735	4,336	3,611	1,303	10,831	4,549	791	1,285	174	366	
General Surgery	11,950	8,795	12,795	6,519	22,421	28,113	803	3,398	192	948	
Neurosurgery	1,489	751	414	52	5,025	1,091	335	341	—	66	
Orthopaedic Surgery	16,568	14,090	7,222	5,512	33,582	20,537	2,799	6,044	836	1,227	
Cardiovascular Surgery	310	201	43	151	317	325	70	7	5	16	
Urology	5,077	3,904	2,860	603	15,666	8,870	2,556	4,411	410	2,748	
Internal Medicine	7,342	6,686	2,865	7,147	17,962	25,572	242	1,725	1	2,607	
Radiation Oncology	36	71	—	10	184	214	45	26	5	4	
Medical Oncology	139	—	—	22	556	274	34	52	0	76	
Residual	42,433	49,761	24,147	22,415	107,386	80,523	7,880	22,099	1,428	10,158	
Total	109,677	137,734	59,947	50,992	258,405	229,269	19,346	50,974	3,531	21,447	
Proportion of Population	2.42%	3.70%	5.74%	4.13%	1.95%	2.90%	2.57%	5.40%	2.46%	4.19%	
Canada: Total number of procedures for which patients are waiting in 2011									941,321		
Percentage of Population									2.76%		

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, Rovere, and Skinner, 2011.

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 2011, an estimated 941,321 Canadians were waiting for care after an appointment with a specialist (table 1). These Canadians waited, on average, 9.5 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 2011: about 11.8 million weeks. This estimate is much greater than that for 2010 of 10.2 million weeks due to an increase in both wait times and in the number of Canadians waiting for care³ (Barua et al., 2011; Esmail, 2011).

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 gynecology to 88% in cardiovascular surgery, and averaged 41% overall (Globerman with Hoye, 1990; Esmail, 2009a).

Table 2: Median Patient Wait for Treatment after Appointment with Specialist, by Specialty, 2011 (in Weeks)

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	22.1	39.8	29.5	19.1	10.8	15.7	17.1	141.1	—	—	21.8
Gynaecology	11.3	10.0	9.4	5.9	7.3	9.0	11.1	4.6	7.0	14.3	8.7
Ophthalmology	9.8	10.2	12.5	26.0	8.9	10.3	12.1	22.0	13.9	19.1	10.6
Otolaryngology	13.8	11.6	36.3	13.9	10.5	7.7	8.8	14.4	15.8	9.2	11.5
General Surgery	7.3	6.6	28.6	14.4	4.5	7.3	4.5	7.6	3.4	3.1	7.0
Neurosurgery	13.0	7.6	12.1	2.4	14.7	6.7	18.1	13.9	—	3.3	11.4
Orthopaedic Surgery	22.0	19.0	36.9	25.3	15.5	18.2	20.3	35.2	30.1	18.8	19.4
Cardiovascular Surgery (Urgent)	1.4	1.6	0.9	5.3	0.6	0.7	1.7	3.9	1.5	1.4	1.2
Cardiovascular Surgery (Elective)	8.4	4.5	4.7	35.3	4.1	3.5	4.5	16.0	8.0	5.0	6.2
Urology	5.4	5.9	12.5	4.9	4.4	5.4	14.7	14.4	18.6	16.7	6.0
Internal Medicine	6.7	8.8	9.2	21.9	6.0	12.1	4.5	6.9	2.0	16.6	9.0
Radiation Oncology	1.6	3.8	—	3.1	2.0	3.6	2.9	2.6	2.2	2.8	2.6
Medical Oncology	3.0	—	—	2.0	2.0	1.5	2.0	3.5	0.1	4.0	2.0
Weighted Median	9.6	10.4	19.0	17.5	7.1	9.2	10.9	15.7	12.3	11.4	9.5

Source: Barua, Rovere, and Skinner, 2011.

Table 3: Average of average hourly and weekly wages*, by province, January to December 2011

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Nominal average hourly wage	\$23.17	\$25.47	\$23.05	\$21.04	\$23.73	\$21.48	\$19.48	\$20.21	\$19.26	\$21.66	\$22.99
Nominal average weekly wage	\$837.26	\$969.09	\$857.88	\$764.40	\$869.30	\$760.04	\$730.10	\$746.14	\$711.94	\$832.36	\$840.06

*Wages reported are earned wages or salaries including tips, commissions, and bonuses before taxes and other deductions.
Source: Statistics Canada's CANSIM database; calculations by author.

Table 4: Calculated cost of waiting for medically necessary health services from specialist appointment to treatment, by province and specialty, 2011 (\$ thousands)

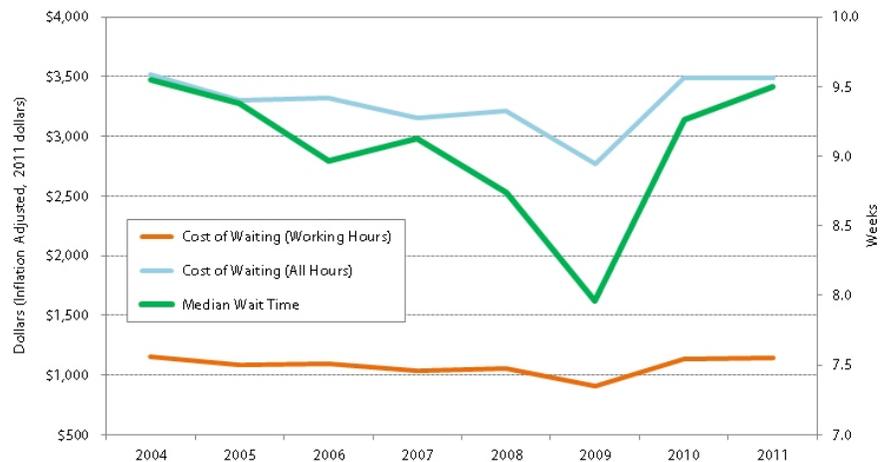
	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	\$7,285	\$34,261	\$1,963	\$1,336	\$5,253	\$5,511	\$817	\$44,675	\$—	\$—	\$101,101
Gyne-cology	\$5,316	\$5,370	\$1,162	\$404	\$6,597	\$5,225	\$929	\$229	\$72	\$1,698	\$27,002
Ophthal-mology	\$10,692	\$39,064	\$4,700	\$12,255	\$25,594	\$41,376	\$2,099	\$12,837	\$379	\$3,388	\$152,384
Otolaryn-gology	\$4,759	\$5,380	\$12,377	\$1,526	\$10,914	\$2,913	\$558	\$1,521	\$215	\$307	\$40,470
General Surgery	\$8,019	\$6,149	\$34,570	\$7,889	\$9,592	\$17,244	\$292	\$2,127	\$51	\$271	\$86,204
Neuro-surgery	\$1,786	\$608	\$474	\$11	\$7,067	\$615	\$487	\$390	\$—	\$20	\$11,456
Orthopedic Surgery	\$33,503	\$28,585	\$25,143	\$11,731	\$49,905	\$31,335	\$4,561	\$17,478	\$1,974	\$2,117	\$206,333
Cardio-vascular Surgery	\$41	\$35	\$3	\$67	\$19	\$19	\$10	\$2	\$1	\$2	\$199
Urology	\$2,509	\$2,450	\$3,382	\$249	\$6,640	\$3,982	\$3,014	\$5,204	\$596	\$4,202	\$32,228
Internal Medicine	\$4,502	\$6,258	\$2,498	\$13,160	\$10,313	\$25,958	\$88	\$971	\$0	\$3,953	\$67,701
Radiation Oncology	\$5	\$29	\$—	\$3	\$35	\$64	\$11	\$5	\$1	\$1	\$154
Medical Oncology	\$38	\$—	\$—	\$4	\$106	\$34	\$5	\$15	\$0	\$28	\$230
Residual*	\$37,663	\$55,291	\$43,369	\$32,912	\$72,867	\$61,987	\$6,886	\$28,447	\$1,378	\$10,557	\$351,356
Total Cost	\$116,117	\$183,480	\$129,642	\$81,546	\$204,902	\$196,264	\$19,758	\$113,901	\$4,667	\$26,543	\$1,076,818

*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*.

However, 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 2011 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).⁴

An assumption that 11.0% of people waiting for treatment in 2011 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 nearly 1.3 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 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 2011 (given in table 3), which provides an estimate of the value of the lost time

Figure 1: Calculated Cost of Waiting per Patient and Median Wait for Treatment after Consultation with Specialist



Source: Esmail (various years); Esmail and Hazel (2008); Barua et al. (2011); 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.

to each individual,⁵ gives an estimate of the cost of the productive time that was lost while individuals waited for medically necessary treatment in 2011 (table 4).

The estimated cost of waiting for care in Canada for patients who were in the queue in 2011, according to calculations based on the methodology produced by Globerman and Hoye (1990), was \$1.08 billion—an average of about \$1,144 for each of the estimated 941,321 Canadians waiting for treatment in 2011. Alternatively, that cost works out to roughly \$10,399 for each individual among the 11.0% of patients in the queue who were suffering considerable hardship while waiting for care.⁶

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 almost \$3.29 billion, or about \$3,490 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.⁷ 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 (Esmail, 2009a).

Looking historically, the estimated private cost of waiting for treatment per patient in 2011 is nearly as high as the \$1,151 (inflation adjusted) estimated for 2004 (see figure 1) and is slightly above the estimated cost of \$1,137 in 2010.⁸ If the cost of hours lost outside of the work week are included, the estimated cost for 2011 is again nearly as high as the \$3,513 estimated for 2004, and slightly above the estimated cost of \$3,483 in 2010. 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 2011 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 2011, the estimated 941,321 Canadians who were waiting for treatment endured an estimated private cost of at least \$1.08 billion, and possibly substantially more, in lost productivity and leisure time. That cost was, on a per-patient basis, slightly greater than the cost in 2010, and nearly as high as the cost in 2004.

Notes

- 1 The calculation measures only the cost of the wait time from specialist to treatment, not the cost of the wait time from referral by a general practitioner to seeing a specialist. Thus, this estimate of the privately borne cost of waiting is an underestimate of the true, privately borne cost of waiting.
- 2 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 in 2004, 2005, 2006, 2007, 2008, 2009, and 2010 published by the Fraser Institute also employ this methodology.
- 3 Note that there is a refinement in the calculation of the number of procedures performed in 2011 in Alberta and Quebec, made possible by newly available data from the Canadian Institute for Health Information. Importantly, this refinement did increase the calculated national median wait time (Barua et al., 2011). The refinement also increased the estimated number of Canadians waiting for care.
- 4 Statistics Canada's findings are based on the percentage of survey respondents who reported that "waiting for nonemergency 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 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.

- 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

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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 do not choose 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 Gliberman and Hoyer estimated the cost of queuing for medically necessary care to be about \$2,900 per patient in 1989. In 2011 dollars, this works out to approximately \$4,649.
- 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, 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. In addition, all figures from 2004 to 2010 have been revised using the most recent wage figures from Statistics Canada.

References

- Barua, Bacchus, Mark Rovere, and Brett J. Skinner (2011). *Waiting Your Turn: Wait Times for Health Care in Canada* (2011 Report). Fraser Institute.
- Esmail, Nadeem (2011). The Private Cost of Public Queues. *Fraser Forum* (March): 22–27.
- Esmail, Nadeem (2009a). *Waiting Your Turn: Hospital Waiting Lists in Canada* (19th ed.). Fraser Institute.
- Esmail, Nadeem (2009b). The Private Cost of Public Queues, 2009. *Fraser Forum* (November): 32–36.
- Esmail, Nadeem (2007). The Private Cost of Public Queues. *Fraser Forum* (December-January): 7–11.
- Esmail, Nadeem (2006). The Private Cost of Public Queues in 2006. *Fraser Forum* (December-January): 20–24.
- Esmail, Nadeem (2005a). The Private Cost of Public Queues in 2005. *Fraser Forum* (December-January): 17–21.
- Esmail, Nadeem (2005b). The Private Cost of Public Queues. *Fraser Forum* (March): 27–31.
- Globerman, Steven, with Lorna Hoye (1990). *Waiting Your Turn: Hospital Waiting Lists in Canada*. Fraser Institute.
- Hazel, Maureen, and Nadeem Esmail (2008). The Private Cost of Public Queues. *Fraser Forum* (December/January): 25–29.
- Sanmartin, Claudia, François Gendron, Jean-Marie Berthelot, and Kellie Murphy (2004). *Access to Health Care Services in Canada, 2003*. Catalogue No. 82-575-XIE. Statistics Canada, Health Analysis and Measurement Group.
- Statistics Canada (n.d.). CANSIM Database. <<http://www.statcan.gc.ca/>>, as of May 9, 2012.
- Statistics Canada (2006). *Access to Health Care Services in Canada: January to December 2005*. Catalogue No. 82-575-XIE. Statistics Canada.