

STUDENT ESSAY CONTEST WINNERS

SAFETY VS. PRIVACY IN A TECHNOLOGICAL AGE

**What's
Inside**

The Inequality
Trap

Supreme Court Ruling on
First Nations Land Dispute

Canada's Physician
Supply



Editor: Lindsay Mitchell

Layout and design: Foothills Graphics

Production Editor: Kristin McCahon

Cover image: iStock Photo

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Canadian Student Review
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Canadian Student Review

1770 Burrard Street, 4th Floor

Vancouver, British Columbia V6J 3G7

Tel: (604) 688-0221 ext. 595

Fax: (604) 688-8539

E-mail: lindsay.mitchell@fraserinstitute.org

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Date of Issue: Winter 2016

ISSN 1707-116X (online edition)

Canadian Student Review is sponsored by the
Lotte & John Hecht Memorial Foundation

Canadian Student Review is published by the Fraser Institute.
The views contained within are strictly those of the authors.



Our mission is to improve the quality of life for Canadians, their families and future generations by studying, measuring and broadly communicating the effects of government policies, entrepreneurship and choice on their well-being.

WELCOME!



Dear Readers,

Since the beginning of the 21st century, government surveillance and access to citizens' private information has climbed to unprecedented levels. But to what extent should governments be allowed to monitor their citizens and do these actions actually keep us safer? These are some of the questions answered by the 1st place winners of our 2015 essay contest, *National Security and the Role of Government: Safety vs. Privacy in a Technological Age*, who beat over 700 students to have their winning essays featured in the winter edition of CSR.

This issue also looks at Canada's physician supply and the recent ruling from the Supreme Court of Canada, which allows First Nations to sue private parties over land disputes, lawsuits that were previously only brought against governments. In the Hot Topics section, new Fraser Institute research looks at the trade barriers between provinces and the environmental risks and effects of hydraulic fracturing. Our featured book recommendation, *The Inequality Trap: Fighting Capitalism Instead of Poverty*, has Senior Fellow and *National Post* columnist William Watson examining society's fight against "the 1%" instead of focusing on trying to help lower-income individuals.

Enjoy!

Lindsay Mitchell

Editor, *Canadian Student Review*



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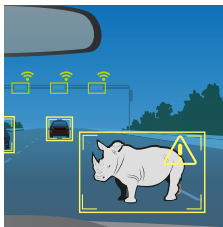
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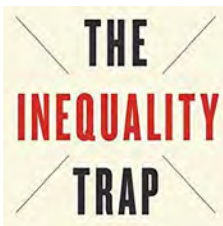


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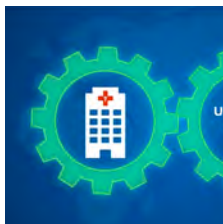
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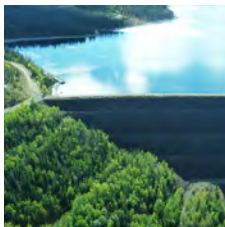
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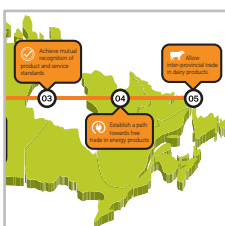
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1st Place Essay Contest Winner
High School Category

NATIONAL SECURITY VS. PRIVACY in the Modern Age

Javaria Mughal

Government surveillance has justifiably developed a negative connotation due to governments' mass accumulation of the personal and communications data of millions of citizens, misleading or overblown claims about the effectiveness of these bulk surveillance programs in preventing terrorist attacks (Bergen, Sterman, Schneider, and Cahall, 2014), and the dubious legal footing of these programs (Associated Press, 2015,

May 7; Condon, 2013, June 12). Such problems demonstrate a need to reevaluate the scope of intelligence operations, and the regulations that govern them. However, surveillance remains a necessary component in securing a nation and protecting its constituent citizens.

Today, terrorism poses a legitimate threat to Western countries, as illustrated by the events of 9/11, threats from extremist groups such

as ISIS, and attempted plots on Western countries (Bergen, Sterman, Schneider, and Cahall, 2014). The attacks on 9/11 and the conflicts created by extremist groups in the Middle East demonstrate these terrorist organizations' significant capacities for destruction. To prevent potentially catastrophic attacks on Western countries, governments must use preemptive measures to identify and neutralize possible strikes before they occur. Without monitoring highly suspected persons' communications and activities, government security programs are less able to assess the severity of threats, as their only intelligence sources would be intermittent tips. US intelligence claims to have already stopped dozens of attacks through preemptive investigation and response, yet some analysts believe that these numbers are exaggerated (Bergen, Sterman, Schneider, and Cahall, 2014).

Today, terrorism poses a legitimate threat to Western countries, as illustrated by the events of 9/11 and threats from extremist groups such as ISIS...

Government surveillance can be useful in many domains other than terrorism. Cases involving unwarranted police violence, assault, theft, and murder can be aided through CCTV cameras. In the *State of Florida vs. George Zimmerman* case, eyewitness accounts of the conflict between Zimmerman and Trayvon Martin all

differed. Consequently, prosecutors found it difficult to establish a comprehensive picture of the night's events. The presence of CCTV cameras or other visual surveillance equipment could have more clearly established the facts and better enabled the successful prosecution of George Zimmerman, or corroborated his innocence as ruled by the court (Bilton, 2013, July 16). Too often do the facts surrounding injustices come down to the word of those with unreliable knowledge, or reason to lie, and too often do we fail to bring justice, or know if justice has been brought, to those actually guilty or innocent.

To prevent potentially catastrophic attacks on Western countries, governments must use preemptive measures to identify and neutralize possible strikes before they occur.

Having established the usefulness of surveillance, the next step becomes determining the extent to which surveillance is appropriate. In 2013, Edward Snowden leaked evidence of the US government's bulk surveillance programs, including the PRISM program for collecting Internet communications of the bulk telephony metadata extraction justified under Section 215 of the US Patriot Act (Granick and Sprigman, 2013, June 27). Since this release, US government officials have consistently stressed the need for these programs. President Obama defended them as integral to the protection of American citizens (Baker, 2013, June 17). NSA Director



Gen. Keith Alexander stated before Congress that “the information gathered from these programs provided the US government with critical leads to help prevent over 50 potential terrorist events in more than 20 countries around the world” (United States Congress, 2013, June 18). However, a report from the New American Foundation casts doubt on these claims.

How large a role does bulk surveillance play in counter-terrorism efforts?

By analyzing 225 cases involving individuals charged with some terrorism crime, the authors of the report *Does NSA's Bulk Surveillance*

Programs Stop Terrorists? determined that NSA surveillance only initiated 7.5% of investigations, of which 1.8% involved bulk telephony metadata under Section 215 of the USA Patriot Act, 4.4% involved surveillance under Section 702 of the FISA Amendments Act, and 1.3% involved an unidentified authority. On the other hand, traditional investigative methods, including the use of tips, informants, intelligence from traditional CIA and FBI sources, routine law enforcement, militants' self-disclosure, and reports of suspicious activity initiated 60% of investigations. The initiation methods in 27.6% of cases are unclear; though possible, it is unlikely that NSA surveillance initiated these investigations, as the government would have then likely

indicated such key contributions in order to emphasize the benefit of its surveillance programs. Either way, these statistics are inconsistent with US officials' claims about the large role that bulk surveillance plays in counter-terrorism efforts (Bergen, Sterman, Schneider, and Cahall, 2014).

In fact, available evidence suggests that bulk collection is not necessary. During a Senate Judiciary Committee hearing in October 2013, NSA Director Alexander admitted that the bulk collection of American telephone metadata had only prevented one known terrorist attack in the US (United States Senate, 2013). In this case, the government used telephone metadata to connect San Diego cab driver

Basaaly Moalin with al-Shabaab, an al-Qaeda affiliate. The FBI discovered that Moalin was in contact with al-Shabaab officials when he was caught providing \$8,500 to an al-Shabaab affiliate. Though bulk collected metadata was apparently used, it is noteworthy that the FBI did not start investigating Moalin until two months after the NSA first provided a tip. Furthermore, this one case which US officials use to argue the necessity of mass data collection does not even illustrate a need for sweeping bulk collection of metadata, but rather the collection of metadata for communications in which one party is a known or highly suspected terrorist. Such a metadata collection method would also have sufficed in other investigations,



such as that of Najibullah Zazi. Zazi, who was planning to bomb the New York City subway system in 2009, was communicating with an email address known to belong to an al-Qaeda figure five months prior to the NSA's interception of Zazi's email (Bergen, Sterman, Schneider, and Cahall, 2014).

The failure to prevent the September 11th attacks despite the slew of warnings suggests that what intelligence agencies require is not more data, but better responsiveness and appropriate information-sharing within government.

We are often presented with a dichotomy that has the 2001 terrorist attacks on one side, and government surveillance on the other. However, US intelligence agencies were repeatedly informed of possible attacks by Osama bin Laden for several months leading up to the September 11th attacks. In the spring of 2001, top officials were briefed by reports indicating the existence and advancement of bin Laden's plans. These warnings continued through the summer with reports indicating continuing plans for bin Laden's attacks and imminent threats (Eichenwald, 2012, September 10). The failure to prevent the September 11th attacks despite the slew of warnings suggests that what intelligence agencies require is not more data, but better responsiveness and appropriate information-sharing within government.

Many people perceive mass government surveillance of individuals' communications and actions as intrusive and ultimately discomforting (CBC News, 2015, January 28). Surveillance advocates quickly dismiss such apprehensions with the phrase, "If you have nothing to hide, you have nothing to fear." But as computer security expert Bruce Schneier counters, the "nothing to hide" argument is built on a premise that "privacy is about hiding a wrong" (Schneier, 2006, May 18). Privacy does not necessitate misdeed, and is a valued right that provides citizens immense comfort and satisfaction. Thus, privacy is worth protecting.

Privacy does not necessitate misdeed, and is a valued right that provides citizens immense comfort and satisfaction.

More complications arise when intelligence agencies seek to interpret the massive datasets they have extracted. Innocent jokes or statements can be misinterpreted as terrorist threats when taken out of their proper context. For instance, a man named Joe Lipari spent two years fighting charges after he paraphrased a quote from the film *Fight Club*. The literal meaning of his statement seemed to threaten an Apple store, but in context, it was a harmless joke written without the intention of pursuing violent action (Booth, 2010, September 24). Due to the clandestine nature of government surveillance operations, it is difficult to precisely quantify the number of individuals


incorrectly deemed a threat and inconvenienced by false charges. However, the fundamental issue of context must be addressed. To more accurately interpret the information they receive, intelligence agencies must work to develop accurate data analysis programs while ensuring the products of algorithms are checked by humans, who have greater capacity to contextually evaluate statements, and determine the true level of threat posed.

Surveillance of those who have done nothing wrong can lead to unjust repercussions for the innocent.

It is simply not the case that government surveillance always allows illegal acts to be prevented or punished, and better protects innocent citizens. The effects of pervasive surveillance are much more ambiguous, and often negative. Throughout history, governments have targeted individuals based merely on ideological, political, or religious beliefs rather than evidence of criminal intent. For instance, during World War I, the precursor to the FBI, the Bureau of Investigation, spied on and sometimes prosecuted war critics, anti-draft activists, and pacifists. Intense and intrusive FBI monitoring also targeted the civil rights, feminist, and anti-Vietnam movements (Fischer, 2015). Considering this pattern of abuse, it is best to forego surveillance of the communications of an entire country's population in order to avoid unjust targeting.

The government's mass accumulation of telephony and Internet data is unnecessary for ensuring national security. Furthermore, surveillance of those who have done nothing wrong can lead to unjust repercussions for the innocent. Therefore, the scope of government surveillance should be limited to:

- Telephony and Internet metadata of communications, in which one party is a known or highly-suspected terrorist, or person of threat
- Content of telephony and Internet communications of persons demonstrated to have probable involvement in terrorist activity—for which a warrant must be granted
- CCTV cameras in public spaces (thus excluding inside residences, corporate offices, etc.)

Ultimately, some measure of government surveillance must be maintained to ensure national security. However, restrictions must limit the scope of information monitored to protect innocent individuals from unwarranted targeting, and repercussions. Surveillance is a powerful tool that can be abused by unfairly targeting citizens, or wielded responsibly to improve public safety. Only responsible oversight and restrictions on surveillance programs will promote the justice we seek. 

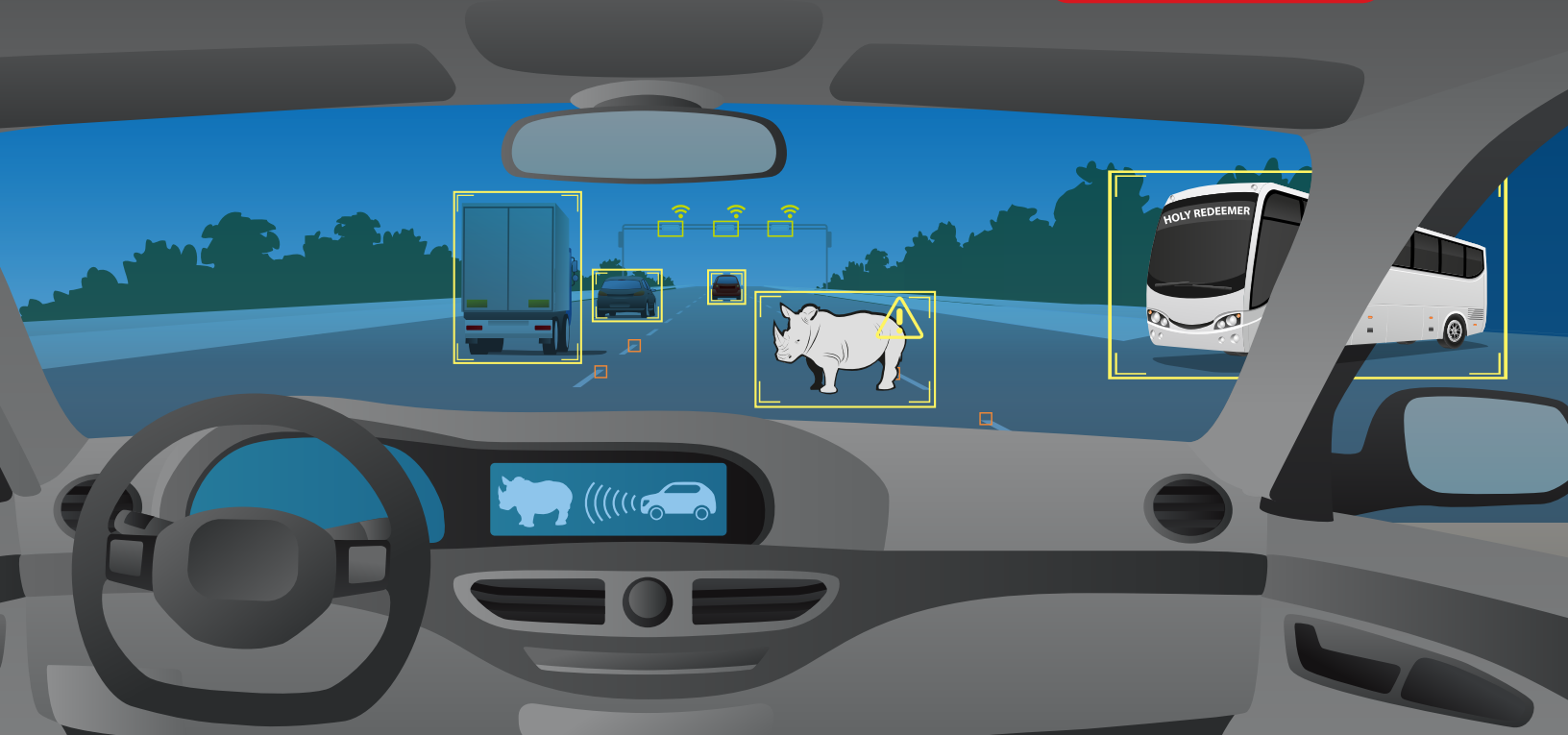


Javaria Mughal is currently a Grade 12 student at The Woodlands School. After graduation, she plans to study English and Economics.

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“QUOTE WALL”



“In an inevitable car accident, what object should you hit: the last endangered white rhino or a busload of nuns?”

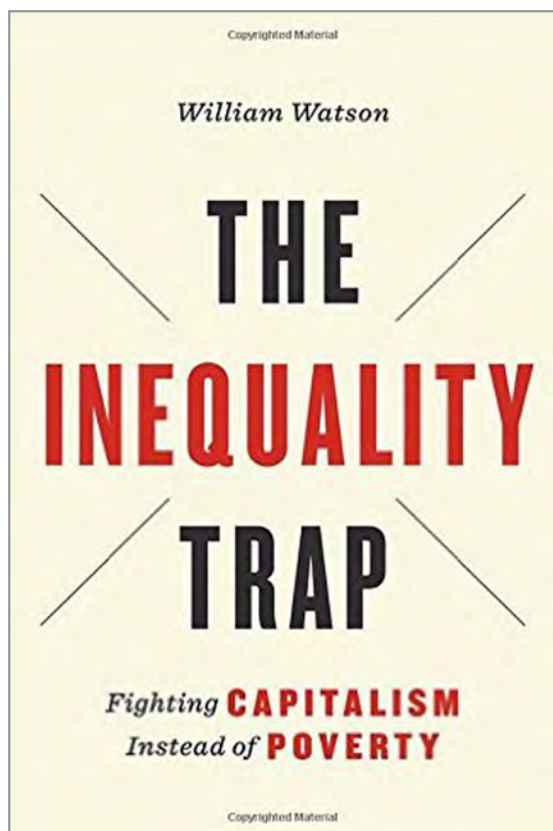
Are we ready for driverless cars? According to some safety testers, the answer is “no” because they haven’t been able to answer hypothetical questions, such as “In an inevitable car accident, what object should you hit: the last endangered white rhino or a busload of nuns?”

But what if the answer doesn’t matter because driverless cars can

hit both and still save a million more lives than accident prone human drivers?”

Eli Dourado, Director of Technology Policy Program, Mercatus Centre at George Mason University and presenter at Vancouver student seminar, October 24, 2015: *Regulating Emerging Technology: How Drones and 3D Printing are Changing the World.* 

THE INEQUALITY TRAP: FIGHTING CAPITALISM INSTEAD OF POVERTY



US President Barack Obama has called economic inequality the “defining issue of our time.” It has inspired the “Occupy” movements, made a French economist into a global celebrity, and given us a new expression—the “one percent.” But is our preoccupation with inequality really justified? Or wise?

In his new book, William Watson argues that focusing on inequality is both an error and a trap. It is an error because much inequality is “good,” the reward for thrift, industry, and invention. It is a trap because it leads us to fixate on the top end of the income distribution, rather than on those at the bottom who need help most. In fact, if we respond to growing inequality by fighting capitalism rather than poverty, we may end up both poorer and less equal.

Explaining the complexities of modern economics in a clear, accessible style, *The Inequality Trap* is a great response to the idea that fighting inequality should be our top policy priority.

William Watson, is a Professor of Economics at McGill University, Columnist for the *National Post*, and a Senior Fellow of the Fraser Institute. 



1st Place Essay Contest Winner
Undergraduate Category

GOVERNMENT SPONSORED BLACKMAIL?

**Mass Surveillance and the
Threat to Personal Privacy**

Ben Woodfinden

Edward Snowden is a polarizing figure. Yet even his detractors must concede that the information he disclosed about the surveillance operations of the US National Security Agency (NSA) and other security agencies worldwide have led to an important public discussion on surveillance and civil liberties in the post-9/11 world.

Snowden's disclosures have raised a series of important legal, philosophical, and political questions.

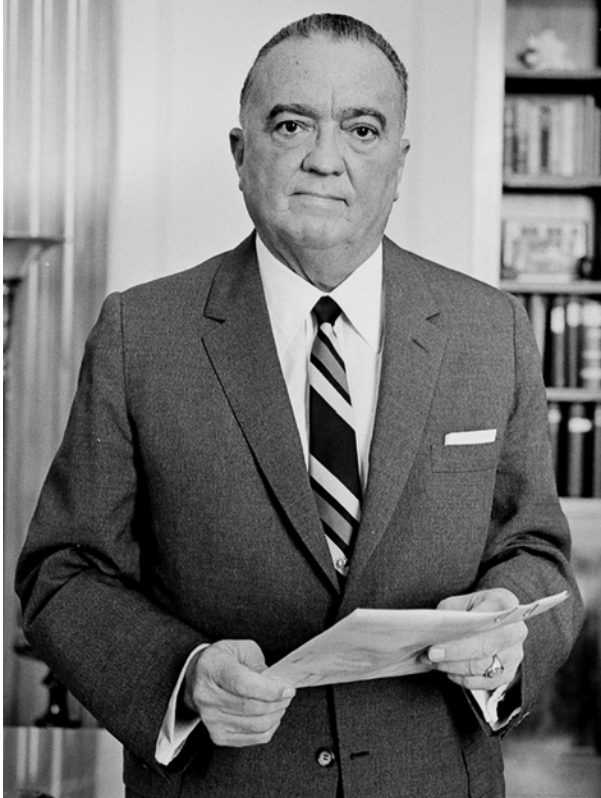
Snowden's disclosures have raised a series of important legal, philosophical, and political questions. Do mass surveillance programs actually keep us safer? More fundamentally, can we trust the government not to misuse the information it gains through mass surveillance? In the United States, where many of these debates are centered, there is a history of the state misusing the surveillance powers it has granted to itself. Historical government surveillance in the United States has resulted in blackmail intended to silence dissent. Disturbingly, this is also taking place today.

MASS SURVEILLANCE IN THE UNITED STATES BEFORE 9/11

The debate raging around mass surveillance is not new. The American government has been using large-scale peacetime surveillance since at least 1919 (Senate Select Committee,

No. 755 at 227-230 (1976)). Every presidential administration since Franklin Roosevelt's has made use of the state apparatus to spy on political opponents (Downs, 2013, June 14). In the early 1970s, a series of scandals involving American intelligence agencies shook public trust in the US government. Between 1968 and 1975, public trust in government dropped from 61% to 36% (Pew Research Centre, 2014). As a result, Congress initiated the Church Committee in 1975 to investigate American intelligence gathering in the wake of these revelations (Senate Historical Office, 1975).

The final Church Committee report, published in 1976, revealed widespread and systematic abuses of power (Senate Select Committee, No. 755 at 16-17 (1976)). On multiple occasions, the CIA, FBI, and NSA violated the fundamental rights of peaceful American citizens. One specific example is worth highlighting. The founder of the FBI, J. Edgar Hoover, was notoriously unconcerned with violating certain citizens' constitutional rights in the name of protecting the country against (often imaginary) enemies (Kessler, 2002: 140). One such imagined enemy was Martin Luther King. Despite overwhelming evidence that he was not a security threat, Hoover ordered extensive surveillance and wiretapping of King. The surveillance produced nothing to suggest that King was a security threat, but it did produce evidence of sexual misconduct. This included a tape of King participating in an orgy in a Washington hotel. Although this information had no relevance to any security operations, a



J. Edgar Hoover, first Director of the Federal Bureau of Investigation. In office March 23, 1935 - May 2, 1972. *Wikipedia* photo

letter was sent out to King that included copies of the tape shortly before he received the Nobel Prize. The intention was clear: to blackmail King and either damage his credibility or force him to resign his position (Kessler, 2002: 144).

On repeated occasions, surveillance operations were not designed to simply monitor for suspicious activity. Rather, they were intended to collect information that could be used to attack the reputation and character of the individuals in question (Senate Select Committee, No. 755 at 221 (1976)). The temptation to use mass surveillance programs to silence and discredit political opponents is an obvious one, and it is one with a well-documented history. If

governments use these programs to violate citizens' basic rights and discredit political opponents then they become a danger to, and not a guardian of, the people they are supposed to protect.

If governments use surveillance programs to violate citizens' basic rights and discredit political opponents then they become a danger to, and not a guardian of, the people they are supposed to protect.

MASS SURVEILLANCE IN THE POST-9/11 ERA

In the aftermath of the Church Committee, Congress established the Foreign Intelligence Surveillance Court (FISC), a special judicial body that had the power to consider requests for secret warrants to spy on non-US persons acting as foreign agents within US borders. The court was supposed to end the frequent abuses that the Church Committee uncovered by introducing a layer of judicial accountability.

Only weeks after the September 11 attacks, Congress passed the Patriot Act, which vastly increased the power of American intelligence agencies. Oversight from both Congress and the FISC was supposed to ensure the law was not misused. However, many suspected that intelligence agencies abused the law nevertheless (Greenwald, 2013, September 27).

In June of 2013, *The Guardian* began publishing leaked documents about



secret NSA programs. The suspicions of several critics of surveillance were confirmed, including revelations that governments have the capacity to collect, store, and analyze almost all of our online and electronic communications. Furthermore, governments have indeed exercised these abilities. Programs like PRISM, Boundless Informant, and XKeyscore allow the NSA to collect enormous amounts of information about anyone it deems of interest directly from the Internet backbone (Bauman, 2014: 122-126). Questions of constitutionality aside, these programs completely overstep the intent and scope of the Patriot Act.¹

Does the NSA's abuse of surveillance power have any similarities to

historical abuses by agencies such as the FBI? Documents disclosed by Snowden suggests that this is the case. One document that Snowden released through *The Guardian* from October of 2012 suggests that the NSA had been collecting evidence of online sexual activity, such as visits to pornographic websites, by six different targets (Ehrenfreund, 2013, November 27). All six men were Muslims, and were believed by the NSA to have been involved in radicalization efforts. However, none of the six targeted individuals were accused in the document of being involved in terror plots. The document identifies at least one of them as being a "US Person," a significant legal category that would preclude surveillance overseen by

¹ For more information on the scope and constitutionality of the Patriot Act, see Etzioni, 2004.

the FISC. The intention of collecting this information, according to the document, was to release evidence of sexual transgressions online to discredit and destroy the reputations of the individuals in question.

As we have seen, this is not without precedent. The FBI under Hoover is the most obvious example of this. Not only has the NSA used surveillance tools to discredit those it deems dangerous, it has also used those tools to spy on the members of Congress tasked with overseeing NSA programs and funding (Pengelly, 2014, January 4). While it is unclear how extensive this spying is, the potential for abuse is evident. Mass surveillance programs are known to have been used by the NSA to blackmail individuals who were not involved in planning any terror attacks against the United States.

The power that mass surveillance gives to governments creates a historically verifiable threat to individuals by creating the potential for state-sponsored blackmail.

CIVIL LIBERTIES AND MASS SURVEILLANCE

The power that mass surveillance gives to governments creates a historically verifiable threat to individuals by creating the potential for state-sponsored blackmail. But why is this so dangerous? Put simply, when governments blackmail their citizens, the potential for dissent

is dulled. Individuals lose the full freedom to speak as they please, afraid of sanctions from a government that does not welcome certain views. Thus, in the name of security, these programs harm the very freedom they are supposed to protect.

In his dissenting opinion in *Olmstead v. U.S.*, Supreme Court Justice Louis Brandeis offered a famous formulation on the value of privacy. Brandeis wrote that:

The makers of our Constitution undertook to secure conditions favorable to the pursuit of happiness. They recognized the significance of man's spiritual nature, of his feelings, and of his intellect. They knew that only a part of the pain, pleasure and satisfactions of life are to be found in material things. They sought to protect Americans in their beliefs, their thoughts, their emotions and their sensations. They conferred, as against the Government, the right to be let alone—the most comprehensive of rights and the right most valued by civilized men. (*Olmstead*, 277 U.S. 438 (1928))

From formulating heterodox opinions to character evolution, privacy is a vital component in the development of our personal identities. Studies have shown that human behaviour changes substantially when people believe, correctly or incorrectly, that they are being watched (Ernest-Jones, Nettle, and Bateson, 2011). There is a reason that we do not have toilets in the middle of living rooms: we naturally value privacy. There are things about ourselves, from our bodily appearance to the

websites we visit to our personal banking information, that we do not want others to know. Regardless of any positive impact this may have on the behaviour of individuals, we should be wary of attempts by governments to influence and change our behaviour. State mandated paternalism reduces the autonomy of the individual and invites even more government intrusion in the private lives of citizens. Even if the behaviours of anti-war activists, or Martin Luther King, or Islamic preachers, were questionable or unpopular, they should not have been used by their government as a weapon to silence their speech. It is in the private realm that we can think, write, speak and act away from the judgement of others. Privacy is thus a foundational part of what it means to be a free individual.

Privacy is a foundational part of what it means to be a free individual.


One of the major findings of the Church Committee was that that “covert action programs [had] been used to disrupt the lawful political activities of individual Americans and groups and to discredit them, using dangerous and degrading tactics which are abhorrent in a free and decent society” (Senate Select Committee, No. 755 at 211 (1976)). A 21st century investigation of the contemporary activities of American intelligence agencies would very likely find evidence of similar wrongdoings. Government agencies

often violate our civil liberties and abuse the immense power they wield to silence dissent and discredit opposition.

Mass surveillance in the modern era fundamentally changes our relationship with the government.

Privacy enables us to have private lives and to do things we may not want others to know about. When we lose this sphere of privacy, anything embarrassing or questionable in our personal lives becomes a weapon that can be used against us. This information can then be used to silence dissent or opposition, as both the FBI and the NSA have attempted to do. Time and time again, security agencies have shown that they cannot be trusted with the sensitive information they collect about individuals; the temptation to use this information is simply too strong.

Mass surveillance in the modern era fundamentally changes our relationship with the government by creating the potential to destroy the private sphere. If we cannot have privacy, we cannot have secrets. What’s worse, those who are not willing to give up their secrets become potential victims of state-sanctioned extortion. The deck is stacked against privacy either way. From FBI spying on prominent civil rights and anti-war activists to present-day NSA spying on Islamic preachers, there are too many examples of state-sponsored blackmail for us to trust that the government will not use

the information it collects against dissidents who pose no threat to national security. While surveillance programs are designed to protect us, ultimately the misuse of the information collected through these programs endangers the very rights they are supposed to protect. 



Ben Woodfinden is a current graduate student at Carleton University, specializing in Political Philosophy. He graduated from Carleton with a B.A in Political Science and History in June 2015. Ben has public policy experience having previously worked for Transport Canada and the Canadian Federation of Independent Business.

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For-Profit Hospitals and Insurers in Universal Health Care Countries



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FOR-PROFIT HOSPITALS AND UNIVERSAL HEALTH CARE

Contrary to the way they are often perceived in Canada, for-profit hospitals are a part of high-performing universal health care systems in other countries such as Australia, France, Germany, the Netherlands, and Switzerland. [C](#)

Learn more [>>](#)

An illustration on a purple background. A large hand in a black suit sleeve holds a magnifying glass over a person sitting at a desk with a computer. The person is wearing glasses and a light blue shirt. The magnifying glass is focused on the person's face.

1st Place Essay Contest Winner
Graduate Student Category

PRIVACY VS. SECURITY

Does a tradeoff really exist?

Demelza Hays

The recent disclosure of the National Security Agency's (NSA) "PRISM" program by Edward Snowden has sparked a debate concerning the trade-off between privacy and security. Proponents of government surveillance argue that security is more important than privacy, and that these programs enable the

government to stop terrorism before it happens. However, this claim cannot be substantiated. Government surveillance programs function under an implicit assumption: surveillance is the best method for preventing terrorism. In order to investigate this assumption, the costs and benefits of surveillance must be compared with the costs and benefits of alternative

strategies. The remainder of this paper demonstrates that an analysis of the monetary and nonmonetary costs and benefits of government spying cannot be conducted with sufficient precision. Therefore, the assumption that public safety requires the curtailment of privacy is unfounded.

The assumption that public safety requires the curtailment of privacy is unfounded.

In response to the Parliament Hill shootings in Ottawa last year by Michael Zehaf-Bibeau, Prime Minister Stephen Harper pledged to expand government surveillance (Northam, 2014). However, he failed to explain why the current level of spying was insufficient to prevent Mr. Zehaf-Bibeau from committing a terrorist act or how expanding surveillance will prevent future attacks. Government websites and official speeches do not reveal specifically how these programs work, what types of data they collect, or what results have been achieved. The bulk of the information available has surfaced thanks to whistleblowers such as Edward Snowden, Thomas Andrew Drake, and William Binney.

Opponents of government surveillance claim that bulk data collection infringes upon individual rights. On June 6, 2013, the *Guardian* reported on an NSA court order to a Verizon subsidiary to disclose the phone records of millions of domestic customers (Greenwald, 2013). The next day, the *Guardian* and the *Washington Post* reported

As you have watched the developments in news stories about government monitoring programs over recent months, would you say that you have become more confident or less confident that the programs are serving the public interest?



Pew Research, 2015

that the NSA accessed details of customer conversations from at least nine companies including Google, Yahoo, and Microsoft (Gellman and Poitras, 2013). Slides released by Edward Snowden show that the NSA collects data ranging from live communications to stored information such as emails, videos, photos, and Skype calls too. In the US, court cases such as *Jewel v. NSA* have accused the government of overseeing an “illegal and unconstitutional program of dragnet communications surveillance” (Jewel, 2008). Although, the government has dismissed these claims, the US district court judge for the District of Columbia, Richard Leon, stated that bulk data collection probably does violate the Fourth Amendment (Klayman et al., 2013).

Although the legality of bulk data collection is still being debated, the assumption that surveillance is the best method for abating terrorism is unwarranted. The theoretical tools used by central planners to conduct cost-benefit analyses are structurally unsound because they function under the assumption that interpersonal and intrapersonal comparisons of utility are possible. Even the most careful analyses can therefore only yield tentative figures that do not include nonmonetary valuations. The twentieth century economist, Ludwig von Mises, explained that governments couldn't distribute resources rationally in an economy without a free market for the means of production (Mises, 1990). Although Mises described the calculation problem in the context of socialist countries, any government that operates outside of the free market cannot conduct truthful cost-benefit analyses. The price mechanism on the free market is the only institution that encompasses the subjective valuations of individuals.

Although the legality of bulk data collection is still being debated, the assumption that surveillance is the best method for abating terrorism is unwarranted.

This paper investigates two separate strategies for measuring the costs and benefits of government surveillance. First, an analysis of the objective, or financial, costs and benefits is presented. The second method involves an analysis of the subjective, or personal, costs and benefits that each individual incurs. Both methods

conclude that the government cannot vindicate the surveillance of citizens.

For purposes of this paper, objective costs and benefits are factual expenditures and revenues that were generated by the operation of a government surveillance program. It is difficult to precisely measure objective benefits from surveillance because the subverted plots will not occur; any attempt to estimate the damage subverted would be hypothetical. If a surveillance program stopped a terrorist act from being implemented, analysts could estimate the number of lives saved and the monetary cost of the damage prevented. However, the Justice Department's Inspector General, Michael E. Horowitz, admitted that FBI agents had not stopped any terrorist acts because of snooping powers granted by Section 215 of the Patriot Act (Office of Inspector General, 2015). During a press meeting with German Chancellor Angela Merkel, President Obama announced, "We know of at least 50 threats that have been averted because of this information not just in the United States, but, in some cases, threats here in Germany. So lives have been saved" (Office of the Press Secretary, 2013). However, an independent report commissioned by the White House does not cite a single example where the NSA's data collection actually stopped a terrorist attack (Clarke, Morell, Stone, Sunstein, and Swire, 2013, Dec. 12).

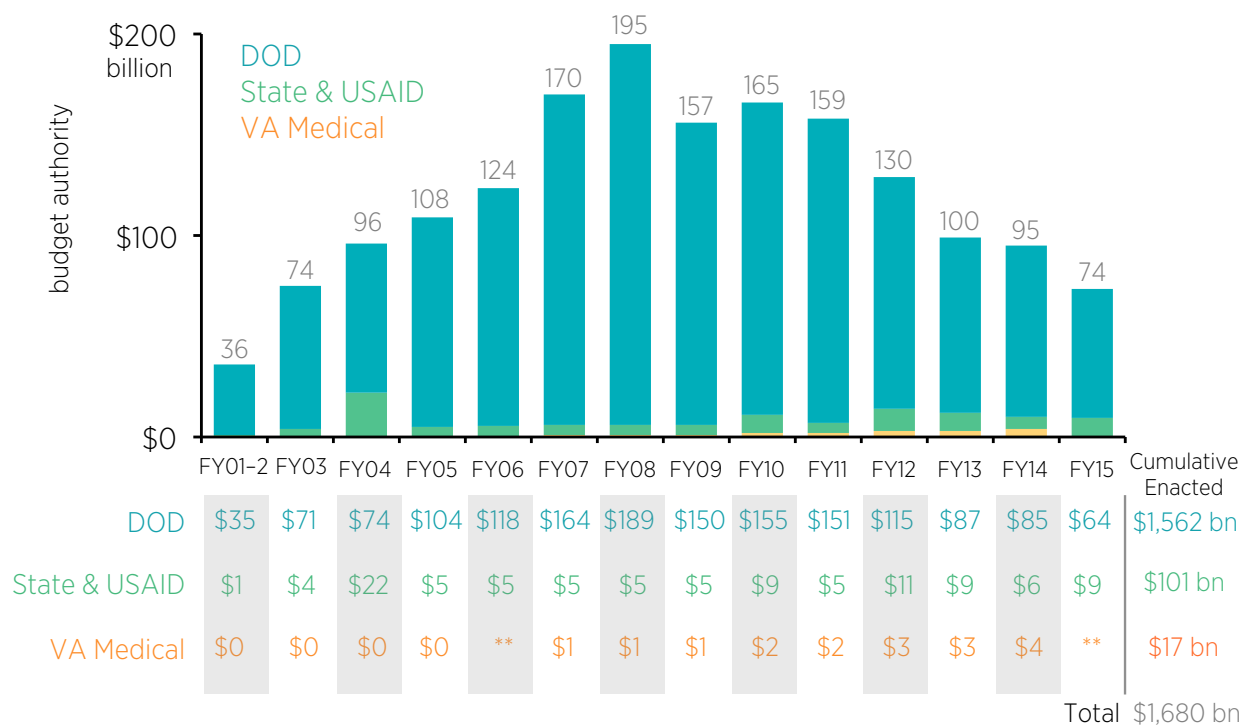
Since bulk data collection on citizens has not prevented any known attacks, the objective benefits are negligible. However, the objective costs of surveillance are quite substantial. An example of an objective cost

is the estimated CA\$4.2 billion to construct and maintain Canada's most expensive government building, the Communications Security Establishment (Weston, 2015). Other examples include the CSE's annual budget of \$829 million and Canada's Department of National Defence budget of CA\$24.495 billion (SIPRI, 2011). The objective costs of surveillance programs amount to transfer payments from productive sectors of the economy to public bureaucracies and government contractors. Instead of taxpayer funds supporting education, health, infrastructure, or simply not being extracted from the private sector in the first place, billions of dollars are being spent on opaque and apparently ineffective surveillance programs.

Instead of taxpayer funds supporting education, health, infrastructure,... billions of dollars are being spent on opaque and apparently ineffective surveillance programs.

As the graph shows below, researchers at George Mason University estimated the cost of the American War on Terror to be US\$1.7 trillion since 2001. Although the American government releases information on the annual budget of intelligence spending, these reports do not describe how the full budget is used. The only information we have about the allocation of these funds comes from the "black budget" leaked by Edward Snowden in 2013. According to the black

Estimated War Funding by Agency, FY 2001 - FY 2015



Source: Amy Belasco, CRS, "The Cost of Iraq, Afghanistan, and Other Global War on Terror Operations Since 9/11," Dec. 8, 2014. FY 15 data comes from US Senate Committee on Appropriations, "Summary: Fiscal Year 2015 Omnibus Appropriations Bill," Dec. 9, 2014. Produced by Veronique de Rugy and Rizqi Rachmat, Mercatus Center at George Mason University.

budget, U.S. spy agencies received US\$52.6 billion in 2013 (DeLong, 2013). However, this document only pertains to one year, and it does not include all military surveillance expenditures.

Although it is difficult to compare the objective costs and benefits of surveillance, individuals can conduct an analysis of their own personal, subjective costs and benefits. Subjective valuation refers to the idea that the value of a good or service is determined by each acting individual instead of how much labor went into the good's production (Menger, 1950). Each individual desires a good or service according to their personal ranking of ordinal values (Mises, 2007). Subjective valuation makes it impossible for another party to precisely measure an increase or decrease in an individual's utility. Subsequently, it is impossible to compare changes in utility between individuals. Therefore, it is impossible for governments to quantify the subjective valuation that an individual gives to reducing his or her probability of death from a terrorist attack.

Researchers cannot quantify utility; however, individuals can decide how much they value surveillance based on their unique preferences. The innate human drive for survival will always generate demand for security. However, different individuals will demand different types of protection. Similarly, the costs that individuals will be willing to pay will vary, and furthermore an individual's demand and willingness to pay will also fluctuate throughout his or her life in response to new

information. Even if it could be shown that privacy violations increase public safety, people vary greatly in how they prioritize privacy or security. For example, some individuals could incur what Ludwig von Mises referred to as a "psychic profit" from surveillance (Mises, 2007). A psychic profit (or loss) is a concept that describes an increase (or a decrease) in an individual's utility or happiness. An individual may prioritize surveillance over privacy because surveillance provides a sense of safety. This is an example of a subjective benefit because the sense of security offered is not worth the same amount for everyone. In comparison, subjective costs include the value that each individual places on their loss of privacy due to unwarranted data collection, domestic drones, and intrusive law enforcement agents. Some individuals may be willing to pay their full salary for a reduction in terrorism. Others might prefer to fund the construction of new school instead.

The innate human drive for survival will always generate demand for security. However, different individuals will demand different types of protection.

Since policy makers cannot measure the subjective valuations of their constituents, the subjective valuations of all of the citizens cannot be aggregated. The theoretical tools that central planners use to quantify and aggregate individual subjective valuations rely on the assumption that

the measurement, aggregation, and comparison of subjective valuations, or utility, is possible. Government agencies, such as the Department of Transportation (DOT), conduct quasi cost-benefit analyses of various programs by comparing the estimated number of lives saved to the objective cost of implementation (Thomson and Monje, 2015). The most common measurement that government agencies use to quantify the value an individual places on a marginal change in their likelihood of death is the Value of a Statistical Life (VSL). In 2015, the DOT estimated an individual's life to be \$9.4 million on average; however, this assumes that all lives have the same value and that each individual values their life to be worth \$9.4 million. VSL estimates are unreliable because they depend on Willingness to Pay (WTP) estimates, which vary according to the assumptions used in the economic model. For example, the DOT's WTP estimate assumes a linear relationship between risk and WTP for avoidance of the risk (Thomson and Monje, 2015). Since these tools are unable to accurately measure individual subjective preferences, governments cannot conduct thorough cost-benefit analyses. Without a cost-benefit analysis of government surveillance, governments cannot verify that surveillance effectively prevents terrorism.

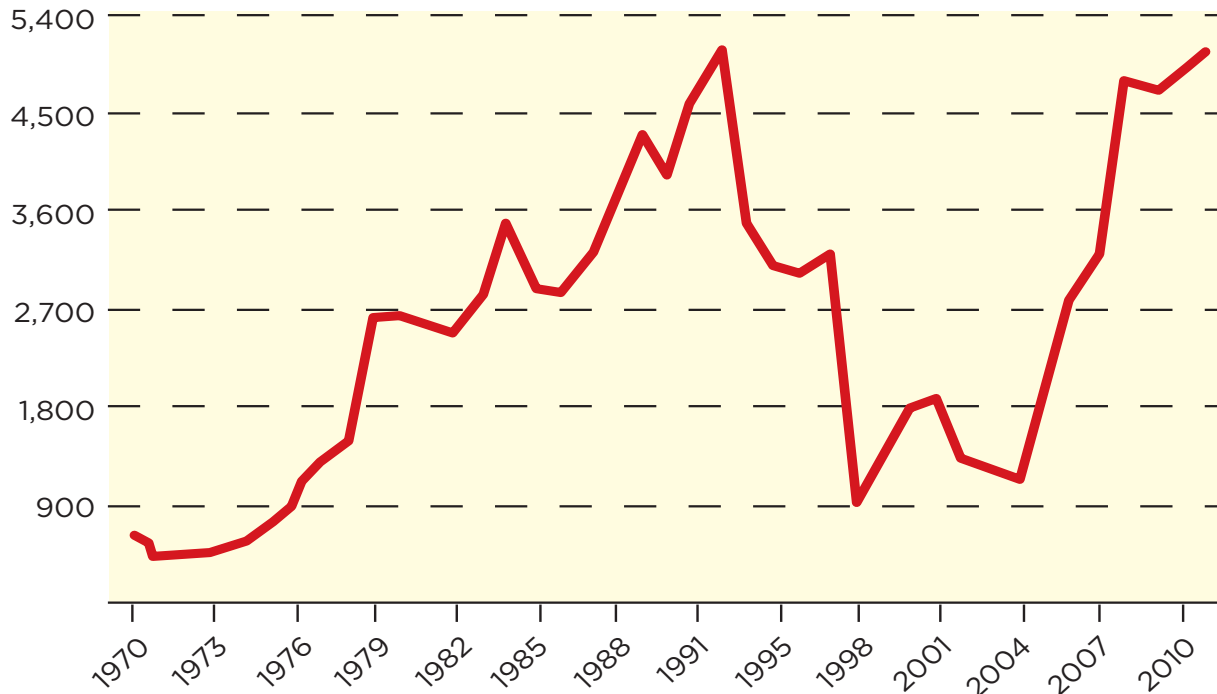
Since September 11, 2001, 67 Americans have died in terrorist-related acts on U.S. soil, yet billions of US taxpayer dollars are being spent on the War on Terror (University of Maryland, 2015). This illustrates that surveillance programs implicitly function under the assumption that all

lives should be saved from terrorism even at great cost to taxpayers. Furthermore, terrorism has increased since the "War on Terror" officially began in 2001. According to the Global Terrorism Database maintained by the University of Maryland, terrorist attacks worldwide initially plummeted from roughly 5,000 incidents annually during the 1980s to 900 incidents in 1998 before steadily increasing after 2004 to new record highs today. Although more research is required for understanding the triggers of terrorism, the data confirm that terrorism is increasing despite surveillance efforts worldwide.

The data confirm that terrorism is increasing despite surveillance efforts worldwide.

Independent researchers posit that cheaper and more efficient ways of combating terrorism are available. One solution may be to engage in "defensive defense" instead of "offensive defense." Political scientist Robert Pape studied the impact of military intervention by NATO or the US on the number of terrorists originating from the Middle East (Pape, 2006). Based on data from 315 suicide attacks between 1980 and 2003, Pape found that most terrorists were motivated by nationalism and occupation of their homeland instead of poverty or Islamic fundamentalism. Following this research, economist Jean-Paul Azam briefed the Obama administration on the impact of "boots on the ground" in oil producing countries. Azam made the simple suggestion that removing US soldiers

Terrorism Increased After Launch of War on Terror



University of Maryland (2015). Global Terrorism Database. Various database searches. <<http://www.start.umd.edu/gtd/>>, as of May 25, 2015.

from foreign countries could greatly diminish the probability of terrorist attacks targeted at the US (Azam and Thelen, 2014).

If terrorists were constantly attacking us and the only way to survive was to be monitored by government agencies, it might be worthwhile to trade privacy for security. However, the assumption that national security requires any abridgment of rights is obfuscated; that it requires vast invasions of privacy is without warrant given the existence of more effective alternatives, including removing troops from the Middle East. Although the government cannot conduct a proper cost-benefit analysis of bulk data collection, individuals can conduct an analysis of the subjective costs and

benefits that they personally incur. Each individual must decide if the sense of security that surveillance provides is worth the reduction in personal privacy endured. **C**



Demelza Hays is a Frédéric Bastiat Fellow at the Mercatus Center in Arlington, Virginia. She graduated from the Toulouse School of Economics in France with a M.A. in Economics in 2015, and she is currently completing her PhD in Economics at the University of Liechtenstein.

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**THIS ARTICLE APPEARED IN THE
FRASER FORUM ON NOVEMBER 18, 2015**

HISTORIC COURT RULING ALSO RAISES QUESTIONS FOR FIRST NATIONS PURSUING ABORIGINAL TITLE

Ravina Bains

In mid-October, as noted in a recent [study](#), the Supreme Court of Canada upheld an earlier B.C. Court of Appeal ruling that will allow the Nechako Nations (Saik'uz First Nation and Stellat'en First Nation) to bring forward a damages claim against Rio Tinto, an aluminum industry giant.

The First Nations claim that the Kenney Dam (pictured on next page), which has operated for more than 60 years on the Nechako River, is causing significant environmental harm to the river and thus negatively affecting their fishing resources. The Nechako Nations are claiming aboriginal title on the land, which houses the Kenney Dam, however they have yet to prove title to the land. This judgement allows the First Nation to move forward with

a damages claim without having proven aboriginal title. Allowing the Nechako Nations to do so could result in future aboriginal title litigation between First Nations and private parties—litigation that was previously only brought against governments.

These are important questions to ask because it could mean an additional 20 years of litigation.

In addition to exposing private parties to litigation that was previously only brought against governments, this judgment will also impact economic development opportunities in places like British Columbia where the number one impediment for mining investment is uncertainty over disputed lands.



Furthermore, for First Nations pursuing aboriginal title claims, this case raises several fundamental questions.

For example, if First Nations are now able to prove aboriginal title on land through litigation against private parties, will governments recognize that title? Or will governments require First Nations to re-litigate the case against the Crown?

These are important questions for First Nations, like the Nechako Nations, to ask because it could mean an additional 20 years of litigation.

For example, the [Tsilhqot'in title case](#)—the 2014 historic decision granting title for the first time on land outside a reserve—took more than 20 years to conclude. So if the provincial or federal governments do not recognize aboriginal title granted through litigation between a First Nation and private party that could mean First Nations would have to re-litigate their case against the Crown,

which is not only costly for the First Nation but could add another decade before they are granted title from governments.

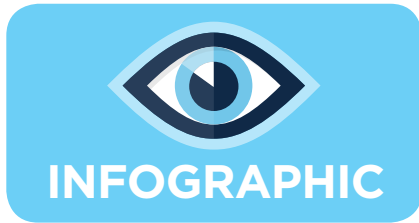
Through this recent decision, the Nechako Nations now have the opportunity to pursue a damages claim against Rio Tinto and prove aboriginal title to their claimed territory in the process.

It remains to be seen if they will move forward with this claim; but before they do, the Nechako Nations ought to seek clarity on these important questions. [C](#)

Read the full study [>>](#)



Ravina Bains is the Associate Director of the Centre for Aboriginal Policy Studies at the Fraser Institute.



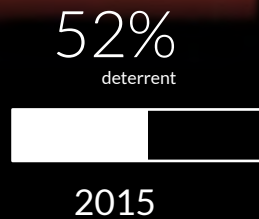
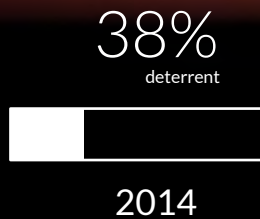
OIL AND GAS SECTOR LOSING CONFIDENCE IN ALBERTA AS A PLACE TO INVEST

Investor confidence is shaking Due to Alberta's policy uncertainty

FISCAL TERMS AND ROYALTIES



ENVIRONMENTAL REGULATIONS



2014 RANKINGS

US—UTAH
US—WYOMING
US OFFSHORE—GULF OF MEXICO
UNITED KINGDOM—NORTH SEA
DENMARK

16. ALBERTA

NAMIBIA
UNITED KINGDOM—OTHER OFFSHORE
FAROE ISLANDS
CA—ONTARIO
AU—WESTERN AUSTRALIA
AU—NORTHERN TERRITORY
OMAN
CA—YUKON
CA—NORTHWEST TERRITORIES
CA—ALBERTA
TRINIDAD AND TOBAGO
AUSTRALIA—OFFSHORE
URUGUAY
BRUNEI
QATAR
US—ILLINOIS
NETHERLANDS—ONSHORE
BAHRAIN
AU—QUEENSLAND
THAILAND
US—ALASKA
CA—BRITISH COLUMBIA

2015 RANKINGS

US—MONTANA
US—LOUISIANA
US—OHIO
JAPAN
NORWAY—OTHER OFFSHORE
IRELAND
US—UTAH
US—WYOMING
US OFFSHORE—GULF OF MEXICO
UNITED KINGDOM—NORTH SEA
DENMARK
CA—NEWFOUNDLAND & LABRADOR
UNITED ARAB EMIRATES
US—PENNSYLVANIA
NAMIBIA
UNITED KINGDOM—OTHER OFFSHORE
FAROE ISLANDS
CA—ONTARIO
AU—WESTERN AUSTRALIA
AU—NORTHERN TERRITORY

38. ALBERTA

CA—ALBERTA
TRINIDAD AND TOBAGO
AUSTRALIA—OFFSHORE
URUGUAY
BRUNEI
QATAR



CANADA'S PHYSICIAN SUPPLY

Doctor-to-population ratio will decline unless Canada becomes more reliant on foreign-trained physicians

Nadeem Esmail





**THIS ARTICLE APPEARED IN THE
NOVEMBER 2008 ISSUE OF FRASER FORUM**

In recent years, Canadians have been paying a significant amount of attention to the supply of physicians in Canada. Reports and commentaries on the issue of physician supply appear regularly in the nation’s news media, while studies on the issue have been produced by research organizations, professional associations, and government committees across the country. Most of these discussions and studies have come to the conclusion that there are too few physicians practicing in Canada today.

That conclusion is supported by the available evidence regarding Canadians’ unmet health care needs and the relative supply of physicians in this country. For example, in 2007 slightly less than 1.7 million Canadians aged 12 or older reported being unable to find a regular physician (Statistics Canada, 2008). Similarly, a research poll completed in 2007 found that 14% of Canadians (approximately five million) were without a family doctor, more than 41% of whom (approximately two million) were unsuccessful in trying to find a family doctor (CFPC, 2007).

UPDATE

In 2013, Canada’s physician to population ratio was 2.6 per 1,000 population, ranking Canada 24th among the 28 countries included in Table 1. Canada’s rank does not change after adjusting data for age.

Source: OECD 2015, calculations by Bacchus Barua

Table 1: Age-adjusted comparison of physicians per 1,000 population for select OECD countries, 2006

Rank of 28	Country	
1	Iceland	4.5
2	Greece (2005)	4.4
3	Netherlands	4.0
4	Czech Republic	3.8
4	Norway	3.8
6	Belgium	3.7
6	Ireland	3.7
6	Slovak Republic (2004)	3.7
6	Switzerland	3.7
10	Denmark (2004)	3.6
11	Austria	3.4
11	Spain	3.4
13	France	3.2
13	Sweden (2005)	3.2
15	Australia (2005)	3.1
15	Italy	3.1
15	Germany	3.1
18	Portugal (2005)	3.0
19	Hungary	2.9
19	Luxembourg	2.9
21	New Zealand	2.7
22	Finland	2.6
23	Korea	2.4
23	Poland	2.4
23	United Kingdom	2.4
26	Canada	2.3
27	Japan	1.7
28	Turkey	1.6

Note: Figure for Turkey was not age adjusted due to a low 65+ population not conducive to meaningful adjustment.
Sources: OECD (2008); Esmail and Walker (2007); calculations by author.

Further, after accounting for the fact that most other developed nations have a greater proportion of seniors (aged 65 and older), and thus a greater demand for health care services (nations with younger populations naturally require fewer health services),¹ Canada's physician-to-population ratio in 2006 ranked 26th among the 28 developed nations that maintain universal access health insurance programs for which data were available (table 1) (OECD, 2008; Esmail and Walker, 2007; calculations by author).

These facts, when combined with evidence that increased spending on physicians has been related to reduced wait times for treatment in Canada (Esmail, 2003), clearly suggest that the supply of physician services in Canada is not meeting the demand.

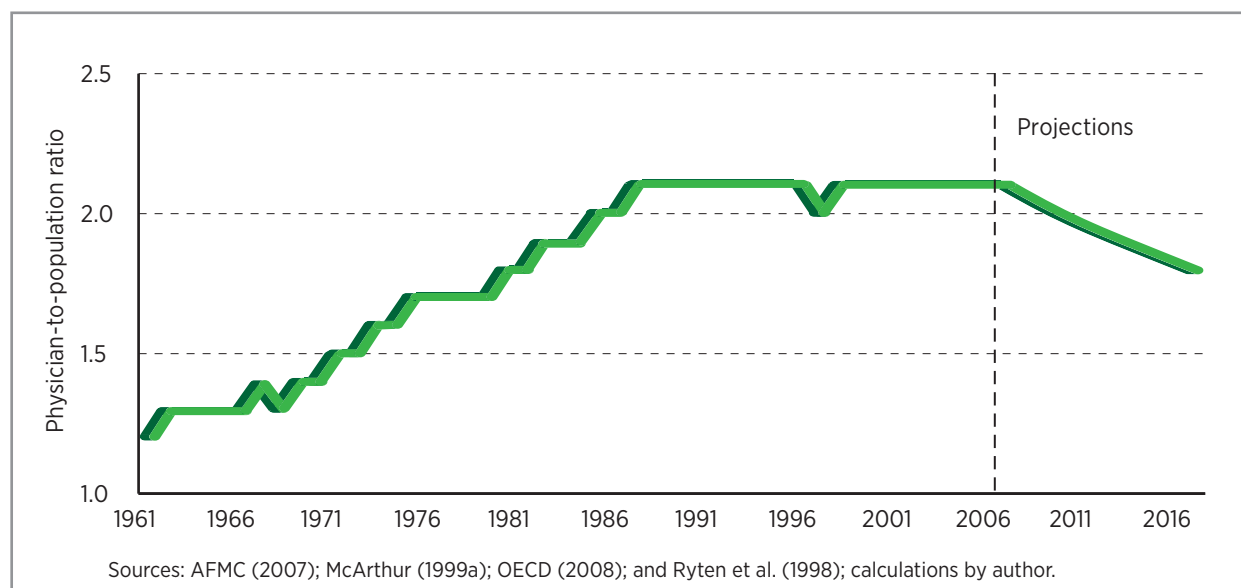
This article seeks to add to the current understanding of Canada's physician shortage and show how

Canada's physician supply may evolve in the coming years.

THE EVOLUTION OF CANADA'S PHYSICIAN SUPPLY

In the early 1970s, Canadians enjoyed one of the highest physician-to-population ratios in the developed world (OECD, 2008). Such generous relative access to doctors was, in light of recent evidence, unquestionably beneficial for Canadians. Unfortunately, in the early to mid-1980s some government officials voiced concern about the generous and growing number of physicians, and recommended that governments reduce the number of medical school admissions and training positions available (Tyrrell and Dauphinee, 1999). While their calls for reform were not met with a specific policy on physician supply, medical school admissions were reduced slightly in the years that followed (Tyrrell and Dauphinee, 1999; Ryten et al., 1998).

Figure 1: Canadian physician-to-population ratio, 1961 to 2017



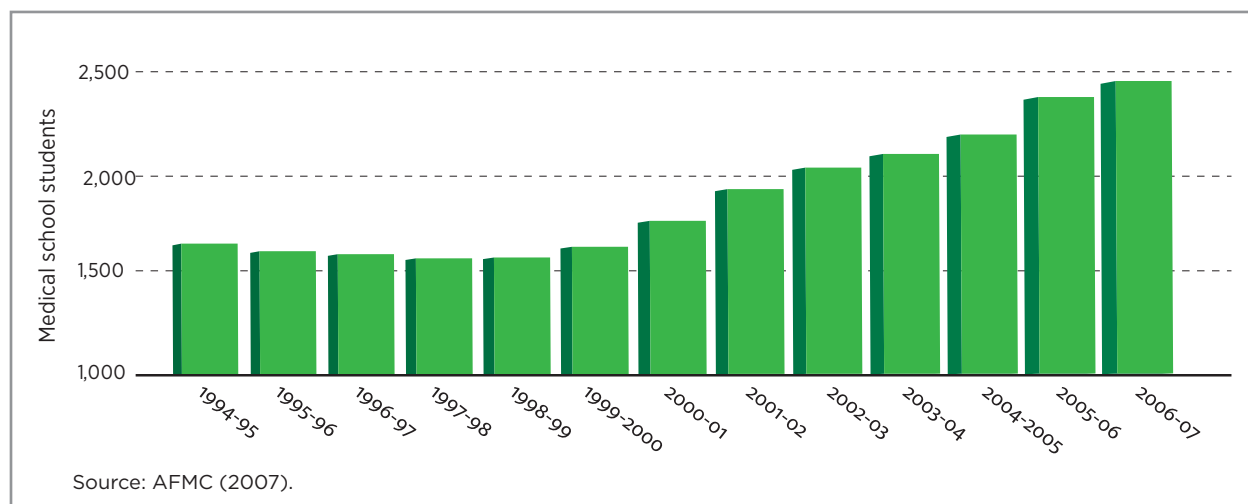
In the early 1990s, however, specific policies on physician supply were introduced following the publication of what has come to be known as the Barer-Stoddart report. In 1991, researchers Morris L. Barer and Greg L. Stoddart published a discussion paper for the Federal/Provincial/Territorial Conference of Deputy Ministers of Health. Their report recommended, among other things, reducing medical school enrollment by 10%; reducing the number of provincially funded post-graduate training positions by 10% to meet the needs of students graduating with M.D.s in Canada; and reducing Canada's reliance on foreign-trained doctors over time (Barer and Stoddart, 1991). Governments responded in 1992 by accepting all three of these recommendations, with the goal of maintaining or reducing the physician-to-population ratio in Canada (Tyrrell and Dauphinee, 1999).

Figure 1 reveals the effect of these decisions: a physician-to-population

ratio that increased continuously from the early 1960s to the late 1980s, peaking in 1993 at 2.1 physicians per 1,000 people. (The projections included in this figure will be discussed later in this article.) Since then, Canada's physician supply has been growing just fast enough to maintain a ratio of 2.1 physicians per 1,000 people (except in 1997, when the ratio fell to 2.0), now one of the lowest ratios among nations that guarantee their citizens access to health care insurance regardless of ability to pay (table 1). In other words, Canada's policies have restricted the growth rate of the physician-to-population ratio in order to maintain a level that is now below what other nations provide through their universal access health programs, and below the current demand for physician services in Canada.

The potential health benefits associated with having a higher physician-to-population ratio (see, for example, Or, 2001, and Starfield et al.,

Figure 2: First-year enrollment in Canadian faculties of medicine, 1994-95 to 2006-07



2005) were lost as a consequence of these restrictions.

While it is clear that the current physician supply is insufficient, the numbers to the left of the projections marker in figure 1 tell us nothing of the future. According to recent statistics published by the Association of Faculties of Medicine of Canada, provincial governments have been increasing the number of medical school admissions significantly over the last six or seven years (figure 2). In order to better understand how Canada's physician supply will evolve over the coming years, it is important to consider the impact these changes in school admissions will have on

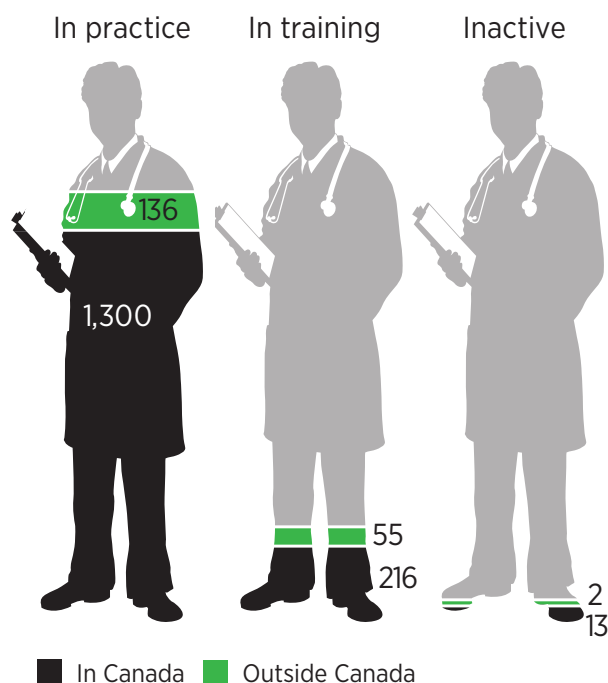
the number of physicians entering the workforce over the next seven to 10 years (the amount of time it will take for these students to become practicing doctors in Canada). It is also important to consider what will happen to the physician supply over that time in order to better understand the impact that government controls have had on medical school admissions and post-graduate training during the late 1990s and the early part of this decade.

GRADUATION RATES AND PHYSICIAN SUPPLY TO 2017

Extrapolating from Canada's medical school graduation rates, it is possible to estimate the number of new doctors who will be entering the workforce in the coming years. To estimate the future supply of doctors accurately, however, it is important to take into account the number of physicians currently working in Canada who will die, retire, or leave for employment in other nations, as these physicians must be replaced in order to maintain a constant supply of physicians over time. An article published in the *Canadian Medical Association Journal* sheds some light on both issues.

In early 1996, Ryten et al. followed up with 1,722 medical school graduates (from an entry class of approximately 1,780) who received their degree in 1989 (leaving them sufficient time to complete post-graduate medical training). They found that only 1,300 of the graduates were actively practicing in Canada seven

Figure 3: Location and professional activity of 1989 Canadian medical school graduates in 1995-1996



Source: Ryten et al. (1998).

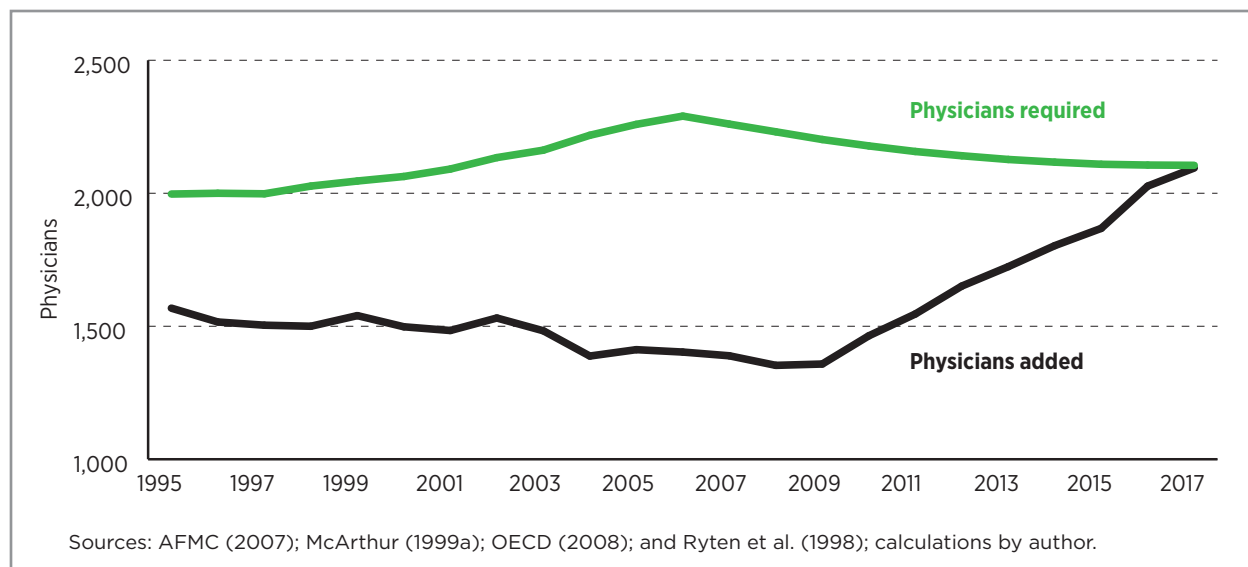
years after graduation. A further 216 were still training to practice in Canada, while 13 students remained in Canada but were not in active practice. Meanwhile, 193 had left the country (figure 3). In total, only 88% of those who graduated in 1989 were practicing or training to practice as Canadian physicians in 1996.

Ryten et al. also found that the number of Canadian-trained physicians entering the workforce was insufficient even to maintain the current supply of doctors at that time. In the mid-1990s, the authors estimated that approximately 650 to 750 new physicians would be needed each year in order to keep up with historical rates of population growth (the physician supply must grow with the population in order to maintain a constant ratio). The authors also determined that a further 900 to 1,100 physicians would be needed to replace those

who either retired or died, and that roughly 300 to 350 new physicians would need to be added in order to replace those physicians who left the country. In other words, maintaining the physician-to-population ratio in the mid 1990s would require adding 1,900 to 2,200 new physicians to the workforce every year (between 3.1% and 3.6% of the 1996 physician population)—a substantially greater number than the 1,516 new Canadian-trained additions (who were either in practice or still training to practice in Canada) from the class of 1989.

By applying the proportions determined by Ryten et al., as has been done previously by McArthur (1999a), to the number of students who enrolled in medical schools in Canada and the number of students who were awarded M.D.s from 2000 onwards, it is possible to estimate the number of new Canadian-trained physicians who

Figure 4: New Canadian-graduated doctors in practice compared to the number of new doctors required to maintain physician-to-population ratio, 1995 to 2017



will be entering the workforce up to 2017.² As figure 4 shows, if 88% of medical school graduates are part of Canada's physician supply seven years after graduation, and if only 97% of those admitted to medical school graduate (as was the case for the class of 1989), then current enrollment and graduation rates suggest that only 2,095 Canadian-trained students will be added to the physician supply in 2017.

Figure 4 also shows the number of new physicians required to maintain the physician-to-population ratio. This number exceeds the number of Canadian-trained physicians entering the workforce every year through 2017, though this difference is small in 2017. This number of physicians required assumes that the number needed to replace those lost to death, retirement, or emigration, and to keep up with population growth is a constant 3.3% of the current physician population over time (which is equal to the addition of 2,000 new physicians in 1996, the low-middle point in the Ryten et al. estimates above).³ It also assumes that only Canadian-trained doctors will be added to the physician supply between 2006 and 2017.⁴


This replacement rate is a conservative estimate: at present approximately 35.9% of Canada's physicians are aged 55 or older (CMA, 2008), which suggests that the number of physicians needed to replace those who retire or die (900 to 1,100 doctors in the mid-1990s) will rise significantly in the coming years. In addition, this estimate does not take into

account the effects of demographic changes in the physician workforce, the consequence of which may be that, in the future, more physicians will be required to deliver the same volume of services being provided today (see, for example, Esmail, 2007). Furthermore, this is only the number of new physicians required to *maintain* the stock of physicians, which is clearly insufficient Canada's physician supply to meet current demand and will fall well short of demand in the future given that Canada's health needs will increase as our population ages.

Making one additional assumption—that the Canadian population will continue to increase at its average growth rate since 1990 (-1.0%)—allows us to estimate how the physician-to-population ratio will evolve in Canada in the coming years (figure 1). Clearly, without a significant addition of foreign-trained doctors, the Canadian physician-to-population ratio will decline between now and 2017,⁵ just as it would have through the 1990s if foreign physicians had not been used to make up for the shortfall caused by insufficient medical school admissions.

CONCLUSION

The current physician supply in Canada is clearly insufficient to meet the demand for physician care under the present structure of Medicare,⁶ and falls well short (in terms of the supply of physicians relative to population) of what is being delivered in other developed nations that also maintain universal

approaches to health care insurance. Without a significant intake of foreign physicians, the physician-to-population ratio will fall in the coming years because there are not enough new doctors being trained in Canada. It would seem that a government-imposed limitation on the number of physicians being trained in Canada is a policy choice that is not serving the best interests of Canadians, be they patients in need of a physician or capable students who wish to become doctors but are unable to access medical training in this country. 



Nadeem Esmail is a Senior Fellow of the Fraser Institute. He first joined the Fraser Institute in 2001, served as Director of Health System Performance Studies from 2006 to 2009, and for the past three years has been a Senior Fellow. Esmail completed his B.A. (Honours) in Economics at the University of Calgary and received an M.A. in Economics from the University of British Columbia.

NOTES

- 1 The methodology used for age-adjustment here is that employed by Esmail and Walker (2007).
- 2 This estimate uses graduation rates for students awarded M.D.s between 2000 and 2007 (who, between 2007 and 2014 will be at the same point in their careers as the students studied by Ryten et al.), and enrollment rates for students entering medical school between 2004/2005 and 2006/2007 who will, in general, be at the same point in their medical careers between 2015 and 2017 as the students studied by Ryten et al. were in 1996 after graduating in 1989. All graduation and enrollment rates are from AFMC (2007).
- 3 This replacement value is smaller than the 3.5% estimate of physicians leaving practice in Canada annually (not counting the number of physicians required to account for population growth) used by Tyrrell and Dauphinee (1999) to estimate changes in the physician supply.
- 4 This second assumption may seem questionable since significant numbers of foreign-trained physicians have been added to the Canadian workforce in order to maintain the existing physician-to-population ratio. However, the precise number of foreign-trained doctors who will be added in the future is difficult to estimate. This assumption does not, however, affect the conclusions of this examination. Since the main purpose of this article is to consider the effect controls have on the supply of Canadian-trained doctors, this simplifying assumption serves to clarify the effect these training restrictions have on the future supply.
- 5 This decline in the ratio is seen in figure 4 as the decline in the number of physicians required to maintain the physician-to-population ratio between 2006 and 2017.
- 6 Shortages can only occur when prices are not permitted to adjust. Prices will naturally rise in any functioning market where goods or services are in short supply relative to demand, thus encouraging new supply and reducing demand simultaneously. The outcome is equilibrium of supply and demand (no shortage or excess). In the Canadian health care marketplace, such adjustment is impossible because of restrictions on both the prices and supply of medical services. The optimal solution to Canada's shortage is obviously to remove restrictions on training, practice, and pricing, and to introduce user charges. This would increase the supply of services while simultaneously encouraging more informed use of medical practitioners' time (thus reducing the demand for treatment overall and improving the allocation of physician manpower and effort). Such a

change in policy would bring Canada more in line with some of the world's top-performing universal access health care programs (Esmail and Walker, 2007). Unfortunately for Canadians, the introduction of user fees and extra billing are not permitted under the current federal legislation guiding Medicare. The analysis here takes the current legislation as given and discusses only the supply of physicians.

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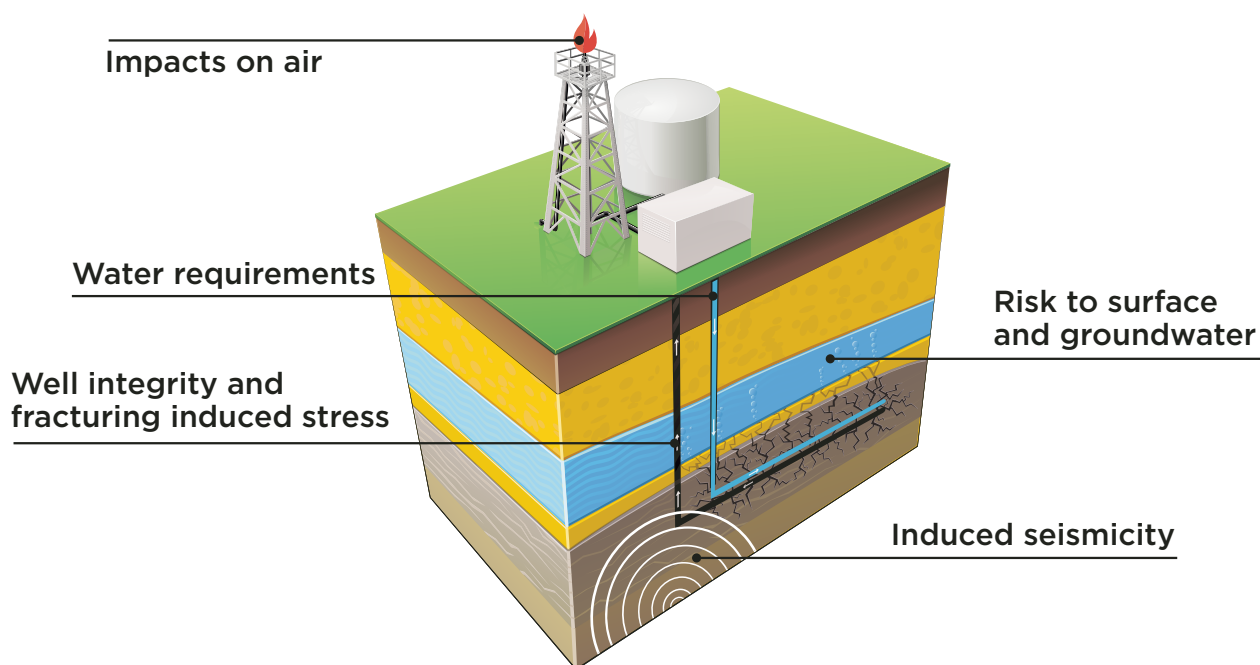


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