

The Private Cost of Public Queues for Medically Necessary Care, 2016 edition

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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 2015 was almost \$1.2 billion. This works out to an average of about \$1,304 for each of the estimated 894,449 Canadians waiting for treatment in 2015.
- 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 \$3.5 billion, or about \$3,951 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 December 2015, the Fraser Institute released its 25th annual measurement of waiting times for medically necessary treatments in Canada (Barua, 2015). The study reported that the national median waiting time from specialist appointment to treatment was 9.8 weeks in 2015, the same as in 2014.

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.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

Table 1: Estimated Number of Procedures for which Patients are Waiting after Appointment with Specialist, by Specialty, 2015

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	3,996	2,426	387	636	3,080	2,714	525	367	28	251	14,412
Gynaecology	3,498	3,489	1,034	854	9,307	5,614	818	845	–	1,012	26,471
Ophthalmology	23,714	10,616	2,529	4,654	39,652	24,456	3,615	3,525	374	1,496	114,631
Otolaryngology	4,015	5,253	760	1,075	10,168	5,511	850	792	57	–	28,481
General Surgery	18,692	10,263	3,118	4,449	25,652	10,649	1,842	5,135	–	13,114	92,915
Neurosurgery	2,576	1,403	409	74	4,232	1,984	443	184	–	–	11,305
Orthopaedic Surgery	26,092	11,484	2,431	5,725	40,915	16,174	6,886	6,289	756	2,677	119,428
Cardiovascular Surgery	255	62	14	44	369	546	137	38	–	22	1,488
Urology	5,612	2,197	31	831	13,484	5,645	1,184	4,814	–	935	34,733
Internal Medicine	20,016	10,338	1,643	3,022	12,286	7,195	532	1,322	385	2,906	59,645
Radiation Oncology	60	32	10	7	317	194	14	26	–	22	682
Medical Oncology	164	–	–	270	624	179	–	71	–	–	1,308
Residual	74,872	44,967	10,370	16,862	126,937	60,147	13,425	17,456	1,942	21,975	388,952
Total	183,561	102,531	22,737	38,501	287,023	141,008	30,272	40,863	3,542	44,411	894,449
Proportion of Population	4.0%	2.5%	2.1%	3.0%	2.1%	1.7%	4.0%	4.3%	2.4%	8.4%	2.5%

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, 2015.

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 2015, an estimated 894,449 Canadians were waiting for care after an appointment with a specialist (table 1). These Canadians were expected to wait, on average, for 9.8 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 of the total amount of time that Canadians waited for treatment in 2015: about 11.5 million weeks. This estimate is lower than the 12.3 million weeks estimated for 2014 due to a decrease in the estimated number of Canadians waiting for care (Barua, 2015; Barua and Fathers, 2014; Barua and Ren, 2015). However, this finding, and other comparisons across years, should be interpreted with caution due to a recent change in the methodology for estimating the total number of procedures for which patients are waiting in the province of Quebec (see Barua, 2015 for further details).

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 2015 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).³

An assumption that 11.0% of people waiting for treatment in 2015 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 1.27 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 can accompany any wait for

Table 2: Median Patient Wait for Treatment after Appointment with Specialist, by Specialty, 2015 (in Weeks)

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	24.5	17.5	12.2	18.7	7.3	10.4	14.8	12.6	8.9	12.8	12.6
Gynaecology	9.2	8.1	7.7	6.6	8.0	10.9	8.5	8.9	–	9.7	8.7
Ophthalmology	18.5	9.7	7.6	16.1	12.2	9.3	21.8	9.9	12.0	11.2	12.0
Otolaryngology	14.6	20.4	6.7	12.1	10.1	7.4	10.8	10.0	5.6	–	10.7
General Surgery	8.5	9.0	5.3	7.8	4.7	6.8	10.0	10.3	–	34.2	7.4
Neurosurgery	17.7	13.1	12.1	3.2	10.9	9.7	18.7	9.8	–	–	12.0
Orthopaedic Surgery	33.2	18.2	9.9	24.4	17.8	13.8	45.1	35.3	24.8	32.9	20.5
Cardiovascular Surgery (Urgent)*	1.1	0.5	0.7	1.9	0.7	1.4	8.0	1.0	–	1.9	1.1
Cardiovascular Surgery (Elective)	7.4	1.6	3.4	6.5	5.0	7.6	10.8	6.7	–	24.5	6.1
Urology	5.6	4.3	2.0	6.1	3.6	9.1	9.2	20.1	–	5.9	5.3
Internal Medicine	17.4	15.7	6.0	9.5	4.5	13.6	8.1	5.6	11.8	14.6	9.6
Radiation Oncology	4.0	2.3	2.2	1.3	2.0	2.9	1.0	3.2	–	3.8	2.3
Medical Oncology	2.6	–	–	19.9	1.8	1.2	–	4.2	–	–	2.3
Weighted Median	14.0	11.0	6.9	11.6	7.4	9.1	17.4	12.9	14.9	20.5	9.8

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

Source: Barua, 2015.

Table 3: Average of Average Hourly and Weekly Wages, by Province, January to December, 2015

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Nominal average hourly wage	\$24.98	\$29.06	\$25.95	\$23.09	\$25.59	\$23.56	\$21.43	\$22.07	\$20.85	\$24.41	\$25.19
Nominal average weekly wage	\$914.04	\$1,104.45	\$970.61	\$841.84	\$937.96	\$830.02	\$809.46	\$820.40	\$776.55	\$953.59	\$922.38

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 282-0151.

Source: Statistics Canada, 2016a; calculations by authors.

Table 4: Estimated Cost of Waiting for Medically Necessary Health Services from Specialist Appointment to Treatment, by Province and Specialty, 2015 (\$ thousands)

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	\$9,841	\$5,167	\$506	\$1,098	\$2,315	\$2,568	\$693	\$417	\$22	\$337	\$22,964
Gynaecology	\$3,228	\$3,423	\$847	\$522	\$7,671	\$5,612	\$622	\$681	–	\$1,031	\$23,638
Ophthalmology	\$44,161	\$12,467	\$2,043	\$6,921	\$49,949	\$20,678	\$7,028	\$3,157	\$383	\$1,765	\$148,551
Otolaryngology	\$5,892	\$13,004	\$546	\$1,204	\$10,553	\$3,734	\$814	\$718	\$27	–	\$36,493
General Surgery	\$16,055	\$11,193	\$1,774	\$3,233	\$12,385	\$6,599	\$1,634	\$4,751	–	\$47,104	\$104,728
Neruosurgery	\$4,595	\$2,238	\$531	\$22	\$4,767	\$1,765	\$739	\$163	–	–	\$14,819
Orthopaedic Surgery	\$87,162	\$25,425	\$2,565	\$12,961	\$74,933	\$20,394	\$27,672	\$20,038	\$1,599	\$9,224	\$281,972
Cardiovascular Surgery	\$29	\$4	\$1	\$8	\$28	\$68	\$98	\$3	–	\$4	\$244
Urology	\$3,133	\$1,146	\$7	\$470	\$4,965	\$4,675	\$965	\$8,748	–	\$579	\$24,688
Internal Medicine	\$35,091	\$19,674	\$1,057	\$2,663	\$5,650	\$8,956	\$385	\$669	\$388	\$4,450	\$78,982
Radiation Oncology	\$24	\$9	\$2	\$1	\$65	\$52	\$1	\$7	–	\$9	\$171
Medical Oncology	\$44	–	–	\$497	\$119	\$20	–	\$27	–	–	\$707
Residual*	\$105,095	\$60,275	\$7,593	\$18,062	\$96,555	\$49,749	\$20,761	\$20,358	\$2,465	\$47,268	\$428,181
Total Cost	\$314,350	\$154,026	\$17,471	\$47,663	\$269,954	\$124,868	\$61,412	\$59,736	\$4,884	\$111,772	\$1,166,138

* 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.

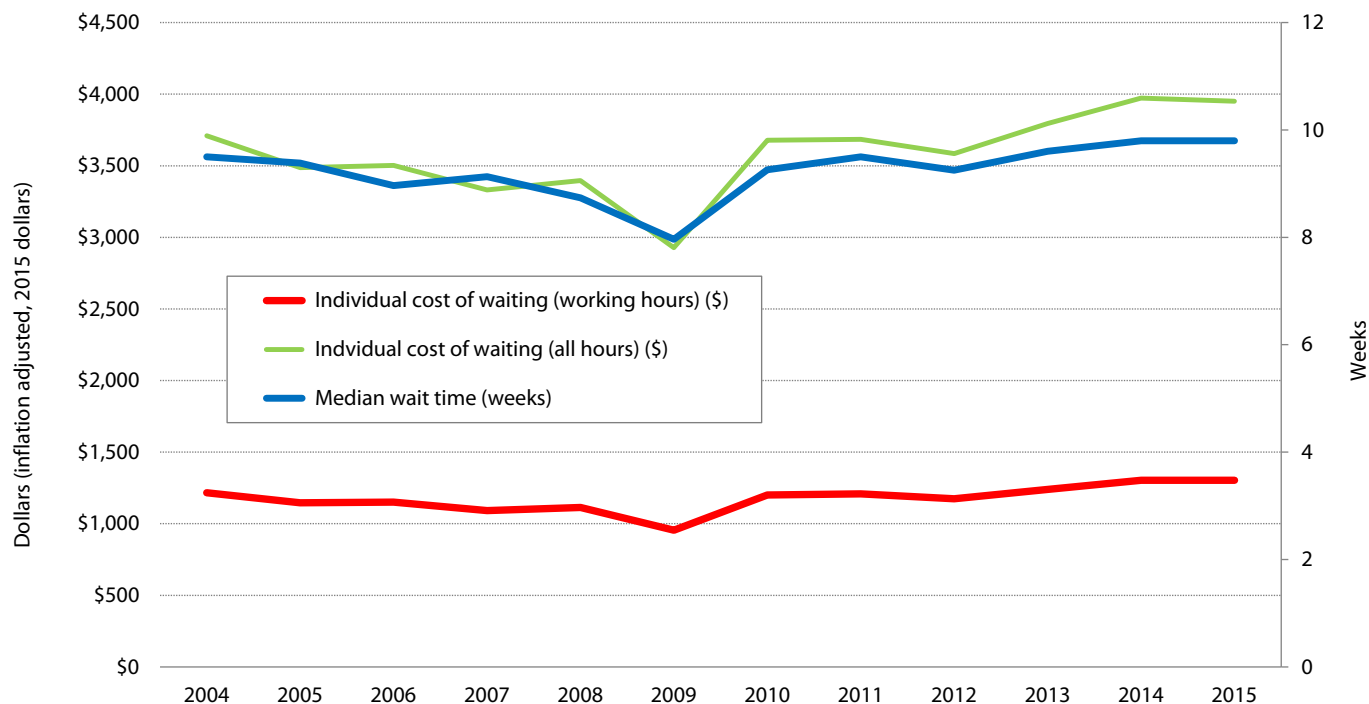
treatment. Multiplying this lost time by an estimate of the average weekly wage of Canadians in 2015 (given in table 3), which provides an estimate for the value of the lost time to each individual,⁴ gives an estimate of the cost of productive time that was lost while individuals waited for medically necessary treatments in 2015 (table 4).

The estimated cost of waiting for care in Canada for patients who were in the queue in 2015, according to calculations based on the methodology produced by Globerman and Hoyer (1990), was almost \$1.2 billion—an average of about

\$1,304 for each of the estimated 894,449 Canadians waiting for treatment in 2015. Alternately, that cost works out to roughly \$12,280 for each individual among the 11.0% of patients in the queue who were suffering considerable hardship while waiting for care.⁵

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

Figure 1: Calculated Cost of Waiting per Patient and Median Wait for Treatment after Consultation with Specialist, 2004–2015



Source: Statistics Canada, 2016b; Esmail 2005-2014; Barua and Ren, 2015; Barua, 2015; calculation by authors.

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 \$3.5 billion or about \$3,951 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.⁶ 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).

From a historical perspective, the estimated \$1,304 private cost of waiting for treatment per patient in 2015 is 7% higher than the \$1,216 (inflation adjusted, 2015 dollars) estimated for 2004 (see figure 1) and is about the same as the \$1,303 estimated for 2014.⁷ If hours outside of the work week are included, estimated \$3,951 private cost of waiting per patient in 2015 is again 7% higher than the \$3,709 estimated for 2004 and about 1% lower than the \$3,973 estimated for 2014. 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.

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 2015, the estimated 894,449 Canadians who were waiting for treatment endured an estimated private cost of almost \$1.2 billion, and possibly substantially more, in lost productivity and leisure time.

Notes

¹ 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.

² Gliberman 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.

³ Statistics Canada's findings are based on the percentage of survey respondents who reported that "waiting for non-emergency surgery affected their life." Gliberman 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 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.

⁴ 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.

⁵ Gliberman and Hoye estimated the cost of queuing for medically necessary care to be about \$2,900 per patient in 1989. In 2015 dollars, this works out to approximately \$4,908.

⁶ 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).

⁷ In addition to adjustment for inflation (to 2015 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.

References

- Barua, Bacchus, and Frazier Fathers (2014). *Waiting Your Turn: Wait Times for Health Care in Canada* (2014 Report). Fraser Institute.
- Barua, Bacchus (2015). *Waiting Your Turn: Wait Times for Health Care in Canada* (2015 edition). Fraser Institute.
- Barua, Bacchus, and Feixue Ren (2015). *The Private Cost of Public Queues for Medically Necessary Care, 2015 edition*. Fraser Institute.
- Day, Brian (2013). The Consequences of Waiting. In Globerman, Steven (ed.), *Reducing Wait Times for Health Care: What Canada Can Learn from Theory and International Experience* (Fraser Institute): 45-75.
- 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.
- Esmail, Nadeem (2006). The Private Cost of Public Queues in 2006. *Fraser Forum* (December-January): 20-24.
- Esmail, Nadeem (2007). The Private Cost of Public Queues. *Fraser Forum* (December-January): 7-11.
- 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 (2011). The Private Cost of Public Queues. *Fraser Forum* (March): 22-27.
- Esmail, Nadeem (2013). *The Private Cost of Public Queues for Medically Necessary Care, 2013 edition*. Fraser Alert. Fraser Institute.
- Esmail, Nadeem (2014). *The Private Cost of Public Queues for Medically Necessary Care, 2014 edition*. Fraser Institute.
- 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 (2006). *Access to Health Care Services in Canada: January to December 2005*. Catalogue No. 82-575-XIE. Statistics Canada. <<http://www.statcan.gc.ca/pub/82-575-x/82-575-x2006002-eng.pdf>>, as of April 5, 2016.
- Statistics Canada (2010). Health Services Access Subsample. *Canadian Community Health Survey*. Statistics Canada.
- Statistics Canada (2012). Health Services Access Subsample. *Canadian Community Health Survey*. Statistics Canada.
- Statistics Canada (2016a). *Labour force survey estimates (LFS), wages of employees by type of work, National Occupational Classification (NOC), sex, and age group, unadjusted for seasonality, monthly (current dollars)*. Table 282-0151. Statistics Canada.
- Statistics Canada (2016b). *Consumer Price Index (CPI), annual (2002=100)*. Table 326-0001. Statistics Canada.

Acknowledgments

This study is primarily based on Nadeem Esmail's 2014 study of the same name. Any remaining errors or oversights are the sole responsibility of the authors.

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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ISSN 2291-8620

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