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Hubris in the North

The Canadian Firearms Registry

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Executive summary

The shootings at Montreal's Dawson College in September 2006 reignited the controversy over the firearms registry and prompted the Conservative government to review its earlier pledge to scrap the registry. This paper is a timely effort to evaluate the effectiveness of the 1995 firearm legislation. In 1995, the government assumed that, by controlling the availability of firearms, the registry would reduce total criminal violence, not just gun violence, suicide and domestic abuse. I argue here that this legislation is fundamentally flawed because it relies upon public-health research to justify its moralistic approach to firearms. Public-health advocates have exaggerated the danger of citizens owning firearms through pseudoscientific research methods. The federal government's moralistic approach to public safety is compared with a more practical and consultative provincial program that is more successful.

The firearms registry involves licensing firearms owners as well as registering firearms. Even though the registry was created by the 1995 legislation, it was not implemented until 1998. Since that time there has been a significant reduction in the number of firearm owners, the number of crimes involving firearms, and the number of firearms-related deaths. Nevertheless, public safety cannot be said to have improved because total criminal violence and total suicide rates remain stubbornly stable, despite the drop in firearms-related violence. Since the registry, with its dual function of licensing owners and registering long arms, was first implemented in 1998, the total homicide rate has actually increased by 9%, while the overall rate of violent crime has decreased by 4%. Perhaps the most striking change is that gang-related homicides have increased substantially, more than doubling between 1998 and 2005. Despite the drop in firearm-related suicides, the overall suicide rate declined by just 3% since the registry began. Unfortunately, an increase in suicides by hanging has nearly cancelled out the reduction in the number of suicides involving firearms. No persuasive link has been found between the firearms registry and any of these changes. Provincial hunter-safety programs, in contrast, are more consultative, and available evidence suggests that such programs have been effective.

In conclusion, no convincing empirical evidence can be found that the firearms program has improved public safety. Violent crime and suicide rates remain virtually unchanged despite the nearly unlimited annual budgets during the first seven years of the firearms registry. Notwithstanding an estimated CDN\$2 billion cost to date, the firearms registry remains notably incomplete and has an error rate that remains embarrassingly high. As a result of its many failures, particularly its failure to reduce gang violence or stop senseless killings like those at Dawson College and Mayerthorpe, Alberta, the firearms registry has failed to win the trust of either the public or the police.

Introduction

Of all tyrannies, a tyranny sincerely exercised for the good of its victims may be the most oppressive. It would be better to live under robber barons than under omnipotent moral busybodies. The robber baron's cruelty may sometimes sleep, his cupidity may at some point be satiated; but those who torment us for our own good will torment us without end for they do so with the approval of their own conscience.

— C. S. Lewis, *God in the Dock* (2002): 292

The shootings at Montreal's Dawson College in September 2006 reignited the controversy over the firearms registry and prompted the Conservative government to review its earlier pledge to scrap the registry. More recently, the saturated media coverage of multiple killings at Virginia Tech in April 2007 has provoked calls for more extensive gun laws. This paper is a timely effort to evaluate the effectiveness of the 1995 firearm legislation.

Canada's 1995 firearms legislation was a bold attempt to improve public safety in Canada. In the words of Allan Rock, the Justice Minister responsible for shepherding the legislation through Parliament, the goals were sweeping indeed: "the primary objective of regulating firearms should be to ensure that Canada remains a peaceful and civilized country." [1] Rock's moral fervor was evident. In the same address to Parliament, the Justice Minister assured Canadians that licensing of owners and registration of firearms would save lives by reducing criminal violence, domestic violence, suicide, and firearm accidents. The legislation had three interlocking components: universal firearms registration, tighter border controls, and increased penalties for criminal misuse of firearms. [2] The firearms registry was viewed as the lynch pin of the government's plan [Rock, 1995a]. Sufficient time has passed since the introduction

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- [1] "Registration will reduce crime and better equip the police to deal with crime in Canadian society by providing them with information they often need to do their job. Registration will assist us to deal with the scourge of domestic violence. If a firearm is not readily available, lives can be saved. If registration, as the police believe, will encourage owners to store firearms safely so those impulsive acts are less likely, the result may be different." Excerpted from the motion for third reading by Allan Rock (Minister of Justice and Attorney General of Canada) [Rock, 1995b].
- [2] The term "firearms registry" will be used here as short-hand for both licensing of owners and registration of firearms. Clearly, both programs are interdependent and both began in 1998.

of the registry to make an empirical evaluation of its effects on public safety possible. It is particularly important to know whether the firearms registry has lived up to the promises made at the time of its introduction. [3] Legislation must be assessed empirically in order for legislators as well as citizens to learn what works and what does not.

It is time to evaluate this legislation but there are several caveats. First, evaluating any legislative effort is an exceedingly difficult challenge, especially legislation as complex as this package. Second, the 1995 act has been phased in over time: a few provisions were implemented in 1995 but licensing of owners and registration of firearms only came into force in early 1998, and was not declared complete until 2004. Third, it is difficult to obtain the necessary information with which to evaluate the legislation as the government refuses to release crucial data. Nevertheless, it is important that an attempt be made to assess whether this expensive experiment was worth the cost. Citizens need to know what works and what does not. To simplify the task, I will focus on the firearms registry (including licensing) and leave to others further evaluation of the legislation. I will draw inferences from the best, albeit flawed, information available. I will inform the reader when evidence is weak or inconsistent but I will not ignore information that refuses to fit comfortably with other information or with my tentative conclusions.

The government's approach to public safety in the 1995 firearms legislation was inherently flawed because it was based on a moralistic stance that exaggerated the dangers of firearms. To justify this legislation, the government relied upon simplistic and misleading public-health studies. Compounding these errors, the government arrogantly ignored the experience of other countries with similar legislation. [4] I will assess the key public-health studies on firearms and argue that such unscientific analyses greatly exaggerate the dangers of firearm ownership. This legislation was driven by the kind of moral fervor that C.S. Lewis warns us about in the passage quoted at the beginning of this section. The firearms registry repeated the failure by an earlier generation of moralists who similarly overreached in their attempts to prohibit alcohol in

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- [3] This paper will focus exclusively upon evaluating the firearms registry (including owner licensing) even though it would also be important to evaluate the impact of other components of this legislation. In addition to the three components already mentioned, the 1995 legislation also prohibited over half of the lawfully registered handguns and introduced mandatory minimum sentences for violent offences involving firearms. No systematic attempts that I know of have been made to evaluate these components, except for a preliminary evaluation of the mandatory minimum sentencing in this legislation that found "little or no impact" [Roberts and Grimes, 1999].
- [4] The government knew about, but did not thoroughly investigate, the firearms regulatory systems in Australia, the United Kingdom, and New Zealand, *inter alia* [Gabor, 1994; MacLellan, 1995; Stenning, 1995].

the United States. [5] In general, consultative approaches have been found to be more effective than moralistic policing methods in democratic societies. [6]

Before we can begin our evaluation, we should describe the context in which the government was operating in 1995. The most important step in evaluating legislation is to identify the goals that were originally announced for it. This is crucial because, if legislation is introduced merely “to be seen as doing something,” then later rationalizations may be opportunistic rather than principled defenses of policy. If legislation is to be more than symbolic, then politicians must be held to account for their promises. As we shall see, the goals have subtly but fundamentally shifted over the past decade. I will first summarize who owns firearms as well as a history of firearm legislation in Canada and, then, I will briefly criticize the public-health approach to firearms. The 1995 legislation cannot be understood without understanding the intellectual framework upon which it is based.

The evaluation itself consists of asking three questions. First, has the legislation been able to reduce access to firearms? For if it has not, then, using the rationale of the public-health model, this legislation cannot be expected to improve public safety. Second, how successful has the federal government been in designing and implementing the databases (both of owners and of firearms) that is central to the firearms registry? Finally, has the firearms registry been effective in improving public safety, that is, in reducing violent crime, total homicide, total suicide, and in saving lives. In the final section, I compare the federal government’s approach to public safety with a provincial firearm-safety program that is more consultative.

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- [5] The Women’s Christian Temperance Union campaigned in the United States against drinking alcohol and was finally successful in 1920 in achieving a nation-wide prohibition of the sale of alcohol. But by the early 1930s widespread illegal bars, known as “speakeasies,” and the rampant growth of gang-controlled alcohol smuggling (principally from Canada) led to prohibition’s repeal in 1933, when Franklin D. Roosevelt was elected president [Blocker, 1976].
- [6] Consultation was thought essential to effective policing by the originator of modern policing methods, Sir Robert Peel, in 1822 [Reith, 1948]. For a thorough discussion of the various approaches to policing, see Oliver, 2001.

The goal of the legislation: Improving public safety

Given the gift of hindsight, few currently admit to the hopes they initially held for this legislation back in 1995. Nevertheless, it is important to evaluate the legislation in light of its original goals, which were to improve public safety by limiting access to firearms. We also need assess the meaning of “public safety” since it is the rationale of the program. Unfortunately for efforts at evaluating the legislation, there has been some drift in the meaning of this term.

At the time the legislation was introduced, Allan Rock, then Minister of Justice, emphasized that its primary goal was to improve public safety and for him the key to public safety lay in controlling access to firearm. In his testimony before Parliament, he stressed that “the regulation of firearms should be the preservation of the safe, civilized and peaceful nature of Canada.” In the same address, Rock went on to define his goals this way: “[F]irearm registration would ... enable us to achieve the objectives of a safe and peaceful society, a more effective response to the criminal misuse of firearms and enhanced public safety.” [7] He boldly asserted that firearms registration would reduce violent crime and domestic violence and save lives.

Registration will reduce crime and better equip the police to deal with crime in Canadian society by providing them with information they often need to do their job ... Registration will assist us to deal with the scourge of domestic violence ... Suicides and accidents provide another example ... If a firearm is not readily available, lives can be saved. If registration, as the police believe, will encourage owners to store firearms safely so those impulsive acts are less likely, the result may be different. [Rock, 1995a]

In making these ambitious claims, Rock is either equating violence involving firearms with total criminal violence or, more likely, he is assuming that reducing the criminal misuse of firearms would lessen the frequency of criminal violence of all kinds. Fire-arms registration is credited with tremendous power to restrict criminal violence and save lives. He is claiming that acts such as suicide and accidents are impulsive and will be reduced by limiting the availability of firearms. This privileges firearms and assumes little or no substitution of methods.

[7] Rock, 1995a; Hon. Allan Rock (Minister of Justice and Attorney General of Canada, Lib.) moved that Bill C-68, an act respecting firearms and other weapons, be read the second time and referred to a committee.

For Allan Rock, the key to improving public safety lay in controlling the availability of firearms. Thus, in addressing Parliament, Rock stresses that firearms registration will keep firearms from those who should not have them.

Surely we must choke off the sources of supply for that underground market. Surely we must reduce the number of firearms smuggled into the country. Surely we must cut down on the number of firearms stolen and traded in the underground. How do we achieve that? Through registration.

As to the second source of guns, those stolen from lawful owners ... What does this have to do with registration? ... [R]egistration which obligates each of us to record the fact of our ownership of firearms will imbue the owners with a heightened sense of responsibility to comply with laws already on the books mandating safe storage ... With compliance with those safe storage requirements the incidence of firearms being stolen, of someone breaking and entering into a person's house and finding a shotgun leaning against the closet wall or a handgun in the bedside table will diminish. A second important source for criminals and guns will be addressed. [Rock, 1995a]

As demonstrated here, Rock believed that registration would control the availability of firearms, which would reduce the misuse of firearms, which in turn would reduce criminal violence—not just violence involving guns—and in addition reduce the total number of suicides as well as domestic abuse.

The “weapons effect”

By focusing upon the ordinary firearm owner, Rock's comprehensive approach to public safety rests squarely upon the “weapon-instrumentality hypothesis” or the “weapons effect” [Zimring, 1968]. According to this hypothesis, firearms are inherently “violence enhancing” in that their possession acts to increase the likelihood of the victim's injury or death [Newton and Zimring, 1969]. The weapons effect makes two empirical claims: first, that firearms are inherently more “dangerous” than other weapons, that is, that gunshot wounds are more likely to lead to “serious injury or death” than are injuries from other weapons; [8] and second, that a sizable proportion of aggressors have “ambiguous motives,” so that the availability of a firearm can transform a relatively

[8] Various ratios have been asserted. Zimring [1968] found that gunshot wounds were five times more likely to result in death than knife wounds, while others have found ratios of 4 to 1 or 3 to 1. See the discussion in Kleck, 1991: 163–65.

minor confrontation into one where the victim is seriously injured or dead. [9] Based on these premises, some researchers advocate restrictions on firearms that would decrease their general availability in order to reduce the number of victims who are seriously injured or killed (Cook, 1991; Gabor, 1994; Hemenway, 2006).

Rock also argued that restricting firearms availability would reduce the human cost of impulsive acts such as suicide and accidents. [Rock, 1995a] While firearms are involved in only a fraction (under 25%) of suicides, suicide makes up such a large proportion (typically over 70%) of deaths involving firearms in Canada. Rock found support for his claims in a study done by Professor Thomas Gabor for Department of Justice Canada that purported to show that firearms availability is associated with total suicide rates, not just suicide involving firearms [Gabor, 1994: 203]. However, the assertion that the availability of firearms is linked with total suicide rates has not been corroborated. Professor Gary Kleck, one of the most widely respected researchers in criminology, has shown that Gabor's claim was based on a misrepresentation of the research literature on guns and suicide. [10] Kleck concluded in his review that Gabor had (a) padded the list of supportive studies by including irrelevant studies, (b) mischaracterized studies as providing support for his thesis that were in fact unresponsive, and (c) omitted studies from the review that were not supportive of the conclusions he desired [Kleck, 1997: 49–53]. [11] As we will see later, Canadian suicide rates have remained stable despite plummeting ownership of firearms.

A long series of Canadian Justice Ministers, most recently Stockwell Day, have reiterated that the primary goal of the firearms laws is to improve public safety [PSEP, 2006]. However, over time, “public safety” has been defined more narrowly. For example, in his report published in 2004, the Commissioner of Firearms, Canada Firearms Centre, William Baker, says,

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- [9] See Kleck, 1991: 153–222 for a discussion and critique of these claims.
- [10] Gary Kleck is a professor of criminology at Florida State University and the preeminent researcher on firearms and violence. His book on firearms, *Point Blank: Guns and Violence in America* [1991], won the Michael J. Hindelang Award of the American Society of Criminology in 1993 for the book that made “the most outstanding contribution to criminology.” He has published four books and more than 34 peer-reviewed academic articles in his career so far (see <<http://www.criminology.fsu.edu/p/vitae/Kleck.pdf>>). Perhaps the most vivid tribute to Kleck's research was given by one of the most distinguished criminologists, Marvin Wolfgang, in 1995, who praised the work of Kleck and Gertz [1995] by saying “an almost clear-cut case of methodologically sound research in support of something I have theoretically opposed for years, namely, the use of a gun in defense against a criminal perpetrator” [Wolfgang, 1995: 188].
- [11] The fallacious review of the literature by Professor Thomas Gabor (Criminology, University of Ottawa) has proven to be quite influential outside of Canada: it was cited as important in Lord Cullen's inquiry into the Dunblane shootings [Mayhew, 1996] and also in the Australian government's response to the Tasmanian shootings [Chapman, 1998].

The objective of the [Canadian Firearms] Program is to keep firearms from those who should not have them while encouraging safe and responsible firearm use by legitimate firearms owners. Through firearms control measures, such as screening and licensing of gun owners, registration and tracking of firearms, and safety training, the Program aims to prevent firearm crime while reducing the number of firearms-related deaths, accidents and threats. [Baker, 2004a: 7] [12]

Note how the goal has evolved since 1995. The original objectives for the firearms legislation were broader, to reduce criminal violence and to save lives; now the stated goal focuses almost exclusively on screening and regulating firearm owners and explicitly limits evaluative criteria to “firearms-related deaths, accidents and threats.” There is no mention of the more general goals, such as reducing criminal violence or saving lives overall. In one sense, this is quite reasonable. The Firearms Program is only charged with controlling firearms and is not responsible for other governmental programs, so, arguably, it should be evaluated on how successful it is in reducing problems related to firearms. However, this narrower goal is only justifiable to the extent that the firearms program helps to achieve the original, and more general, goal. In 1995, reducing gun violence was claimed to be important in order to reduce overall criminal violence, not just gun violence. Rock assumed reducing “gun deaths” was a way to save lives, not just a shift the way in which people die. [13] Originally, the gun registry was seen as the key to a general improvement in public safety, not as an end in itself. If people easily shift from one weapon to another, there is no necessary link between reducing “gun deaths” and actually saving lives. By introducing the criterion of “gun deaths,” the scope of the original goal to improve public safety has been abandoned and the organization has achieved an easier way to claim success. In addition, this definition shifts the focus of gun laws from reducing criminal violence to reducing suicides involving firearms.

The redefinition of the goals seen here is reminiscent of administrators who attempt to “game the system” [14] by setting targets to increase their chances of being seen as successful. When governmental administrators (or executives in large firms) discover their original goals are too ambitious, and they expect a negative evaluation

[12] Stung by criticism, the CFC retroactively changed the mission statement given in the 2003 report. The most important change was to add a secondary goal: “providing police and other organizations with expertise and information vital to the prevention and investigation of firearms crime and misuse in Canada and internationally.”

[13] Rock’s view has not changed since 1995. He claimed in 2002 and again in 2007 that the registry was justifiable because it has saved over 300 lives per year [Matas, 2002; McCarthy, 2002; Gardner, 2007].

[14] “Gaming the system” refers to unethical exploitation of the rules [Potter, 1965].

in the future, they can react by redefining the goals (or the way in which the goals are measured) to make their goals easier to achieve. In 1995, the objectives for the firearms legislation, as set by Allan Rock, were very broad indeed: the reduction of total criminal violence, domestic violence, and suicide. Rock saw firearms controls as the means of effecting this reduction. The goals were not just reducing firearms violence, nor just keeping lives from being lost through the misuse of firearms. The government wanted to reduce criminal violence overall and to save lives from any kind of violence. The reduction of firearms violence was seen as the key to reducing overall criminal violence, not as an end in itself. The CFC's new goals focus myopically upon guns and ignore the big picture and, incidentally, they are much easier to achieve. [15]

Used in this way, "gun deaths" are a red herring. Given the many ways available to kill, a drop in "gun deaths" does not necessarily imply that any lives have been saved in total. If a gun is unavailable, a murderer can find a sharp knife or heavy object that may be used as a bludgeon in virtually any home. For anyone tempted by suicide, it is not difficult to find alternatives. The question of substitution (or displacement) remains open. There is no compelling evidence that general gun-control laws can reduce overall murder or suicide rates. [16] Australia is another country where the authorities tend to rely upon public-health experts and where "gun deaths" are dropping without any accompanying fall in suicide rates [Australian Bureau of Statistics, 2006; Ozanne-Smith et al., 2004]. Nor have the gun laws been shown to affect the total homicide rate or even the number of gun homicides in Australia [Baker and McPhedran, 2006; Chapman et al., 2006].

In summary, focusing upon "gun deaths" diverts attention away from the original objective, which was an overall improvement in public safety. The narrower goal is more easily attainable and it ignores the more difficult challenge of reducing suicide and homicide rates, that is, of saving lives overall.

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- [15] Another example was provided by Canada Post some years ago when they were criticized for not being able to deliver the mail on time. Canada Post redefined the standards for being 'on time'. Previously, it had been one day across town. Canada Post changed it to two days. Reportedly, the Corporation cut its late mail rate by a third.
- [16] See Kleck, 1997: 286–88 and the associated tables 8.2 and 8.4. Miller and Hemenway's review [1999] is consistent with Kleck's findings in that they could not find a compelling link between gun availability and overall suicide rates.

Demographics and the history of firearms legislation in Canada

Demographics

The primary reason (73%) people in Canada own a firearm is for hunting. The second most popular reason given is target shooting (13%) [table 1]. In contrast to the United States, few Canadians report owning firearms for protection. Only 4% to 6% of respondents volunteer that protection is the principal reason for owning a firearm; in the United States, surveys find between 15 and 22% who give this reason [GPC Research, 2001; Kleck, 1991; Mauser and Margolis, 1992; Mauser, 2001b]. In Canada, it is likely that many Canadian respondents who do so are employed in security or enforcement. In comparison to the general population, the owners of firearms are predominantly male, older, somewhat less well educated, but have a higher annual income [table 2].

Estimates of the number of firearm owners in 2005 range from the Canada Firearm Centre's estimate of 2.2 million to the National Firearm Association's estimate of 7 million [Canada Firearms Centre, 2005; Tomlinson, 2005]. My best estimate is that in 2005 there were between 3 and 3.5 million firearm owners [Mauser, 2005]. Estimates of how many firearms were privately owned in Canada range from 7.7 million (the government's preferred number) to over 25 million, plus an unknown number of air guns [GPC Research, 2002; Smithies, 2003]. Estimates based on import and export figures tend to be higher than survey-based estimates. Garry Breitkreuz, MP, estimates from government surveys and import and export figures that there are approximately 16.5 million firearms in private hands in Canada in 2001 [Breitkreuz, 2001]. Independently, I estimated there were between 12 and 15 million firearms in private hands in Canada in 1995 [Mauser, 1995b]. [17] However, since the estimate of the total firearm stock is based upon telephone surveys, this probably underestimates the number of firearms and fire-

[17] The estimates for the numbers of firearms in civilian hands and the number of civilian firearm owners were independently determined. Together they imply that each firearm owner has between 3.4 and 5 firearms, which is somewhat higher than survey-based estimates (eg, the GPC 2001 survey estimated 3.22 firearms per owner). This suggests that either the survey estimates of numbers of firearms per owner are too low, which is not unreasonable, or my estimates of the number of firearm owners are too low. The problem in estimating the number of firearm owners is exacerbated by the mutating definition of "firearm owner." In many households with firearms, the firearms are available to all, or nearly all, members of that household. How many "owners" should be counted in such a situation? If firearms are common property, like the stove and the household furniture, then both the husband and the wife are joint owners of those firearms. But current Canadian firearm law requires a single owner for each firearm. For this reason coupled with the cost of obtaining a licence, households have been motivated to reduce the number of firearm owners over the past decade.

Table 1: Reasons for owning a firearm in Canada

Hunting	73%
Target shooting	13%
Pest control	8%
Protection	6%
Other	13%
Total	118%

Note: Total exceeds 100% because respondents could indicate more than one reason for owning a firearm.

Source: GPC Research, 2001, Figure 11.

Table 2: Demographic profile of firearm owners and general population

	Owners of firearms	General Canadian population
Sex		
<i>Male</i>	88%	49%
<i>Female</i>	12%	51%
Age		
<i>18–34</i>	15%	33%
<i>35–54</i>	49%	40%
<i>55 +</i>	34%	27%
Education		
<i>High school or less</i>	51%	43%
<i>College or some post secondary</i>	28%	28%
<i>University degree</i>	19%	30%
<i>No response</i>	2%	1%
Household income		
<i>Under \$20,000</i>	8%	15%
<i>\$20,000–\$39,999</i>	24%	24%
<i>\$40,000–\$59,999</i>	25%	19%
<i>\$60,000 and over</i>	33%	27%
<i>No response</i>	10%	15%

Note: Totals may not equal 100% due to rounding.

Source: GPC Research, 2001, Table 5

arm owners, and so overestimates the share that is registered. Surveys must rely upon voluntary compliance from respondents. It almost certainly excludes any weapons in the hands of criminals, as violent criminals are extremely unlikely to be contacted in a telephone survey or, if contacted, to respond honestly. [18]

Legislation in Canada

Many Canadians are not aware that Canada has long had strict firearm legislation. Criminal law is a federal responsibility and it includes the criminal misuse of firearms. Handguns have been tightly controlled in Canada by the federal government since the 1890s [Hawley, 1988]. The handgun registry, which began in 1935, had records of just over 1 million guns in 1995. Consequently, the registration legislation in 1995 really only applied to, or added, long guns.

The 1995 *Firearms Act* is not the first time firearms were included in the criminal code nor the first time guns were required to be registered in Canada. Legal restrictions have been imposed on handguns since the 1890s and registration has been mandatory since 1934. [19] During World War II, there was a temporary requirement to register long-guns (rifles and shotguns) [Smithies, 2003]. Prior to the current firearms legislation, passed in 1995, the firearms law was extensively amended in 1969, again in 1977, and further in 1991 [Kopel, 1992: ch. 4]. These changes are described below.

Under the Canadian constitution, hunting regulations fall under provincial jurisdiction as part of the provincial responsibility for managing non-renewable natural resources. Since the bulk of firearms owners are hunters, provinces have traditionally been responsible for regulating the normal usage of rifles and shotguns. This practice accords with other traditional regulatory powers of the provinces. Firearm safety training has traditionally come under provincial hunting legislation. Prior to the 1960s, firearm safety courses were voluntary and were offered by gun clubs and other non-profit groups. [20] Starting with Ontario in 1960, provinces began to make firearm safety training mandatory before one could obtain a hunting licence. By 1981, all provinces except Prince Edward Island required applicants to pass a provincial examination on hunter safety in order to qualify for a hunting licence. [21]

[18] Gary Kleck made this same observation in Kleck and Gertz, 1995.

[19] The RCMP estimates that at the present time there are two or three million unregistered handguns in Canada.

[20] The earliest firearm-safety programs in Canada were introduced in Nova Scotia and were copied from programs developed by the National Rifle Association of America [Murray, 1987].

[21] Paul Adams, Program Manager, Hunter Safety and CORE, BC Wildlife Federation, personal communication (February 2006).

At the federal level, the basic framework for modern Canadian firearm legislation was established in 1969 when three classes of firearms (restricted, non-restricted, and prohibited) were defined; almost all rifles and shotguns were classified as “non-restricted.” The 1969 legislation was amended in 1977 as part of a Parliamentary agreement that ended the death penalty. [22] The 1977 firearms act for the first time required a police permit in order to purchase a firearm (the Firearm Acquisition Certificate), introduced a legal requirement for safe storage, and banned certain types of firearms, including fully automatic weapons.

In 1991, the government of Canada amended its firearm law in reaction to a horrific shooting at the University of Montreal [Dixon, 2003]. The 1991 law banned a number of “military-style,” semi-automatic rifles as well as “high-capacity” magazines, that is, those that held more than 10 rounds. In addition, stringent new requirements were added to the process of purchasing a firearm, including a firearm safety course, a mandatory 28-day waiting period, two character references (one of which must be from the applicant’s spouse), a passport-type photograph, and a long series of personal questions. [23] In addition, specific regulations were introduced covering safe storage, handling, and transportation of firearms.

The federal government that came to power in 1993 was determined to amend the firearms laws extensively. In their view, much tighter control of firearms was needed in order to improve public safety. The 1995 legislation made sweeping and radical changes and focused on firearms registration. Allan Rock, then the Minister of Justice, summed up the bill before Parliament:

The components of Bill C-68 [the 1995 firearms amendments] that we will be focusing on today are as follows: firstly, strict measures to counter the criminal use of firearms; secondly, specific penalties to punish those engaged in the smuggling of firearms; and thirdly, broad measures to define what constitutes the lawful use of firearms in a manner that poses no threat to public safety.

In the case of each component, universal firearms registration is a fundamental requirement for achieving the stated objectives. [Rock, 1995b]

In addition to the licensing of owners and the registration of all rifles and shotguns, this legislation also prohibited more than half of all currently registered firearms

[22] See the discussion in Friedland, 1984; Hawley, 1988; or Carrigan, 1991. When the death penalty was abolished in 1976, no one had been executed in Canada since 1962.

[23] The requirement for a mandatory firearm safety course had been in place since the 1977 legislation but it had never been implemented due to disputes between the federal and provincial governments over cost sharing. Kim Campbell’s legislation brought a determination to implement this already-existing provision in the legislation.

(and scheduled their confiscation), and introduced a framework for detailed regulations covering all aspects of firearms in Canada.

The provisions in this complex bill were phased in over time. [24] The firearm prohibitions were introduced simultaneously with the first reading of the legislation in the House of Commons on February 15, 1995; the increased penalties for criminal misuse of firearms became operative when the bill was proclaimed into law, on January 1, 1996, after the bill received Royal Assent in December 1995. The provisions for the registry took longer to implement. Owner licensing and long-gun registration were implemented on January 1, 1998. [25]

Starting in 1998, Canadians were required to obtain a licence to own a firearm and to register all firearms, including long guns. [26] Failure to keep a firearm licence current without divesting himself of his firearms immediately made the owner subject to criminal penalties. All in all, this legislation includes a wide range of provisions that made sweeping changes to the legal status of firearm owners.

The sweeping new laws were brought in without a review of existing legislation or a cost-benefit analysis. [27] The government's approach, particularly the proposed firearms registry, generated intense controversy. The government did not engage in any meaningful consultation with user groups as had been done with previous firearm legislation. Nor did the government accept amendments in Parliament. Three of the four opposition parties (Reform, Progressive Conservatives, and New Democrats)—despite their mutual antipathy—joined together to fight Bill C-68. [28] Several provincial governments (spanning the political spectrum from NDP to Progressive Conservative) actively opposed the legislation. Almost all provinces (including Ontario, the largest province in Canada) backed a constitutional challenge to the legislation. When the challenge was finally rejected by the Supreme Court of Canada in 2000, 8 of 10 provinces, and all three territories, declined to cooperate with the federal government in enforcing the new law [Lindgren and Naumetz, 2003].

[24] Indeed, as of June 2007, not all of the provisions have yet been implemented.

[25] Niemczak, Peter, Parliamentary Research Branch (2004). Letter to Garry Breitkreuz, MP, summarizing sections of the Firearms Act, S.C. 1995, c.39 compiled using the Table of Public Statutes and Responsible Ministers (December 31, 2003), updated to April 21, 2004 with Canada Gazette, Part II (April 22, 2004).

[26] It is important to remember when speaking of firearms registration, that handguns had been required to be registered and subject to strict controls since the 1930s.

[27] This failure was uncovered by Garry Breitkreuz, MP through the Access to Information Act. See Breitkreuz, 2003a, 2003b.

[28] The only opposition party to side with the government was the *Bloc Québécois*, who were rewarded with a separate firearms registry under the control of the provincial government of Quebec.

Public-health advocacy and firearms legislation

The 1995 Canadian firearms legislation was critically flawed because it relied upon the public-health approach to firearms. This approach purports to be scientific but instead uses the trappings of science to mask a moralistic stance that exaggerates the dangers of firearms. In this section, I will briefly review the literature to demonstrate how public-health research systematically violates important scientific principles. The moralistic nature of the public-health approach to firearms is incompatible with the necessity of gaining broad support for legislation in a modern democracy.

The influence of the public-health approach on the federal government is evident in the idealistic goal of improving public safety that was set for the 1995 firearms legislation. Compare this goal with the more traditional goal for criminal legislation of protecting the public order. [29] Setting idealistic goals represents a subtle but significant expansion of police powers. Traditionally police powers have focused on guarding the public order and detecting crime. By ambitiously expanding the goals to improving public safety, the focus of criminal legislation has now become open ended; the focus has dramatically shifted away from the more modest goal of reducing criminal violence to the broader, more idealistic, goal of preventing any and all potential threats to safety. Suicide and accident prevention now receive as much or more attention from firearms law than do more traditional policing goals such as detecting and preventing crime. Further indications of the government's reliance upon public-health advocates may be seen in the frequent references to public-health activists in speeches to Parliament and media releases during the early years of this legislation. [30]

[29] "Public safety" has no commonly agreed meaning. The term is most closely associated with the Committee of Public Safety that was active during the French revolution in 1793. At the time, the phrase justified the identification and elimination of opponents as enemies of the revolution. More recently, the term has become identified with police or emergency service agencies. A review of the websites of public-safety departments in Australia, Canada, United Kingdom, United States, and New Zealand shows that, in practice, this has come to include traditional policing efforts as well as emergency services such as fire, rescue, and ambulance. Occasionally, it also includes prevention of suicides and accidents. In the twenty-first century, it has also come to include protecting against terrorism. See Palmer, 1971, for a discussion of the committee of Public Safety in Revolutionary France, and the website for Public Safety Canada, which was established in 2005 to oversee efforts to safeguard public safety and emergency preparedness, <<http://www.publicsafety.gc.ca/pol/index-en.asp>>.

[30] The Department of Justice distributed a list of experts with the information packet for the Media at the time Bill C-68 was introduced in Parliament. See also the submission to Parliament by the Canadian Public Health Association, which is available on their website [Canadian Public Health Association, 2007].

Idealistic goals put public support at risk. Modern policing recognizes the need for broad public acceptance in democratic society. In the 1820s, when Sir Robert Peel started professional policing in London, his basic premise was that “the police are the public and the public are the police” [Braiden, 1992]:

As (Sir Robert) Peel warned, “the extent to which the cooperation of the public can be secured diminishes, proportionately, the necessity of the use of physical force and compulsion for achieving police objectives.” The increasing use of physical force by the police to impose unpopular laws will divide the police from the policed even further. Without resorting to military force, it is difficult to enforce laws that are not supported by people who do not wish to obey them. [Mauser, 2001a: 5–6] [31]

The effectiveness of any legislation depends upon the willingness of a large proportion of those affected to accept its legitimacy. The temperance movement failed in the United States and Canada in prohibiting alcohol because the prohibitionists overreached. This failure can be placed at the feet of the prohibitionists themselves, as they were utopian moralists, that is, they believed that eliminating the legal manufacture and sale of alcoholic drink would solve the major social and economic problems of American society [Levine and Reinerman, 2004]. Such lofty goals are utopian. Significant numbers of Americans and Canadians did not believe in the legitimacy of such radical legislation and refused to obey the law. [32]

[31] Sir Robert Peel’s basic principles are described at greater length in *Misfire: Firearm Registration in Canada* [Mauser, 2001a]. A few of these principles are given here to illustrate the approach:

- 2 To recognize always that the power of the police to fulfill their functions and duties is dependent on public approval of their existence, actions and behaviour, and on their ability to secure and maintain public respect.
- 3 To recognize always that to secure and maintain the respect and approval of the public means also the securing of willing cooperation of the public in the task of securing observance of laws.
- 4 To recognize always that the extent to which the cooperation of the public can be secured diminishes, proportionately, the necessary of the use of physical force and compulsion for achieving police objectives. [Reith, 1948]

[32] Prohibition may be the clearest example of such a situation but other examples are readily available. Contemporary examples may be seen in the current American marijuana laws and gun laws in various American cities (e.g., Chicago, New York, and Washington, D.C) and in a variety of countries (e.g., Jamaica, Republic of Ireland, and the former USSR) [Kaplan, 1979; Kates and Mauser, 2007]. The classic example is the attempt by the English government to stop the smuggling of tea in their unsuccessful efforts to enforce the monopoly on tea importation by the East India Company in eighteenth century [Mui and Mui, 1968].

Like the Prohibitionists, public-health advocates are utopian moralists in their approach to firearms. The public-health zealots treat firearms as a “disease vector” and argue that only a drastic control on firearms will solve the world’s social problems [Cukier and Sidel, 2006]. If Prohibition was an attempt to impose rural values upon urban residents, then firearms registration is an effort to inflict urban values upon rural Canadians. Utopian moralism conflicts with effective legislation and good policing. When the law criminalizes behaviour that the public believes is legitimate, not only does public opposition render enforcement problematic, but the public is also likely to lose respect for the law and possibly even for the government itself. This danger is especially severe when the number of people willing to violate the law is high.

Public-health advocacy: Scientific or moralistic?

Public-health advocates claim that their firearms analysis is scientific but it is not; it is fundamentally moralistic. They exaggerate the dangers of firearm ownership through pseudoscientific research methods. Firearms in public-health studies are assumed to be dangerous and research methods that confirm this assumption are chosen. Pseudoscience is then used in order to justify a moral crusade.

The public-health approach grows out of a concern about traumatic injury as a public-health problem and has shifted concern towards suicide and accidents and away from the traditional focus on criminal violence. While this broadened mandate has brought new data and new funding sources into criminology, it has had several problematic side effects: first, it diverts scholarly attention away from the perpetrator and focuses more on the instrument; and, second, it tends to shift policing away from community consultation and more towards paternalistic prescriptions. Perhaps the most negative consequence is the encouragement of moralistic reasoning that has accompanied such radical advocacy research. [33]

Despite their scientific pretensions, those in the public-health community primarily see themselves as advocates. This stance is illustrated in the mission statements of professional associations as well as in the writings of public-health researchers. Examples can be seen not only in the Canadian Public Health Association website but are also seen on the websites of the Public Health Association of Australia and the American Public Health Association. [34] “The Public Health Association of Aus-

[33] See Kleck, 1997: 56–62 for a more thorough discussion of the illogical and unscientific methods typically used by public-health researchers when studying firearms.

[34] The Canadian Public Health Association is perhaps typical of public-health associations in setting out its primary goals as advocacy or political lobbying rather than scientific: “The Association’s mission is to constitute a special national resource in Canada that advocates

tralia (PHAA) is a forum for the promotion of the health of the public ... The Association ... actively undertakes advocacy for public health policy, development, research and training” [Laut, 2004]. Similarly, the American Public Health Association: “APHA has been influencing policies and setting priorities in public health for over 125 years. Throughout its history it has been in the forefront of numerous efforts to prevent disease and promote health” [APHA, 2007].

Advocacy is not wrong in itself but it must be based on solid analysis. Indeed, it is a strong argument for policy if it can be shown that the policies are founded on scientific principles. However, if scientific methods are used merely as trappings for *a priori* convictions, then it becomes “sagecraft,” not science. [35] Unfortunately, when public-health researchers study firearms, their moralism drives their research to the extent that they ignore basic scientific principles in their efforts to prove that firearms are evil.

Use of the epidemiological model

One of the most fundamental problems with the public-health approach to firearms is that it is based upon an unscientific version of the “epidemiological model.” [36] In their oversimplified version of this model, guns are treated as if they were a disease vector and “gun deaths” a disease. Public-health moralists argue that strict governmental controls on firearms are justified because they see the availability of firearms as a public-health threat, even an “epidemic” [Hemenway, 2006: 635; Cukier and Sidel, 2006: 6]. Unfortunately, in their zeal to lobby government, public-health advocates have oversimplified the epidemiological model. [37]

The complexity of disease agents is not understood by public-health advocates in their use of the epidemiological model to analyze firearms. Epidemiologists have

for the improvement and maintenance of personal and community health according to the public health principles of disease prevention, health promotion and protection and healthy public policy” [Canadian Journal of Public Health, 2007: <<http://www.cpha.ca/english/inside/about/about.htm>>].

- [35] I strongly recommend the excellent discussion of “sagecraft” in public-health research in Kleck, 1997: 1–62.
- [36] The epidemiological model is a valid scientific approach to understanding epidemics and is fundamental to the public-health approach to firearms. This model is used by academic researchers (e.g., Hemenway [2006]) as well as by anti-gun activists. The title of a recent book by prominent crusaders against firearms, *The Global Gun Epidemic: From Saturday Night Specials to AK-47s* [Cukier and Sidel, 2006], exemplifies the public-health orientation to firearms legislation.
- [37] This argument in this section relies upon the critical analysis of the public-health approach by Dr. Paul H. Blackman [1997]. See Rothman, 1993: 11 for a description of the epidemiological model as it is used in epidemiology.

long recognized that the same agent may be a disease hazard, a protectorant, a cause, or a preventative, depending in part upon the susceptibilities of particular hosts [Lilienfeld and Stolley, 1994: 37; Mausner and Kramer, 1985: 267–69; Rothman, 1986: 11, 52]. In the public-health literature, guns are treated as if they were merely disease hazards and their potential role as protectorants or preventatives is ignored. For example, criminologists have found that the manner of introduction to guns—by family rather than peers—has a strong influence upon how likely teenagers are to engage in violent behaviour [Lizotte and Tessoriero, 1991]. This suggests a direction for research to explain why firearms in one host neighbourhood are linked with criminal violence, thereby becoming a “disease hazard,” while in another community, firearms may act as a “protectorant.” Similarly, public-health researchers have ignored the factors of “hosts” or users, in preference to repetitious studies of the dangers of the “availability” of firearms.

Epidemiological studies are useful in identifying the susceptibility or immunity of segments of the population to morbidity and mortality from particular causes [Lilienfeld and Stolley, 1994: 3]. However, when public-health researchers turn to firearms, for some reason they have not attempted to determine which groups or individuals may be made more or less susceptible to homicide or violence because of the presence of a firearm. Textbook epidemiology recognizes that differences in frequency and severity of diseases vary importantly among racial groups but public-health researchers frequently ignore important differences in homicide rates that are related to ethnicity.

The failure to recognize the importance of “hosts” as a factor is typified by one widely cited study that compared homicide rates in the Canadian city, Vancouver (British Columbia), and the neighbouring American city, Seattle (Washington) [Sloan et al., 1988]. Despite the glaring differences in their ethnic profiles, the two cities are described as having a “comparable ... ethnic makeup” [Cotton, 1992: 1172]. This claim may be true in general but the authors ignore ethnic differences that undermine their claims. The black population of Seattle was 30 times larger than Vancouver’s and had a disproportionately high homicide rate. If the comparison of two cities is limited to more closely matched populations (e.g., non-Hispanic whites), no significant difference can be found between the homicide rates for the two cities [Blackman, 1997]. Rather than recognizing the problems of inner-city black youths, the study concluded that stricter Canadian gun laws were responsible for Vancouver’s lower overall homicide rate [Sloan et al., 1988].

Even more perplexing is the failure of public-health research to pursue the differences in exposure to guns. In the epidemiological model, “exposure” refers to the extent to which populations are in contact with a pathogen [Mausner and Kramer, 1985: 188–90]. Non-Hispanic white households are much more likely to have firearms in the home than are black households, particularly urban black households, and non-Hispanic

whites are much more likely to grow up with firearms in their home. [38] Thus, inner-city blacks are much less likely to be exposed to guns than are non-Hispanic whites [Kleck, 1991: 56-57; Wright, Rossi, and Daly, 1993: 87-89].

Use of the case-control method

Much of the public-health research into firearms relies upon the case-control method. The case-control method is a legitimate research methodology for identifying risk factors, that is, for generating hypotheses about what factors might increase the risk of catching a disease. In other words, this is a method for *discovering* hypotheses, not *testing* them [Campbell and Stanley, 1963: 12]. This model was not designed to be a confirmatory methodology, that is, it is not intended to test hypotheses that certain conditions cause the disease under study [Lilienfeld and Stolley, 1994: 227].

The case-control model is vulnerable to serious threats to both internal and external validity. Hypothesis testing is properly reserved to experimental methods. In public health, this typically means subjecting risk factors to clinical trials. All too often public-health researchers uncritically rely upon the results of case-control studies as if these studies confirmed their hypotheses. This tendency is particularly egregious when firearms are at issue. The case-control methods are used unscientifically to bolster distorted claims about firearms and violence.

The primary threat to internal validity in case-control studies is selection bias, which frequently occurs when experimental subjects are not randomly assigned. It is critically important in the case-control method to match subjects in the experimental and control conditions. Case-control research involves the comparison of “case” subjects, who have been exposed to the test stimulus, with a “control” sample, who have not been so exposed. Logically, to draw the inference that the test stimulus caused the observed differences between the groups on the dependent variables, the control group must be identical (not “similar”) to the case group except for exposure to the test. This is best achieved by random assignment of subjects. However, this design is critically weakened if the researcher selects the control group. All that can be done is to match the case subjects with those in the control sample as closely as possible on the variables the researcher believes are the most important. In social-science research, matching on background characteristics has all too often been found to be ineffective and misleading [Campbell and Stanley, 1963]. Matching cannot ensure that the groups are equivalent.

[38] The point is that just as greater exposure to tobacco smoke has been found to result in a greater likelihood of illness among those exposed, the same mechanism should work with “exposure” to guns. Since non-Hispanic whites are more exposed to guns (i.e., more of them have guns and have them for longer periods), then, given their greater exposure, non-Hispanic whites should have the higher violent crime rates. But they do not; it is the blacks that do. Why? Because rates of violent crime are not the result of just “exposure” or “availability.” Don Kates observes that crime rates for blacks raised in rural areas of the United States are nearly identical to the crime rates of rural whites [Kates and Mauser, 1997].

The problems inherent in the case-control design are illustrated in a well-known public-health advocacy paper that found that the availability of firearms increases the risk of homicide [Kellermann et al., 1993]. In this case-control study, Professor Kellermann hypothesized that gun ownership was a risk factor for homicide in the home. He found that 63% of the victims of firearm homicides in their home also kept a firearm in their home. [39] He compared this percentage with the controls where there was not a homicide and only 35% of whom kept a firearm at home. After adjusting for other factors, Kellermann found that keeping a firearm at home increased the probability of being murdered. [40] Concerns about the methodology of this study resulted in the US Congress passing a motion to require Kellermann to release his original data. When Kellermann failed to comply, Congress cut funding for the Centers for Disease Control, who had supported his research, and set strict limitations on future research grants in order to encourage the CDC to comply with proper scientific research methods [Polsby, 1995].

Kellermann's methods have been severely criticized [e.g., Kleck, 1997]. For the "case" sample, Kellermann and his colleagues selected households in three urban counties in the United States where people had been murdered in their own homes. They excluded any instances (a) where intruders were killed by the homeowner, (b) where people were killed away from home, or (c) where any children were killed. To find out information about the conditions of the homicide, Kellermann and his colleagues interviewed, "persons who were close to the victim," whom they refer to as "proxies" [Kellermann et al., 1993]. The researchers did not ask the victim's proxy (from whom they derived their information about the victim and his or her household) whether the victim had previously defended himself or herself with a gun.

In order to approximate a "control group," Kellermann and his associates selected other households from the neighbourhood of the same sex, race, and age group as the victim. The "controls" were asked the same questions that had been asked of the victim's proxy. Respondents often find it easier to admit socially unacceptable practices about their friends or relatives than about themselves. It follows that there would be a significant amount of under-reporting in the control group. This is particularly problematic with firearm ownership. To the extent that firearm ownership was under-reported in the control group, the odds-ratio that is crucial to the findings of the study would have been undermined. [41]

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- [39] Originally, Kellermann reported that 93% of homicides in the home occurred in homes where guns were kept but later changed the percentage to 63% [Kellerman, 1998].
- [40] More specifically, he found that the adjusted odds ratio of keeping a gun or guns in the home increased the probability of being murdered in the home by a factor of 2.7.
- [41] An odds-ratio is a way of measuring relative risk. In public-health research, it is calculated by dividing the odds in the treated or exposed group by the odds in the control group [Bandolier, 1996].

As noted earlier, matching cannot ensure that the groups are equivalent. The control group differed markedly from the victim group. While matched on the demographic variables, the control group was distinctive on behavioural measures. Compared to the control group, the victim group was more likely to rent rather than own, live alone, drink alcoholic beverages, have problems in the household because of drinking, have trouble at work because of drinking, be hospitalized because of drinking, use illicit drugs, have physical fights in the home during drinking, have a household member hit or hurt in a fight in the home, have a household member require medical attention because of a fight in the home, have a household member involved in a physical fight outside the home, have any household member arrested, and be arrested personally [Kellermann et al., 1993: 1086–88]. In sum, the victim (or “case”) group and the “control” group reported very different lifestyles, with the homicide victims living a very high-risk lifestyle. If the groups are not equivalent, as they demonstrably are not in this study, then the odds-ratios are of doubtful validity. These and other factors render Kellermann’s conclusions about the danger of keeping firearms at home ludicrous.

Another crucial threat to the validity of case-control studies is non-participation. Kellermann reports that 30% of the people who were initially contacted to act as controls refused to participate. Epidemiological research has found that there is a tendency for less healthy respondents to refuse to participate [Austin, 1994]. The use of healthier controls exaggerates the differences between the controls and the victims and thus it may contribute to an overestimation of the odds ratio.

Kellermann’s study also has problems with external validity. It cannot be generalized because households were selected in only three urban counties in the United States where people had been murdered in their own homes. Since the households were not randomly selected, this means that the sample is not representative of households in the USA, nor is it even representative of urban American counties. For example, 53% of the case subjects had had a household member arrested, 25% had alcohol-related problems, 31% had a household history of illicit drug abuse, and 62% of the case sample were black, compared with 25% of the households in the urban counties where the study was conducted, and 12% of all American households. Thus, the results may not logically be generalized to any target population.

Finally, Kellermann over-interpreted his findings. Even though the case-control methodology is not designed to determine causality, Kellermann asserted an unambiguous causal result. Moreover, Kellermann claimed his findings of an odds ratio of 2.7 was a “strong” result but such an odds ratio falls below the well-established threshold set for identifying potential risk factors for disease [Lilienfeld and Stolley, 1994]. Because of his inability to control for the confounding factors already discussed, his results are most likely spurious. Despite all of these methodological problems, Kellermann’s results are widely accepted in the public-health field. All too

often, public-health studies are judged by their good intent, in this case the reduction of violence, regardless of their methodological flaws. Public-health advocates appear willing to run with any published study, regardless of how weak it is, just so long as its findings are congenial to their noble goals.

Use of the weapons hypothesis

Public-health researchers have also tended to exaggerate the importance of the “weapons hypothesis” so that the availability of firearms is equated with death or injury. This is a misrepresentation of criminological research findings. By focusing myopically upon “firearms death,” researchers gloss over important distinctions between suicide and homicide, as well as ignoring violence from other types of weapons. The narrow research focus of public-health researchers amounts to a refusal to even consider theoretically the diverse “susceptibilities” to firearms of particular hosts. Depending in part upon the susceptibility of particular hosts, firearms theoretically may act as a disease hazard, a protectorant, a cause, or a preventative, as can any “disease vector.”

Such a basic misunderstanding of criminology might be charitably ascribed to the unfamiliarity of public-health researchers with the research literature in criminology. Such a profound unfamiliarity is irresponsible because good epidemiological methodology requires researchers to learn as much as possible about a disease they are attempting to understand. Nevertheless, public-health researchers are often woefully ignorant of even the most basic research in criminology. If one wished to be uncharitable, these lacunae could be seen as due to efforts to promote their *a priori* agenda through pseudoscientific studies.

Sound epidemiological research requires establishing research protocols that conform to known biological and other important factors. This implies that when public-health researchers study violence involving firearms, they should become familiar with criminological studies. Unfortunately, public-health researchers appear to be ignorant of much of the basic research in sociology and criminology. For example, despite their intellectual importance, few public-health studies cite work by Professors Gary Kleck, Gwynn Nettler, or Jim Wright [e.g., Kleck, 1991, 1997; Nettler, 1982; Wright et al., 1983].

In summary, then, public-health researchers frequently ignore basic scientific principles in favour of advocacy of utopian schemes. The epidemiological model is oversimplified to justify moralistic campaigns against firearms, basic research findings in criminology are ignored, and the case-control method is misapplied. These failings lead too many researchers to draw conclusions that are not supported by their research methodology and to compound these errors by recommending legislative solutions that fall far outside the boundaries of their research. Such studies are not properly scientific but “sagecraft,” that is, exploiting the scientific trappings of research to win arguments rather than to test propositions. Many of the magazines where these

studies are published (e.g., *Canadian Medical Association Journal*) are not proper scientific journals because they do not subject manuscripts to blind review by academics qualified in research methodology. [42] These pseudo-scientific studies provide a flimsy foundation for public policy.

The Canadian federal government, by relying upon public-health advocates, exaggerated the dangers of firearm ownership by ignoring key research findings concerning firearms. The moralistic nature of the public-health approach to firearms contrasts with the consultative approaches that are more typical in a democratic society and that conform more closely to basic policing principles. It is difficult to enforce moral laws upon an unwilling populace.

[42] Articles may well be subjected to “peer review,” in that they are circulated to MDs prior to publication. But editors pay insufficient care in ensuring that papers are reviewed by MDs who have been trained in quantitative research methods. The serious methodological problems in the medical research literature on firearms and violence have been extensively documented by well-respected researchers [Kates et al., 1995; Kleck, 1997]. For a concise description, see chapter 2 in Kleck, 1997.

Organizational problems at the registry

Starting in 1998, three years after the firearms legislation became law, Canadians were required to obtain a licence to own a firearm and to register all firearms, including long guns. By any standard, this was a rushed effort. During this time period, the Canada Firearms Centre (CFC) attempted to create the necessary infrastructure to license an estimated 3 to 4 million firearms owners and register from 7.7 to over 25 million firearms. During this same time, the number of employees in the CFC jumped from a handful to at least 600 [Breitkreuz, 1999; Mauser, 2001], and the Auditor General estimated that program costs for the firearms registry had reached at least \$600 million, although she complained that she could not get all of the necessary financial information [Fraser, 2002]. Serious problems were uncovered each time the Firearms Centre was reviewed by the Auditor General [Office of the Auditor General of Canada, 2002a, 2006].

Large, sprawling government programs invite waste and inefficiency. It is not an easy task to create a large information database. [43] Creating and managing the firearms registry posed particularly challenging problems that were underestimated by the Canadian government. The Department of Justice failed to develop a clear understanding of the project's scope and to plan for the level of inter-governmental and inter-agency cooperation that would be needed. Apparently, no one in the Department of Justice had experience with designing and implementing an information technology project of this size or scope.

Another reason for this difficulty is that identifying firearms is uniquely complex, [44] and this complexity is reflected in the different agencies' widely differing information needs. Perhaps the best example of mismanagement is the department's failure to understand that the standards for data quality varied across the agencies involved and this created virtually insurmountable obstacles to the development of an accurate and common database. Freedom-of-Information requests have revealed that the Royal Canadian Mounted Police (RCMP) continue to have serious doubts about the validity and usefulness of the information it contains [Breitkreuz, 2003e].

[43] The Department of Justice warned Allan Rock, then Minister of Justice, of the difficulties involved. See the Department of Justice internal memo uncovered through the Access to Information Act by Garry Breitkreuz, MP [Breitkreuz, 1996].

[44] Identification of firearms is inherently complex because of the profusion of model numbers, serial numbers, calibers, and years of manufacture. Firearms that are essentially similar, and made by the same manufacturer, may have a wide variety of serial numbers and calibers, for example. Radically different firearms may share identical serial numbers because they were made by different manufacturers in different countries. This complexity has always made this task very difficult in each country where it has been attempted.

The originally modest information-technology project grew rapidly in the face of numerous demands for change. Five years after the contract for the project was awarded, the development team had dealt with more than 2,000 orders for changes to the original licensing and registration forms or to the approval processes. Many of these changes required extensive additional programming. As the public learned about its problems, the Quixotic nature of the firearms registry was revealed. [45]

Cost overruns

The cost overruns were caused by the failure of the government to anticipate the complexities of creating and maintaining the firearms registry. The Canadian government was aware of the decision of the New Zealand government to abandon a firearms registry but these warnings were ignored. The Canadian government even sent a delegation of MPs to New Zealand to study their experience with firearms registration. The New Zealand Police told the Canadians that, in their experience, firearm registration was difficult to justify: the results had been disappointing in that the registry was incomplete and highly inaccurate, and had proved of limited value in locating offenders. [46] The New Zealand Police also told the visiting Canadians that the registry was much more expensive than they had originally thought [McCallum, 1982]. Unfortunately, this practical advice fell on deaf ears. The Justice Minister had already decided to go ahead. Unwilling to admit failure, the government resorted to financing the ever-growing project through “supplementary estimates” that avoided reporting requirements [Janke, 2006; Stanbury, 2003].

The problems in the Department of Justice became widely known in Canada when Auditor General Sheila Fraser released a scathing report in December 2002. Despite promises at the time that the firearms program, including the registry, would not cost over CDN\$2 million, the Auditor General estimated that it would cost taxpayers at least CDN\$1 billion by 2005. [47] She summarized her report by saying, “This is certainly the largest cost overrun we’ve ever seen in this office” [Office of the Auditor General of Canada, 2002a].

This is a staggering cost overrun, but it is necessarily an underestimate. First, the scope of the Auditor General’s inquiry was formally limited to examining the

[45] The Canadian gun registry is used as a case study of mismanagement [Duvall, 2004].

[46] Green, Joe, Inspector, Manager, Licensing and Vetting, New Zealand Police, personal communication, 2005. Wellington, New Zealand.

[47] In 2002, the Auditor General estimated that the Department of Justice’s costs alone on the firearms registry would reach \$1 billion in 2005 [Office of the Auditor General of Canada, 2002a].

Department of Justice but several other federal ministries are involved in administering the firearms program: these include the Solicitor General, Canada Border Services Agency, Department of International Trade Canada, Department of Foreign Affairs, and Native Affairs and Northern Development. Other ministries, such as Parks, Fisheries, and Environment, incur costs due to the firearms registry that have not yet been reported; the firearms in the hands of the police have yet to be registered; and the cost of destroying the guns confiscated since 1998 have yet to be accounted for. In addition, the federal government partially reimburses the program expenses of cooperating provinces and territories. [48]

When the full scope of this sprawling program is included and all governmental costs are considered, specifically those of other federal departments as well as the provincial expenditures that are reimbursed by the federal government, it was estimated that the total would exceed two billion dollars by 2005 [Breitkreuz, 2003c]. This is 1,000 times more than was originally budgeted, but this too is an underestimate. Unfortunately, the total costs remain unknown as many program expenditures related to this program remain hidden. [49]

The Auditor General also complained that the registry audit was the first time her office had had to discontinue an audit because necessary information could not be obtained. [50] The Auditor General had to end her audit precipitously, and leave her financial analysis incomplete, because the government either could not, or would not, cooperate with her by revealing all of the program's expenditures. [51]

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- [48] In 2003, many of these departments were integrated into Public Safety and Emergency Preparedness Canada (PSEPC), now Public Safety Canada (PS).
- [49] It is important to note that even this estimate only includes governmental costs. It does not include the costs to the owners of firearms or to society. Moreover, in terms of governmental costs, it also excludes prosecutorial and correctional costs.
- [50] This statement is reported by Tim Naumetz [2002], who also quotes the Auditor General as saying: "We stopped our audit when an initial review indicated that there were significant shortcomings in the data provided. We concluded that the information does not fairly present the cost of the program to the government." In the veiled language of government officials, this is strong criticism indeed. This criticism is also reported by Andrew McIntosh and Anne Dawson [2002].
- [51] [Office of the Auditor General of Canada, 2002a: 9]. This lack of cooperation motivated the Auditor General to ask the RCMP to investigate. This investigation is ongoing and resulted in then Prime Minister Paul Martin setting up the Gomery Commission in 1995 to investigate the procedural difficulties within a number of departments. This commission uncovered numerous instances of criminal conduct during its investigation—including hundreds of thousands of dollars diverted from the firearms registry. The Phase Two Report appeared in 2006. [See Ha, 2005; Makerenko, 2006].

The Auditor General saved her strongest criticism for the way the government deliberately misled Parliament: “The issue here is not gun control. And it’s not even astronomical cost overruns, although those are serious. What’s really inexcusable is that Parliament was in the dark” [Naumetz, 2002: A1]. The government knew about the mismanagement problems in the firearms registry years ago, but ignored questions from MPs such as Garry Breitkreuz whose requests for financial information were repeatedly refused on the grounds of “cabinet secrecy.”

In May 2006, the Public Accounts Committee issued a report censuring former Minister of Public Safety and Emergency Preparedness, Anne McLellan, faulting her for ignoring the advice of her senior bureaucrats and not reporting the cost overruns of the troubled gun registry. McLellan violated accepted accounting practices by deciding to move the cost overrun to the next fiscal year instead of going to Parliament to ask for additional funds. The most likely explanation for McLellan’s deviation from standard practice is that she deliberately misled Parliament because she thought the information would hurt the Martin government’s chances in the election that she expected to be held in early 2004. [52] In response to this independent assessment, in February 2003 the registry was relocated in the Ministry of the Solicitor General, joining the Royal Canadian Mounted Police (RCMP). Paul Martin became Prime Minister early in 2004 and the firearms program got another Minister. [53] When the Conservatives formed government in 2006, the firearms registry moved yet again; this time, responsibility for the firearms registry was transferred to the RCMP. At the same time, the Conservatives also reduced the annual operating budget for the firearms program by a further \$10 million. [54]

Because of heightened concerns about budgetary concerns, the firearms program is in an awkward position as it attempts to manage the firearms registry. Tight budgetary restrictions have led to complaints that the program has reduced the quality of service. Long waits are normal, and errors frequent. Nevertheless, the registry is ineffective in tracking stolen firearms, because of duplicate serial numbers and inadequate descriptive information [Naumetz, 2003b]. This again reflects the inherent difficulty of the task. [55]

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- [52] Support for this speculation has been uncovered in governmental documents recently released through FOI requests. For details, see Janke, 2006.
- [53] There have been a series of ministers in charge of the firearms program since 1994: Allan Rock, Anne McLellan, Martin Cauchon, Wayne Easter, and Anne McLellan, for a second time.
- [54] On May 17, 2006, the Conservative government announced they were transferring responsibility for the Firearms Act and regulations to the Royal Canadian Mounted Police (RCMP) from the former Canada Firearms Centre. See Public Safety and Emergency Preparedness Canada [PSEP], 2006.
- [55] Few people without familiarity with firearms realize just how many numbers there are to be found on them: serial numbers vie for place with, among other things, model numbers, patent numbers, and calibres. This profusion inevitably brings clerical errors.

Budgetary restrictions also compromise the quality of the data. Unfortunately, one of the cost-cutting decisions was to reduce efforts to verify descriptive information submitted about firearms. Applicants for firearm permits appear not to have been as thoroughly screened as they were prior to the introduction of the firearms registry. One imaginative Canadian even managed to register a soldering gun without the Canadian Firearms Centre knowing that it was not a “firearm” under the Canadian criminal code [CNEWS, 2002]. This example not only illustrates the level of screening given by the firearms registry but also demonstrates the contempt that many feel for the registry. Few now take seriously claims that the registry has any real use.

The 2004/05 budget eliminated funding for firearms safety programs altogether, even though it maintained the budget for public relations. [56] Despite the huge expenditures, the firearms registry is plagued with errors. Millions of entries are incomplete or incorrect [Breitkreuz, 2002]. The Auditor General also reported that the RCMP in 2002 announced that it did not trust the information in the registry [Office of the Auditor General, 2002b]. As the New Zealand Police discovered decades ago, it is exceptionally difficult to maintain a firearms registry [Kopel, 1992: ch. 6; McCallum, 1982; Thorp, 1997]. If police are to trust the registry when it is a case of protecting police lives, enforcing court orders, or testifying in court, the data contained in the registry must be both accurate and complete. An inaccurate registry becomes a self-defeating exercise and cannot be useful in aiding the police in protecting the public.

The firearms registry continues to be an expensive program. The budget for the Canada Firearms Centre was \$82.3 million in 2005/06. The operating budget was \$77.2 million (94% of the total), with \$15.7 million allocated to firearms registration and \$61.5 million for licensing. It is reasonable to assume that the lion’s share of this is due to long guns, since only 6% of registered firearms are handguns or other “restricted weapons.” Thus, approximately \$12.7 million is spent registering long guns, and \$49.9 million is spent licensing long guns. Of course, program costs do not exhaust the costs imposed on Canadian citizens by the registry. Laws require enforcement, [57] and laws impose compliance costs on the public. [58]

[56] This was released in the departmental statement [Canada Firearms Centre, 2004].

[57] The minimum cost of enforcing the act is estimated to be between \$7 million and \$49 million annually. The Library of Parliament estimates that it costs taxpayers at least \$3,107 per case to pursue each violation of the Firearms Act through to conviction [Jackson, 2003b]. The lower estimate is based on the number of simple possession charges (2,265), while the higher estimate is based on the 18,000 Criminal Code, offensive-weapons incidents, minus the 11% of weapons-related offences that fell into the category of illegal firearms usage (e.g., using a firearm in the commission of an offence or pointing a firearm), for an estimated 16,000 incidents. [Personal correspondence between Garry Breitkreuz and author (May 9, 2006)].

[58] Estimates for registering a firearm vary from \$8 to re-register an already registered firearm over the phone up to \$110 to register a non-verified firearm [Jackson, 2003a].

Inaccuracy and incompleteness

The principle of the registry demands an exceptionally high level of accuracy to guarantee to the police officer knocking on a door that the information in the registry is correct about the number and nature of the firearms owned in the residence. If any important percentage of the firearms remain unregistered, it is very likely that the firearms in the hands of the most violent criminals are not registered. If this is the case, police officers cannot trust the information that there are no firearms in a residence. Failure to register a firearm does not mean no firearm exists. Or, if there is only one firearm registered, the officer cannot safely infer that there are no other firearms. Practically speaking, the registry is not useful to an investigating officer since it must be assumed that a firearm is available when the officer knocks on a door, regardless of whatever is reported in the registry. Trusting the information in the registry could get police officers killed. [59] Despite its current cost of over one billion dollars, the police still have grave reservations about the usefulness of the firearms registry [Breitkreuz, 2004].

Conclusion

In summary, the Canadian firearms registry has had numerous action plans, a series of ministers, and thousands of changes made to the computer system. This is not a recipe for effectiveness or efficiency. In other words, as New Zealand discovered decades ago, a firearms registry may not be worth the effort, as such a database is exceptionally difficult to maintain, outrageously expensive, and any benefits are all but impossible to demonstrate. In a subsequent section of this paper, I evaluate the success of the firearms registry in including all the firearms in the country. An incomplete registry is a guarantee that it will include only those firearms that are the least likely to be used in crime.

Large, sprawling, government programs are invitations to waste and inefficiency, even corruption. Some may find it comforting to dismiss the failures of the firearms registry by imagining that Canadians are uniquely incompetent or corrupt. Even if this were true, it is more salutary to recognize the universal implications for any large-scale national program (e.g., CBC or national day care). Citizens would be wise to make every effort to keep close control over large governmental programs to minimize waste and fraud. In the case of firearms registration in Canada, it is even more expensive because a new organization had to be created in order to set out to accomplish it and the goals kept changing.

[59] The Canadian Association of Chiefs of Police disagrees with this assessment. They argue that, despite its limitations, the registry may still be of some utility in knowing positively that a weapon is in the house, and it would still be useful in enforcing court orders. Even if it is incomplete and inaccurate, the existence of the registry provides some reassurance to the police and the courts, the Chiefs argue, that when confiscation orders are issued, the police will be able to confiscate some or all of the weapons that pose a threat to the community [MacLeod, 2004].

Cooperation by the owners of firearms

The Canada Firearms Centre (CFC) announces the number of firearm licences that have been issued, as well as the number of firearms registered, and it claims that this coverage is close to complete. But such claims are nearly impossible to evaluate given the difficulty in estimating how many owners have not taken out licences or registered their firearms. Part of the difficulty is that there is no agreement about the number of Canadians who own firearms, nor are there accurate counts of the number of firearms in private hands. Canada is not unique in this. Similar difficulties have been encountered in other countries. [60] In 1997, estimates of the total number of firearms in Australia ranged from 2.5 million to over 10 million, and estimates of the number of firearms to be prohibited ranged from 800,000 to 3.35 million [Sport Shooting Association of Australia, 1997]. It is essentially impossible to conduct accurate inventories of items, such as firearms, that the population does not want the government to count.

How well did the Canada Firearms Centre (CFC) do by the official deadline of July 1, 2004? As of November 11, 2004, the CFC reported that almost 2 million firearm owners had been licensed, out of a total of 2.2 million owners, and that nearly 7 million firearms had been registered. By their own figures, this means that, as of the official deadline in 2004, there were 406,834 holders of long-gun possession licences who had failed to register any long guns and, in addition, there were a further 316,837 handgun owners who had failed to re-register or dispose of their handguns [Naumetz, 2004b; Canada Firearms Centre, 2004]. Thus, according to the CFC, over 90% of owners have taken out a licence and registered at least one firearm. Currently, the numbers continue to grow. As of November 2006, the CFC reports that 2 million owners have licences and 7.1 million firearms have been registered [Canada Firearms Centre, 2006].

[60] There is some evidence from a number of countries over a substantial time period that roughly a sixth of guns will find their way into the registration system in exercises such as this. When military-style, semi-automatic rifles were restricted in Canada in 1991, the RCMP estimated that approximately 12% of the firearms imported were actually registered [Mauser, 2001a]. Australia tried to introduce a gun registration system during colonization in 1796, and about a sixth of the known guns were registered. The Federal Republic of Germany began a registration system under the Baader-Meinhof threat in 1972; the government estimated there were 17 to 20 million guns in the country but only 3.2 million were eventually registered. In the 1980s, when the English authorities tried to register pump-action and semi-automatic shotguns, only 50,000 were ever brought forward out of the 300,000 shotguns that were known to have been imported. Again, in New Jersey, USA, registration requirements were handed down for so-called "assault weapons." A minimum of 100,000 firearms were included under the legislation (probably many more, but there were difficulties with the wording of the legislation). Fewer than 2,000 of these firearms were offered for registration [Kopel, 1992].

However, if we accept my best estimate that there were between 3 and 3.5 million owners in 2004, then the participation rate is much lower, between 60% and 65%. The large drop in the number of firearm owners since the registry was introduced indicates that a substantial number of former owners either have divested themselves of their firearms or they have simply not registered their firearms. [61] The number of these scofflaws is unknown.

Estimates of the participation rates among Aboriginal Canadians are even lower. Many bands have refused to comply, while others have only partially cooperated. [62] The government of Nunavut, one of Canada's three northern territories, has a court injunction that has forced the federal government to halt registration in Nunavut since 2002. The most optimistic estimate is that fewer than 25% of residents of First Nation communities have complied with the firearms act [Breitkruez, 2003d; Naumetz, 2003a]. One band in British Columbia has even decided, in defiance of the federal government, to issue its own firearm licences [The Province, 2003].

How complete is firearms registration?

Estimates of the actual gun supply range from 7.7 million (the government's preferred number) to over 25 million, plus an unknown number of air guns [GPC Research, 2002; Smithies, 2003]. If we accept my best estimate that there were between 12 and 15 million firearms in private hands in Canada [Mauser, 1995b], then, since the CFC claims 7.1 million firearms registered, then the best estimate is that approximately half (between 47% and 59%) of the private firearm stock is registered.

In summary, it is difficult to know the level of non-participation among Canadians because there is no agreement about the number of Canadians who own firearms, nor are there accurate counts of the number of firearms in private hands. Estimates of the number of previously law-abiding firearm owners who do not have a firearm licence range from approximately 700,000 up to 2.5 million. However, the number of former owners who have divested themselves of their firearms is unknown. Surveys show that the number of firearm owners has been decreasing since 1995, so the best estimate is between 60% and 65% of firearm owners have licences and approximately half of all firearms are registered.

[61] There are no records available that would corroborate the sale or export of the necessary number of firearms.

[62] A constitutional challenge has been launched by a Saskatchewan native organization [Blackwell, 2004].

The notion of “gun deaths”

In evaluating public safety, we need to avoid being misled by simplistic and emotional concepts like “gun deaths.” Because of the problem of substitution, a rise or fall in “gun deaths” does not necessarily imply that any lives have been lost or saved overall. The variety of alternative ways of killing means that there is no necessary link between “gun deaths” and trends in suicide or homicide: murders involving guns may decline while murders involving bombs or knives may increase. The most appropriate measures of public safety are meaningful measures, such as rates of homicide and violent crime, because they tell us whether more or fewer human beings are actually dying or being hurt.

At first glance, the concept of “gun deaths” may appear plausible. Gun laws are supposed to stop the misuse of guns, so an obvious measure of success would be a drop in “gun deaths.” However, there are conceptual problems with the term that detract from an understanding what firearms have to do with homicide or suicide.

“Gun deaths” is a *pot pourri* of suicides, homicides, and accidents. The supposed link is that these deaths share a common cause: a gun was accessible. But the mere availability of guns does not make ordinary people commit murder or suicide or have accidents. This term may be useful to frighten the public into thinking that expensive measures taken to reduce the number of guns held lawfully will automatically spill over into crime reduction but it does not aid understanding any more than it reduces the overall number of people killed.

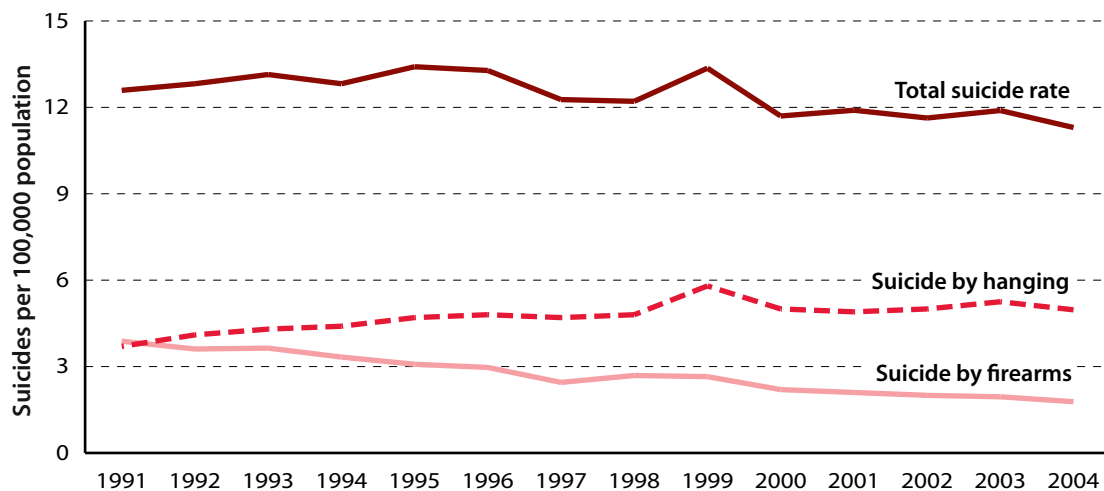
The notion of “gun deaths” has another conceptual problem. “Gun deaths” would be a legitimate measure for evaluating a program specifically directed at the misuse of firearms were it not for the problem of substitution. That is, other weapons are easily substituted for firearms in committing homicide or suicide. Because of the problem of substitution, it is a fallacy to imagine that a reduction in “gun deaths” implies that any lives have been saved. [63]

Japan has exceptionally tight firearms laws, but a high suicide rate. Mass killing in Japan has typically involved poisoning. In many countries, arson and bombing have been used in multiple killings. Whether or not these multiple murders involve the suicide of the perpetrator, they are obviously unaffected by firearm laws. Because of the variety of alternative ways to kill, the only useful measures of public safety are more meaningful ones, such as rates of violent crime, suicide, and homicide.

[63] This is not to say that analyzing firearms-related homicides separately (or suicides or firearms accidents) is analytically useless. The extent of substitution in any situation is an empirical question, so it would be logical, for example, to hypothesize that total accidents might be reduced by focusing on firearms-related accidents. This would be a useful strategy even if the attempt only managed to reduce the number of firearm accidents, but the total accidents did not decline. My point here is that by mixing homicides, suicides, and accidents together simply because a firearm was involved is analytically valueless.

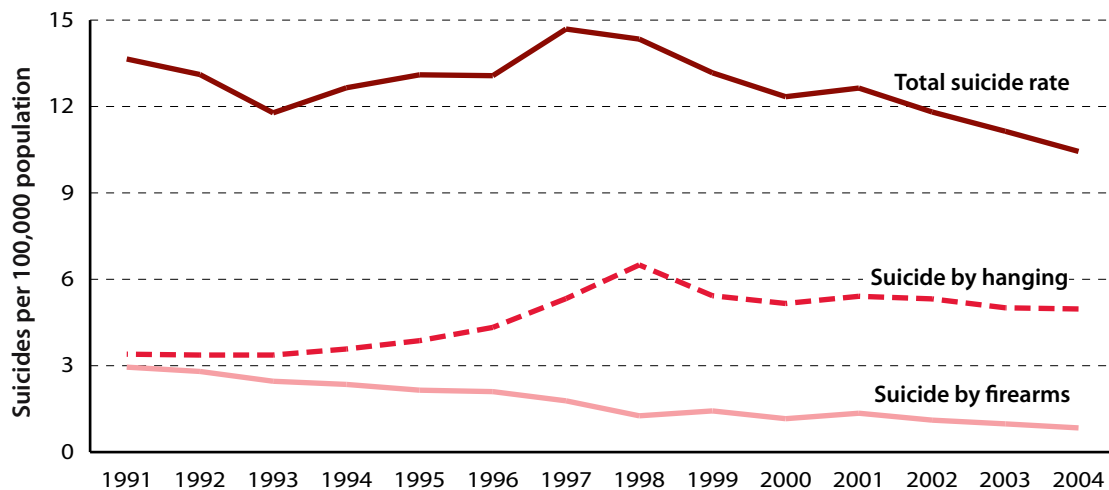
In Canada, trends in “gun deaths” are not good indicators of suicide trends, in part because firearms are involved in only a small fraction (18%) of suicides. An inspection of the trend in Canadian suicide rates since 1990 shows that they have stayed remarkably stable even though firearm suicides have fallen by 50% in the same time period [figure 1]. Nor is there a link between the decline in suicides involving firearms and total suicide rates in Australia [figure 2]: firearm suicides have been declining at least since 1991, while total suicide rates remained stable, even increasing, until more recently. For a more thorough analysis, see Baker and McPhedran, 2006.

Figure 1: Methods of suicide, Canada (1991–2004)



Source: Statistics Canada, 2007.

Figure 2: Methods of suicide, Australia (1991–2004)



Source: Australian Bureau of Statistics, 2006b.

The concept of “gun deaths” is a grab-bag that confuses rather than clarifies. As may be seen in table 3, “gun deaths” are largely suicides, some homicides, and a very small percentage of accidents. Suicide, homicide and accidents are distinct phenomena and are better understood when analyzed independently. If homicide, suicide or accident rates are influenced by firearm availability, then this will be seen in these analyses. The result is that, when gun laws are introduced—often very restrictive laws such as those of Jamaica in 1974 or of the Republic of Ireland in 1972 that impose total, country-wide bans—the number of people killed does not fall and may actually increase. Focusing on “gun deaths” diverts attention from the original goal of the Canadian legislation, which was to improve public safety.

One of the assumptions underlying the use of the artificial term “gun deaths” is that the availability of firearms increases the overall suicide rate. Comprehensive reviews of technically sound studies have not found strong empirical connections between the ownership of firearms and either overall homicide or suicide rates. Comprehensive reviews of the literature have been published by both Kleck [1997] and Hemenway [1999, 2004]. Kleck [1997] reviewed previous studies that examined the link between gun ownership and both violent crime and suicide. In his review of studies of the link between ownership and violent crime, he only included studies that actually measured

Table 3: Canadian “gun deaths”

	Homicide	Suicide	Accidents	Total
1992	214	1,048	63	1,325
1993	173	1,053	44	1,270
1994	170	973	38	1,181
1995	145	911	49	1,105
1996	177	811	46	1,104
1997	156	815	45	1,016
1998	129	816	31	976
1999	151	802	37	990
2000	156	685	20	861
2001	148	651	28	827
2002	152	633	31	816
2003	161	618	27	806
2004	173	568	23	764

Note: This table excludes firearm deaths from two minor sources, “Legal Intervention” and “Undetermined” because these data are unavailable for 2002 and 2003. Approximately 20 deaths per year on average fall into these two categories combined.

Sources: 1991–2001—Hung, 2006; 2002–2004, accidental and suicide deaths—Statistics Canada, 2007; 2002–2004, firearm homicides—Dauvergne and Li, 2006.

gun availability rather than simply assuming it, and only studies that measured rates of criminal violence, not percentages. The results were mixed for the entire set. After screening out those studies that did not meet rigorous methodological standards, none of those remaining reported a significant relationship between level of firearm ownership and homicide rate [Kleck 1997: 248–51]. In his review of 13 previous studies examining the link between guns and suicide, he reported that only two (including Kleck and Patterson, 1993) had found a significant association between firearm prevalence and total suicide [Kleck, 1997: 284–85]. However, both of these studies had methodological problems that undermined their findings.

Nor has convincing empirical support been presented for the thesis that gun laws have lowered the overall suicide rate or homicide rate [Kleck, 1997: 49–53, 286–88, 377; Marvell and Moody, 1995] [table 4]. In contrast, research consistently shows that the availability of one means of committing suicide has a strong influence on the frequency of suicides using that method [Kleck, 1997: 285]. Miller and Hemenway, while evading a direct answer to the question about firearms and suicide, after decrying the data quality, do say that the “evidence ... is currently less compelling” [1999: 73]. However, Hepburn and Hemenway [2004] disagree with Kleck’s assessment that no strong empirical link has been shown between firearm ownership and overall homicide rates.

Method substitution

The use of “gun death” as a dependent variable merely muddies the water as there is no logical link between increases (or decreases) in the distinct components of “gun deaths”, that is, suicide or homicide. [64] It is frequently claimed that guns are uniquely more lethal than other methods of attempting suicide but this is misleading and wildly exaggerated. Kleck [1991: 258] reported findings that the fatality rates for hanging, carbon-monoxide poisoning, drowning, and shooting oneself were all in the 75% to 85% range. Similarly, Sayer et al. [1996] found that hanging had a higher fatality rate (82%) than firearms (75%) in New South Wales. Moreover, researchers frequently confound lethality of a method with the user’s determination. Anyone serious about committing suicide would be expected to choose an effective method. Given the ubiquity of ropes and motor vehicles, tall buildings and railway lines, there would appear no shortage of methods available that are highly lethal.

[64] There is no logical link between these concepts, but empirical links might well exist. A decline in gun deaths conceivably might be empirically related to a decline in either homicide or suicide. Consequentially, some criminologists hypothesize that focusing on the means of murder or suicide might reduce the total number of gun deaths as well as the total of suicides or homicides. As such, it is an empirical question. At present, empirical research has not been able to support this hypothesis.

Table 4: Studies of the association between gun laws and suicide rates

Study	Sample	Number of control variables	Gun ownership measured	Number of gun controls assessed	Gun controls significantly reduce [a] rate of	
					gun suicide	total suicide
Geisel et al., 1969	50 states, 1960	7	No	1 (8) [b]	Yes / No [c]	No
	50 states, 1965	8	No	1 (8) [b]	Yes / No [c]	No
	129 cities, 1960	8	No	1 (8) [b]	—	No
Murray, 1975	50 states, 1970	9	No	7	No	No
Lester & Murrell, 1980	48 states, 1960, 1970	0	No	1 [b]	Yes	Yes
Nicholson & Garner, 1980	Time series, DC	0	No	1	Yes	Yes
Lester & Murrell, 1982	48 states, 1960, 1970	0	No	3 (8) [d]	Yes	—
Medoff & Magaddino, 1983	50 states, 1970	5	No	1 (2) [e]	—	Yes
DeZee, 1983	50 states, 1978	7	No	7	No	—
Sommers, 1984	50 states, 1978	2	No	9	No [f]	—
Lester, 1987a	48 states, 1970	0	No	1 [b]	—	Yes
Lester, 1988a	9 regions, 1970	2	Yes	1 [b]	Yes [g]	No
Boor & Blair, 1990	50 states, DC, 1985	9	No	2 (8) [h]	—	Yes
Rich et al., 1990	Time series, 2 cities	0	No	1	Yes	No
Kleck & Patterson, 1993	170 cities	9	Yes	13	No [i]	No [i]

Notes

[a] Significant at .05 level.

[b] Measured “strictness” of gun control; all types lumped together.

[c] Overall “strictness” index was significantly and negatively related to the gun suicide rate but separate gun-law dummies yielded no significant results.

[d] Used three factor scores grouping eight gun-control types together; individual controls not assessed.

[e] Lumped two gun-law types together into a single dummy variable.

[f] Only one of nine gun-law coefficients was significant at .05 level.

[g] Only bivariate association reported.

[h] Grouped eight types of gun control into two summary variables.

[i] Only one of 13 results was supportive for gun suicide rate, two of 13 for total suicide rate.

Studies about evenly divided but all of the studies reporting a negative impact of gun controls have been technically primitive.

Specific criticisms

Boor & Blair, 1990: did not separately study gun suicide rates, failed to measure local gun laws, and lumped controls together.

Lester & Murrell, 1980: no control variables that might be correlated with gun controls.

Nicholson & Garner, 1980: no control variables that might be correlated with gun controls.

Lester, 1987a: used gun-homicide percentage and gun-accident rate as proxy for gun ownership, which has positive correlation with suicide rate.

Lester, 1988a: used gun magazine subscription as proxy; not a valid measure.

Source: Kleck, 1997: 292, table 8.4.

The key question is method substitution, or displacement, and on this question the research is becoming clearer. There is considerable evidence showing that limiting the availability of one suicide method reduces the frequency with which that method is used; but support is conspicuously lacking for the assertion that reducing the availability of firearms reduces the overall suicide rate. [65] While some public-health researchers claim that the unique deadliness of firearms means that substitution effects are not important in suicide [e.g. Gabor, 1994], this is belied by the empirical evidence. Unfortunately, the public-health literature generally ignores the relevant criminological research. As shown above, the evidence is consistent with strong substitution effects. As seen in figure 1, as firearm suicides declined over the past decade, hanging suicides increased in Canada.

Conclusion

In summary, the concept of “gun deaths” is not an appropriate measure for evaluating firearms laws. Certainly gun laws would be expected to reduce homicides with guns and violent gun crime. But reducing gun violence is only part of any master strategy to improve public safety, which must mean reducing homicide and violent crime overall. Evaluating the firearms registry means assessing its effectiveness in improving public safety. The government’s original goals were clear: “to reduce criminal violence generally, and more specifically, to reduce domestic violence and homicide.” The reduction in violence involving firearms was viewed primarily as a means of reducing total criminal violence, not as an end in itself. The federal government also thought that the gun laws would reduce loss of life due to impulsive acts such as suicide and accidents. Again, controlling firearms was seen not as just a way to reduce deaths from guns but as a way to save lives overall.

[65] Several studies have agreed with Gary Kleck’s evaluation that “most technically sound evidence indicates that most types of gun controls have no measurable effect, for good or ill, on most rates of crime and violence” [Kleck 1997: 377]. Importantly, Kleck argued [1997: 387] that owner licensing and background checks could reduce both homicide and suicide. He may, however, have retreated from this position by 2001 [Kleck and Kovandzic, 2001].

Evaluating the firearms registry

The most effective way to evaluate the firearms registry is by asking how well it has accomplished the goals originally set for it. If legislation is to be more than symbolic, then politicians must be held to account for their promises. At the time the legislation was introduced, the federal government asserted that the key to improving public safety lay in controlling the availability of firearms, and that universal firearms registration was the best way to achieve this. At that time, it was argued that restricting firearms availability would reduce homicide and criminal violence, as well as domestic violence, and, in addition, save lives by reducing suicides and firearm accidents. Each of these goals will now be examined in turn. Thus, the important questions are whether public safety has improved since universal firearms registration became mandatory in 1998, and if so, whether it is worth the cost. This approach is preliminary. For the present, it is possible to look only at broad trends in the overall national rates. Clearly, further work needs to be done to confirm these observations.

The first step is the most fundamental: has there been a decline in firearms availability since the introduction of the firearms registry? In 1995, the government argued that owner licensing and firearms registration were crucial in limiting accessibility to firearms. Restricting the availability of firearms would not only reduce firearm misuse but, more important, overall criminal violence, total suicides, and domestic abuse. Thus, before it is logically possible to credit the firearms registry with improving public safety, there would have to be a reduction in the number of firearms owners.

As table 5 shows, the answer to this question appears reasonably clear: the number of firearm owners has declined substantially. The best estimate is that there were between 4.5 and 5.5 million firearm owners prior to the 1995 legislation; this number had dropped to between 3.5 and 4 million firearms owners by 1996 [Mauser, 2001a; Mauser and Buckner, 1997]. And it has continued to drop. After firearms registration was

Table 5: Number of civilian gun owners in Canada

	Households reporting ownership of firearms to surveys (percent)	Estimates, Department of Justice	Estimates, Mauser
1976	35%		4.5–5.5 millions
1989–1994	29%	3.3 millions	4.5–5.5 millions
1995–1998	21%	3.0 millions	3.5–4.0 millions
2000	17%	2.3 millions	3.0–3.5 millions
2004		2.3 millions	3.0–3.5 millions

Source: GPC Research, 2001.

introduced in 1998, it dropped still further. I estimate there were between 3 and 3.5 million firearm owners in Canada by 2002. There are probably fewer still in 2007, although it is likely that the rate of decline has slowed.

Surveys show a continuous drop in numbers of people who admit to owning firearms since the early 1990s. Surveys during the early 1990s found that an average of 29% of Canadian households reported owning one or more firearms; surveys conducted between 1995 and 1998 found an average of only 21% of households reporting firearms. Later surveys have found still lower percentages. In 2000, only 17% of households admitted to owning one or more firearms [GPC Research, 2001]. But how much of this apparent drop is real?

The estimates presented here are based upon surveys, and surveys have well-known limitations. It is highly probable that some owners would deny in a telephone interview that they have firearms. Moreover, given the demonization of firearms over the past decade, the share of deniers may well have increased. To what extent this is true is unknown and probably undiscoverable. In the GPC survey, 6% of the respondents who admitted to owning firearms claimed they planned to divest themselves of their firearms because of the new legislation. Government estimates of the number of gun owners in 2001 assume that all of these respondents acted upon their declared intentions. It is impossible to know how many actually did so. Considering the way people tend to retain heirlooms, and the way guns are seen as valuable personal items (for instance, fine hunting shotguns have historically cost up to a year's wage for a working man), it is highly likely that a substantial proportion of these firearms have just been pushed back deeper into people's closets.

Another partial explanation for this drop is the definition of "firearms owner" has changed. The advent of licensing meant that a firearm could officially only have one unique legal owner; prior to licensing, firearms were frequently treated as family property, similar to other commonly owned goods, such as computers, refrigerators, or household furniture, and hence they could have more than one legal owner. This was particularly true in rural homes. Given that licensing costs are significant, some families probably have decided to limit the number of "official" owners. However true any of these considerations may be, the data suggest that there was a real and significant drop in the number of law-abiding firearm owners after the legislation was passed in 1995 and then again after the introduction of the firearms registry in 1998. It would appear that both events reduced the availability of firearms. [66]

[66] The decline in the number of firearms owners in Canada has corresponded with a drop in the numbers of hunters [Husband, 2005]. Such a decrease bodes ill for wildlife conservation in Canada, as hunters are the mainstay of provincial budgets for wildlife management. The implications are substantial. Canadian hunters pay provincial governments almost \$70 million per year for hunting opportunities; this roughly equals what the provinces spend on wildlife management [Mauser, 2004]. In fact, hunters are the driving force behind conservation in Canada as they are throughout North America. Canadian hunters, in addition to what they spend

The drop in the number of firearms owners is in part due to demographics. [67] Firearms owners are older than the general population, so their numbers would be expected to shrink faster than the general population through differential mortality. It is generally true that a higher proportion of older cohorts die than younger cohorts. A second factor causing the fall in firearms owners is the firearms registry. Not only are older owners divesting themselves of firearms but the increasingly strict requirements for owning firearms have reduced the numbers of young people who become interested in the shooting sports and purchase firearms. Thus, as the older owners die, they are not being replaced by younger owners in proportionate numbers.

Some researchers have used proxies for estimating firearms ownership because survey estimates are not always available. Unfortunately, present research suggests that none of the widely used proxies are valid measurements for time series. That is, none of the proxies can accurately track survey estimates over time. The most widely accepted proxy for cross-sectional studies for the number of firearms owners is the proportion of suicides that involve firearms, although Kleck argues that while this proxy is valid in cross-sectional studies it cannot be relied upon for time series. [68]

on licences and fees, also voluntarily contribute over \$33 million annually for habitat protection and conservation projects [Powers, 2000]. More important, the Canadian Wildlife Service reports that hunters spend almost half (\$2.7 billion) of the \$5.6 billion the Canadian public spends on wildlife-related activities each year on hunting-related tourism. In total, hunters contribute over \$10 billion annually to the Canadian economy [Filion et al., 1993]. A similar decline in the number of hunters has been also noted in the United States by the National Shooting Sports Foundation [Wentz and Seng, 2000].

Hunters are also important in controlling problem wildlife. Not only do wildlife cause economic losses for farmers and orchardists through crop damage, they are also hazardous for motorists [Cotter, 2005]. In just one province, British Columbia, there were over 4,700 wildlife-related accidents in 2000. That year, it was estimated that wildlife accidents cost the province over \$18 million in accident claims, \$600,000 in highway accident clean-up costs, and \$300,000 in lost provincial revenue from hunting licences. In addition, collisions between wildlife and motor vehicles kill at least two people each year in British Columbia alone [BC Ministry of Transportation, 2000]. A decline in the number of hunters would mean governments would have to pay to reduce the wildlife populations rather than having hunters pay government for the privilege. A recent study of another Canadian province, Manitoba, found that, if hunting were eliminated, problems in wildlife damage would increase substantially because deer and bear populations would increase over 200% and waterfowl would increase over 300%. Manitoba, with a population of 1.1 million people, had 10,475 collisions between wildlife and motor vehicles in 2003. As a result, Manitoba Public Insurance paid out \$20.1 million in insurance claims [IAFWA, 2005]. Hunters provide a vitally important tool for wildlife management.

- [67] This discussion focuses on aging. Other demographic forces, such as urbanization and immigration, may also play important roles in driving down firearms ownership.
- [68] Philip J. Cook argues that FS/S is a valid proxy for both cross-sectional and over-time variation [Azrael et al., 2004: 43–62]. Gary Kleck disagrees with the validity of FS/S as a measure of firearm ownership over time [Kleck, 2004: 3–36].

Restricted availability and public safety

Now that we have shown that the firearms registry has restricted the availability of firearms, we can turn to evaluating whether it has improved public safety. Specifically, we ask: has the registry reduced homicide, criminal violence, and domestic violence, and has it saved lives by reducing suicides and firearm accidents? In 1995, the government promised the registry would achieve each of these goals. We will examine each of these in turn.

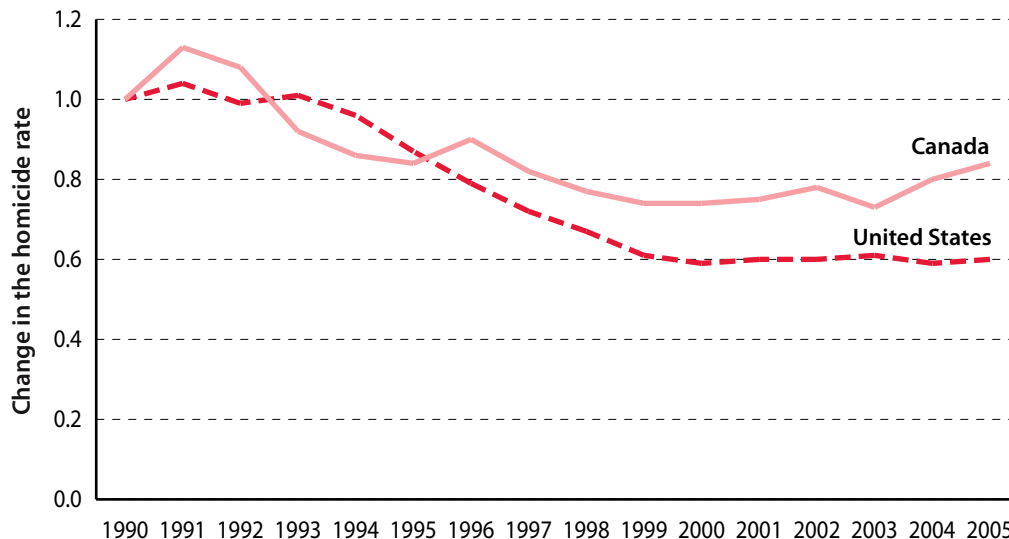
Homicide

Since the firearms registry was introduced in 1998, the Canadian homicide rate has increased slightly [figures 3 and 4]. According to the most recent statistics for 2005, the homicide rate has increased by 9% since 1998 [Dauvergne and Li, 2006]. This trend offers no support for the argument that the registry is effective or has improved public safety. The homicide rate had been declining before the registry was introduced. Indeed, the homicide rate in Canada has been declining since the mid-1970s. This decline continued for a few years after the registry was introduced, reaching a low of 1.73 per 100,000 in 2003. In 2004, the homicide rate jumped up by 10% and it increased again in 2005 by another 5%.

The homicide rate may have increased since the registry was introduced, but would it, perhaps, have increased even more without the registry? It is difficult to answer such a speculative question but some light may be shed by examining homicide trends in two countries, the United States and the United Kingdom, that resemble Canada but have taken quite divergent paths with respect to firearms laws. The United States offers a convenient comparison with Canada as it shares a similar demographic profile. [69] Although the American homicide rate is higher than Canada's, the homicide rate in the United States has dropped by 11% and the violent crime rate by 17% since 1998; during the same period, the Canadian homicide rate increased by 9% [Dauvergne and Li, 2006; FBI Uniform Crime Reports, 2006]. For all their faults, perhaps the Americans are doing something right. In contrast, British firearms laws, despite ever-increasing restrictions, have not been able to stop the homicide rate in the United Kingdom from continuing to increase. While the homicide rate in Canada has decreased by 16% since 1990, it has increased 31% in the United Kingdom.

[69] The United States is similar demographically to Canada though not identical. Importantly, none of the differences undercut the argument being made here. The United States has a greater proportion of ethnic groups that have relatively high crime rates (e.g., blacks and Hispanics) than Canada. Moreover, the birth rates of these ethnic groups are higher than the rest of American society [US Census Bureau, 2006]. Another important difference is that the population in the United States is younger than that in Canada and that the American population is growing older more slowly than the Canadian [Statistics Canada, 2002]. Each of these demographic differences would be expected to act to increase the violent crime rates in the United States relative to Canada. Despite these factors, both homicide and violent crime rates have fallen faster in the United States than in Canada.

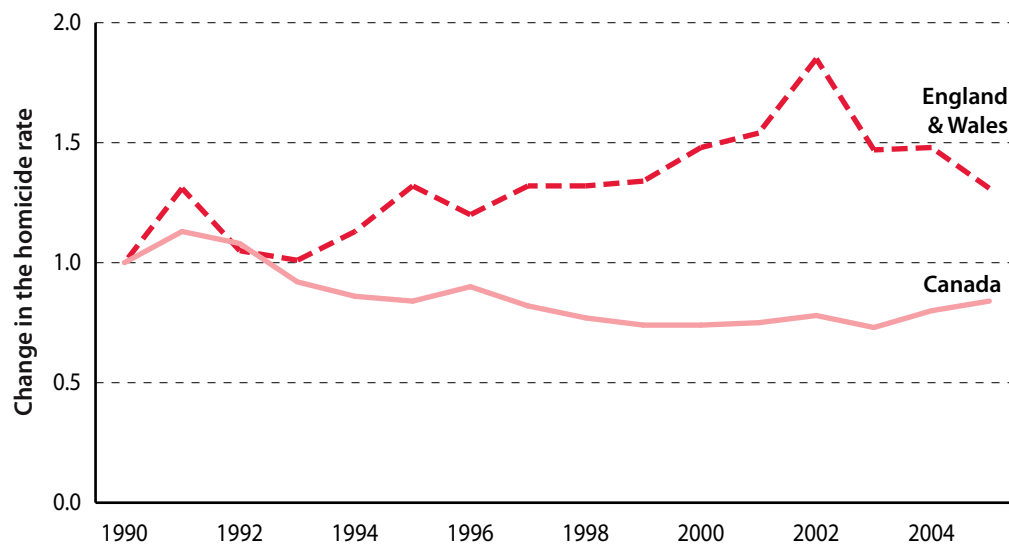
Figure 3: Change in the homicide rate, Canada and the United States (1990–2005; base year = 1990)



Note: 1990 was chosen as a base year for convenience to show that homicide rates have fallen more in the United States than in Canada over this time period.

Sources: Dauvergne and Li, 2006; Federal Bureau of Investigation, 2006.

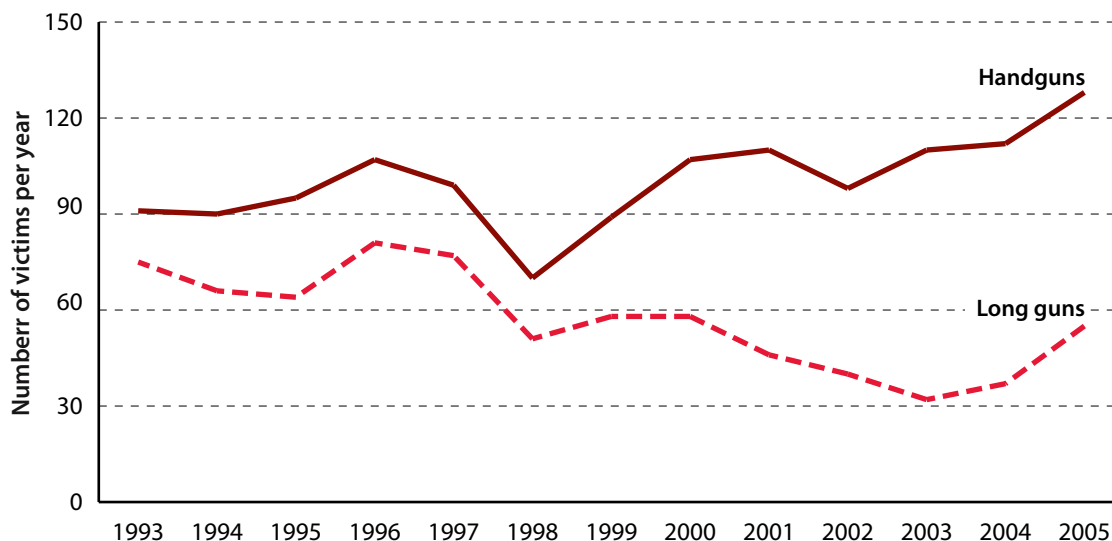
Figure 4: Changes in the homicide rate, England & Wales and Canada (1981–2005; base year = 1990)



Note: 1990 was chosen as a base year for convenience to show how homicide rates have diverged in the two jurisdictions. Homicide rates have dramatically increased in England and Wales since handguns were banned in the 1990s before declining to approximately the same level as during the mid-1990s.

Sources: Dauvergne and Li, 2006; Walker et al., 2006.

Figure 5: Trends in use of handguns and long guns in homicides, Canada (1993–2005)



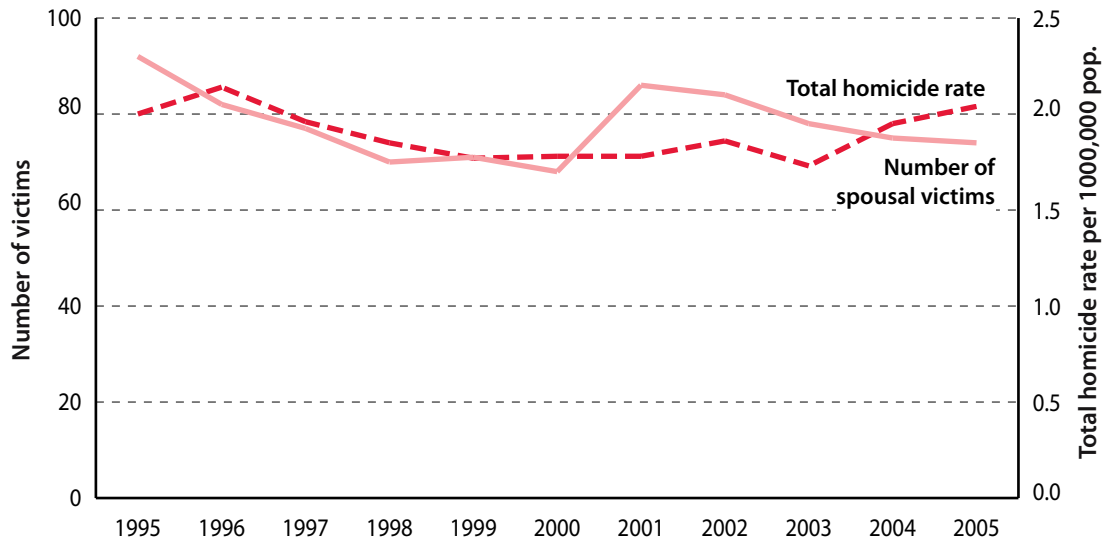
Source: Dauvergne and Li, 2006: 20.

An inspection of the Canadian homicide data shows that the percentage of homicides involving a firearm over the past decade has been basically stable [figure 5]. The percentage of homicides involving firearms was 31% in 1993, 27% in 1998, and 34% in 2005 [Dauvergne and Li, 2006]. The stability in the share of homicides involving firearms suggests that any change (whether an increase or a fall) is driven by more basic factors, such as demographics or economics, and not by a change in the availability of firearms [Bunge, 2005; Kates and Mauser, 2007]. Again, this does not lend support to the effectiveness of the firearms registry.

The frequency of family and spousal homicides has continued to decline slowly [figure 6]. This trend began at least in the early 1990s when detailed statistics of domestic homicides began being recorded and has continued through 1998 and up to 2005. As with total homicides, the proportion of spousal homicides involving firearms has remained relatively constant, at around 24% [Canadian Centre for Justice Statistics, 2004]. This stable proportion suggests that any reduction in domestic homicides is not being driven by restrictions on the availability of firearms but by demographic or economic forces. [70] The firearms registry may have restricted the availability of firearms, and it may have reduced the numbers of long guns (rifles and shotguns) used in homicides, but there has not been a corresponding decrease in the proportion of firearm misuse in homicide—either total or spousal. There appears to have been a slight decline in the number of

[70] Alternative explanations for this decline would be a reduced social tolerance for spousal abuse, and, more specifically, changes in zero-tolerance, mandatory charging policies by the police.

Figure 6: Trends in spousal homicides, Canada (1995–2005)



Source: Statistics Canada, 2006.

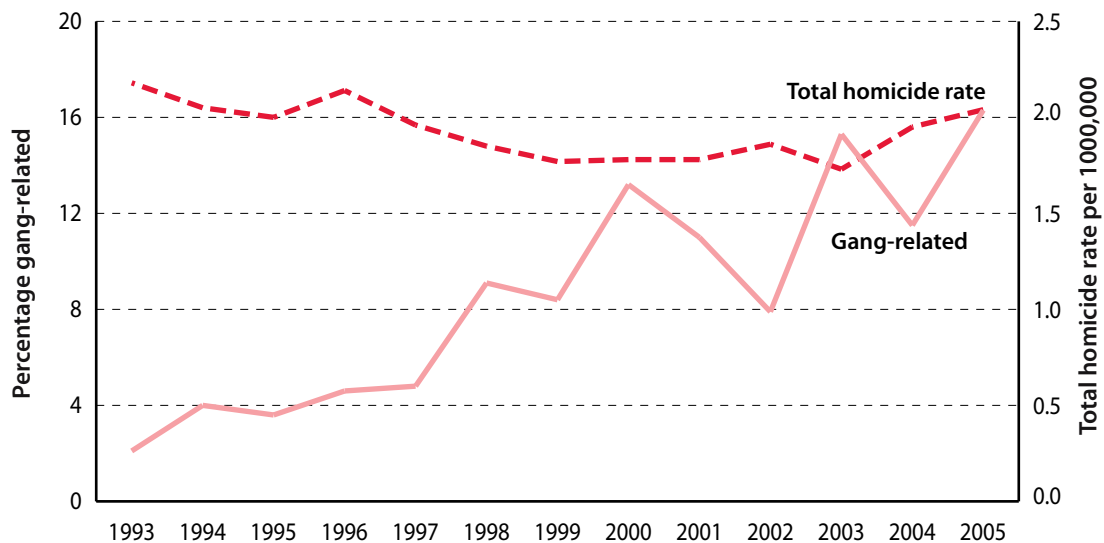
murder-suicides in the past few years: there were 34 murder-suicide incidents in 2004 and 35 in 2005, while the ten-year average is 38 incidents per year [Dauvergne, 2005; Dauvergne and Li, 2006]. There is no evidence that this decline is due to the firearm registry.

In contrast, the number of homicides that are related to gang activity has increased since the early 1990s, and since 1998 [figure 7]. Gang-related murders typically involve handguns. Although handguns have been registered since the 1930s, this has not reduced the level of their criminal misuse. The pessimistic predictions of some criminologists have been confirmed: the firearms registry did not act to reduce homicide rates and was particularly ineffective against gang activity. The increase in the use of firearms by criminal gangs is not consistent with the hypothesis that firearms crime should decrease with a declining availability of firearms.

Violent crime

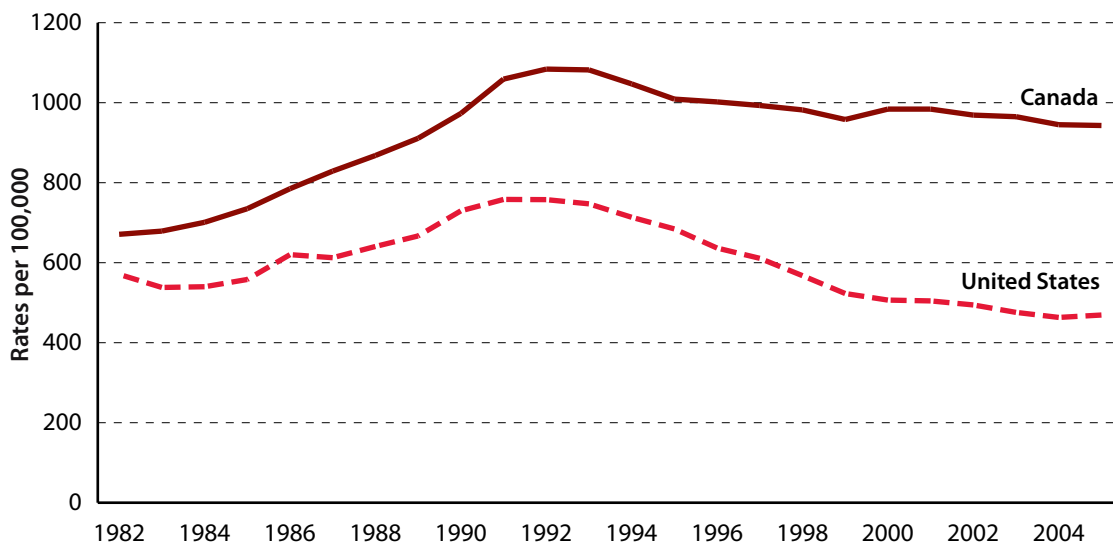
The rate of violent crime has decreased by 4% since the firearms registry was introduced in 1998 [figure 8] [Gannon, 2006]. However, it is difficult to give the gun registry credit for causing the decline because the decline in violent crime started well before firearms registration was introduced. As well, since handguns play a bigger role in criminal violence than do long guns, and the primary focus of the firearms registry is on long guns, the registry would not be expected to have a significant impact on criminal violence involving handguns, although it should be noted that almost all crimes—both violent and property crimes—peaked around 1992 and have fallen for the past 15 years. Such a pattern is also true in the United States. It is hard to imagine that the gun registry had a measurable impact in this environment.

Figure 7: Trends in gang-related homicides, Canada (1993–2005)



Sources: Dauvergne and Li, 2006; Statistics Canada, 2006: 23.

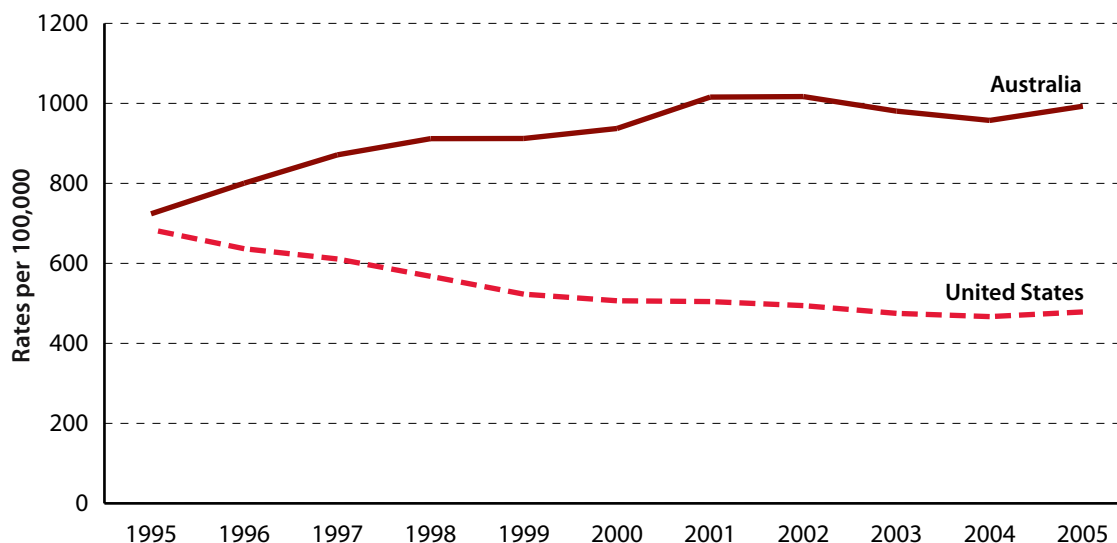
Figure 8: Trends in violent crime, Canada and the United States (1982–2005)



Note: This figure compares the official counts of violent crime. Unfortunately, violent crime is defined somewhat differently in Canada and the United States. The principal difference is sexual assault. In Canada, sexual assault is more broadly defined than in the United States so a larger number of crimes are included in the Canadian definition of violent crime than in the American. It is extremely difficult to make exact comparisons. Whenever efforts are made with more nearly comparable definitions, violent crime in the United States is found to be higher than in Canada [Gannon, 2001].

Sources: Federal Bureau of Investigation, 2006; Gannon, 2006: 16.

Figure 9: Trends in violent crime, Australia and the United States (1995–2005)



Note: In comparing violent crime across countries, direct comparisons are not meaningful since the list of crimes included in the catchall term “violent crime” varies from country to country. In Australia, violent crime includes homicide offences, except “driving causing death[s],” assault, sexual assault, and robbery. In the United States, violent crime includes murder, non-negligent manslaughter, forcible rape, aggravated assault, and robbery.

Sources: Australian Bureau of Statistics, 2006a; Federal Bureau of Investigation, 2006.

Figure 8 shows that, after a slight decline in the early 1990s, violent crime rates have remained essentially stable ever since, albeit declining slightly (4%) since 1998. There is no discernible impact from the firearms registry. These small changes are most likely due to demographic or economic causes. As prominent criminologists have predicted, the firearms registry has not had a significant impact on criminal violence [Gabor, 1995]. Since few of the firearms used by criminals are registered, or have ever been registered, firearm regulations have little effect on their access to firearms. [71] To the extent that firearm restrictions do limit their access to firearms, more serious criminals are willing to pay higher prices for firearms while less serious criminals substitute other weapons in order to commit violent crimes.

It is again instructive to compare trends in Canada with those in other countries. Over the past decade, violent crime has fallen faster in the United States than in Canada. Since the peak in 1992, violent crime in Canada has fallen by 13%, while it has plummeted by 38% in the United States. It is particularly important to note that violent crime continues to increase in several countries where very severe restrictions have been imposed on civilian firearms, at non-negligible cost, such as Great Britain and Australia [figures 9 and 10] [Mauser, 2003, 2004a]. Don Weatherburn, the

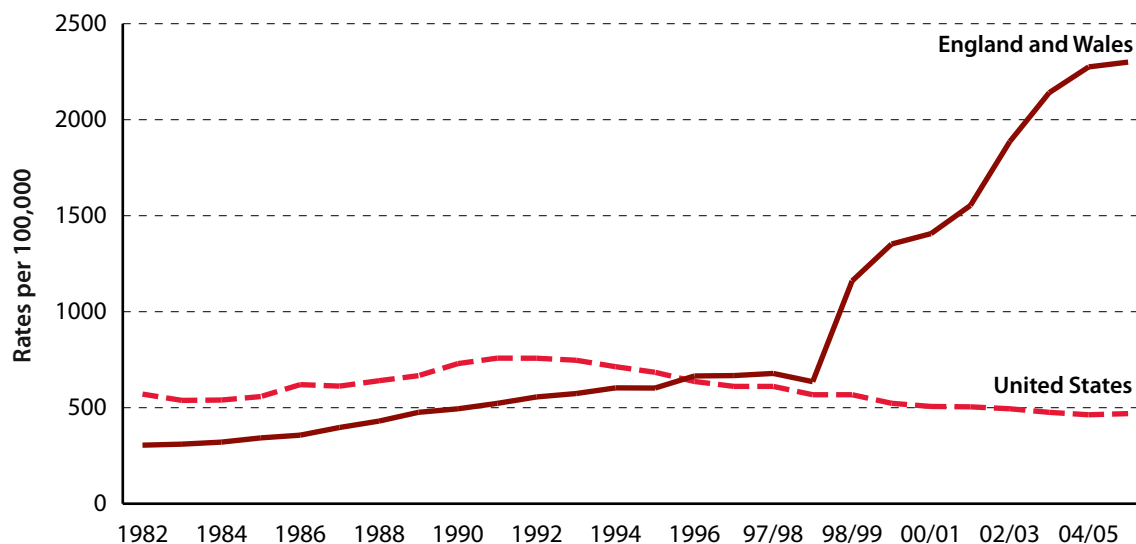
[71] Studies in Australia and United Kingdom, as well as Canada, show that only between 8% and 16% of firearms used in homicides have ever been registered or legally owned [Mauser, 2003].

head of the Bureau of Crime Statistics and Research in New South Wales, admitted that the firearms legislation had little impact upon armed robberies or abductions in his state [Wainright, 2005].

Contrary to Allan Rock's original hopes, the firearms registry did not have an impact on domestic violence. An analysis of the 2004 General Social Survey (GSS) shows that the percentage (7%) of Canadians 15 years of age and older who reported that they had experienced spousal violence over the previous 5 years has not changed since the previous GSS in 1999 [Milhorean, 2005].

My analysis suggests that the firearms registry may have contributed to the shrinking numbers of firearm owners and gun violence, including homicides involving firearms, but this did not cause a corresponding decrease in overall homicide rates or violent crime rates. This conclusion is consistent with other research [Bunge et al., 2005; Kleck, 1997: 377]. Powerful econometric studies could not find an impact of earlier

Figure 10: Trends in violent crime, England and Wales and the United States (1982–2005/06)



Note 1: In comparing violent crime across countries, direct comparisons are not meaningful because different crimes are included. In addition, similar sounding crimes are often defined quite differently.

Note 2: Much of the increase in violent crime in England and Wales may be explained by changes in the way violent crimes are counted.

Note 3: In 1988, the Home Office introduced a new set of rules, and additional changes were introduced in 2002. The malleability of definitions and counting rules for "violent crime" reinforces the argument that the homicide rate is the most preferred index for measuring criminal violence either in one country over time or among different countries.

Note 4: Rates for 1998/99 are presented two ways: (1) the number of crimes recorded in that financial year using the coverage and rules in use until March 31, 1998; (2) the number of crimes recorded in 1998/99 using the expanded offence coverage and revised counting rules that came into effect on 1 April 1998.

Sources: Federal Bureau of Investigation, 2006; Walker et al., 2006.

Table 6: Canadian Suicide Trends

	Suicide by firearms	Suicide by hanging	Total suicides
1991	1,110	1,034	3,593
1995	916	1,382	3,968
1998	818	1,434	3,698
2001	651	1,509	3,688
2002	633	1,570	3,648
2003	618	1,662	3,764
2004	568	1,590	3,613

Sources: 1991–2001—Hung, 2006; 2002–2004—Statistics Canada, 2007.

Canadian gun laws on either homicide [Mauser and Holmes, 1992] or violent crime [Mauser and Maki, 2003]. Murder appears to depend primarily upon motive, not the availability of a particular tool. Contrary to the purported findings of case-control studies, homicides are not more likely to occur in homes with firearms. No support was found in these econometric studies for the claim that Canadian gun laws have saved any lives by reducing homicide. Future analyses, when more data become available, may of course modify these conclusions.

Suicides

Has the firearms registry been able to reduce impulsive acts and thereby save lives by reducing the number of suicides and accidents with firearms? Has the registry been able to reduce the rate of suicide? Notwithstanding the slight overall decline—approximately 7%—in the total suicide rate since 1998, the overall impression is one of remarkable stability [figures 1 and 2; tables 6 and 7]. [72] My preliminary inspection suggests that the firearms registry did not make a significant impact on the total suicide rate. It is likely that the gradual decline in total suicide is due to demographic factors. On the other hand, the fall in the number of suicides involving firearms is probably due to the increased difficulty in obtaining firearms caused by the firearms registry. However, this decline does not appear to have translated into a reduction in total suicides.

Two observations may help here. First, while fewer people have used firearms to commit suicide since 1998, there has been a compensatory increase in suicide by hanging. A similar trend can be seen in Australia where the tightening up of firearms laws in 1997 has not caused a corresponding drop in overall suicide rates [Baker and McPhedran, 2006]. The second observation is that the annual rate of decline in total suicide is lower after firearms registration was introduced than before. Between 1995 and

[72] Note that these rates have not been age-adjusted.

Table 7: Australian Suicide Trends

	Suicide by firearms	Suicide by hanging	Total suicides
1991	510	587	2360
1994	420	639	2258
1995	389	699	2368
1996	384	792	2393
1997	330	987	2720
1998	235	1217	2683
1999	270	1028	2492
2000	223	989	2363
2001	262	1050	2454
2002	218	1045	2320
2003	194	996	2213
2004	169	998	2098

Source: Australian Bureau of Statistics, 2006: 10.

1997, the annual rate of decline was 1.3%; between 1998 and 2002, it was 0.2%. However, further research is required. It would be particularly important to study those populations who are the most at risk.

Accidents involving firearms

Has the registry had any impact on the number of accidents involving firearms? First, we need to put firearm accidents into perspective. Concern about accidental deaths and suicides involving guns plays an important role in the debate over firearm laws although accidents involving firearms are infrequent compared with other accidental deaths in Canada [table 8]. There were an average of 26 accidental firearm deaths in Canada per year over the most recent five-year period reported by Statistics Canada (2000–2004) compared with 176 deaths from medical complications, 1,853 deaths from falls, and 3,081 deaths from traffic accidents. Statistics Canada shows that children younger than 10 years of age are much less likely to suffer from firearms accidents than are older people: on average, there were no firearms deaths for children under the age of 10 recorded during this time period and just three deaths for those between 10 and 19 years of age. The bulk of the accidental firearm deaths (22) occurred to adults. Children are much more at risk from drowning or motor vehicles than they are from firearms; 83 children under 10 died in traffic accidents and 33 children drowned each year during this same time period. Even hospitals pose greater risks for children than do firearms: annually, two children under 10 die from medical complications, while none die from accidental firearm injuries.

Table 8: Annual average number of deaths involving firearms and other accidental means in Canada, by age (2000–2004)

	< 1 year	1–4 years	5–9 years	10–14 years	15–19 years	20 years +	Total
Population (000s)	332	1,402	1,989	2,104	2,126	23,408	31,361
Accidental gun deaths	0	0	0	1	2	22	26
Medical complications	1	1	0	1	2	179	184
Drowning/submersion	4	19	10	11	25	211	280
Burns	2	11	8	7	7	230	264
Falls	0	4	2	2	11	1,833	1,853
Pedal cycling	0	0	4	7	6	43	51
Motor vehicles	4	31	48	74	357	2,566	3,081

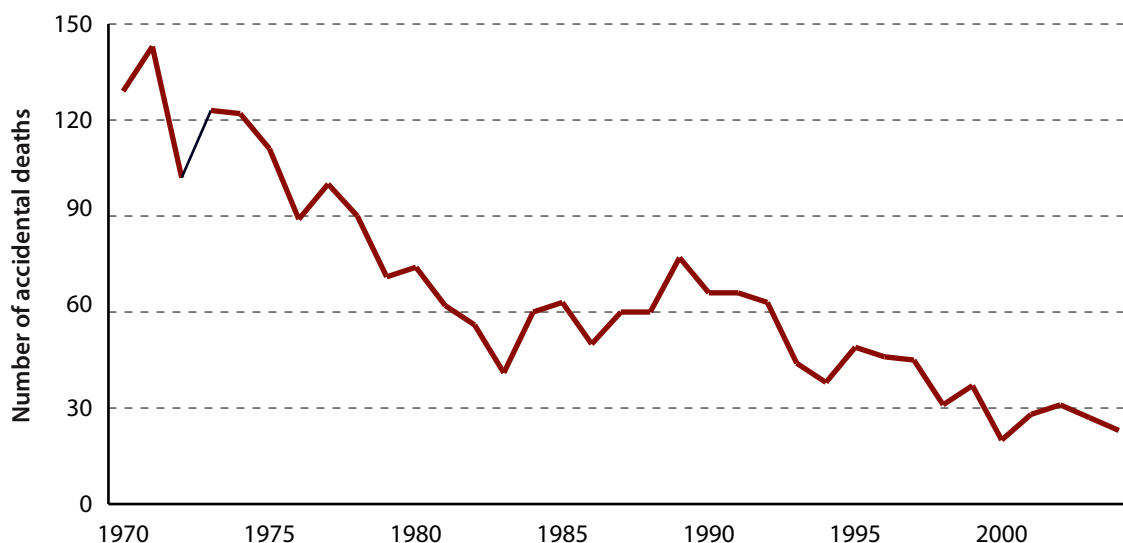
Accidents were categorized as following: accidental gun deaths, W32–W34; medical complications, Y40–Y88; drownings and submersion, W65–W74; burns, W85–99, X00–X19; falls, W00–W19; pedal cycling, V10–V19; motor vehicles, V01–V99.

Sources: Statistics Canada, External Causes of Morbidity and Mortality, Causes of Death, 2000, 2001, 2002, 2003, 2004, <<http://www.statcan.ca/english/freepub/84-208-XIE/2002/tables.htm>>; for population statistics: Annual Demographic Statistics, 2002, Cat 91-213-XIB.

National statistics show that since 1998 both the rate and frequency of accidental firearm deaths have declined since 1998. The frequency of such accidents is small so, as one would expect, there is considerable variability in these rates but an impressive decline is nevertheless easily visible. Indeed, firearm accidents have been declining since the early 1970s at least [figure 11]. And this is the absolute number of firearms accidents. It is possible that the same factors that caused the earlier decline continue to drive the decline since the introduction of the registry. Because this decline is of such long standing, it is difficult to credit the firearms registry with it, although the registry might possibly have been contributory in the past several years.

Scepticism about the effectiveness of the firearms registry still leaves us with the question of what can account for this decline. Three hypotheses have been put forward. First, there is a decreasing number of firearm owners; second, firearm owners are increasingly likely to be screened and to receive firearm safety training; and, third, emergency medical services have improved since the 1970s so that, while firearm injuries may not have decreased in frequency, fewer firearm deaths have resulted. Any attempt to evaluate these hypotheses faces nearly insurmountable difficulties. Each hypothesis involves concepts that are all but impossible to measure and, what is worse, the necessary data are rarely available. These are well-known problems that researchers have long complained about but they require restating. All I can do here is devise the best approximations I can for these concepts and report what I have done to measure them.

Figure 11: Accidental deaths involving firearms, Canada (1970–2004)



Source: Statistics Canada, 2007.

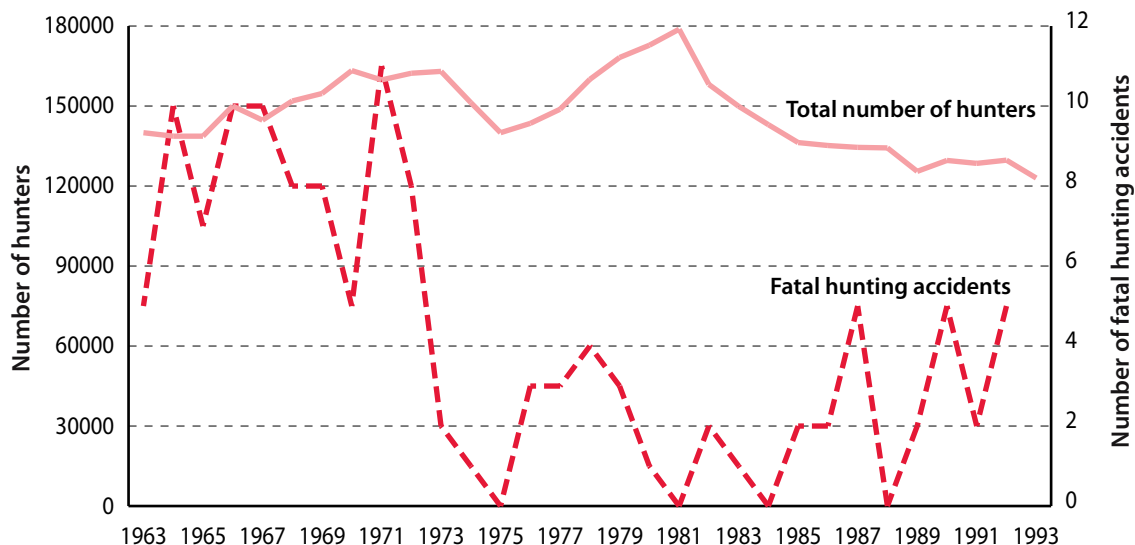
Even though high-quality annual data at the national level are available for deaths due to firearm accidents dating back decades, no data exist of similar high quality for determining the numbers of firearm owners. Survey data are spotty and thus inadequate, and no valid proxies have been found for tracking firearm ownership over time [Kleck, 2004]. Consequently, it is impossible to test these hypotheses at the national level. However, the necessary data do exist at the provincial level.

For most of the past 100 years, firearm safety training was viewed as a uniquely provincial responsibility. Thus, provincial data are available on the number of hunters, and the number of people who passed hunter or firearms safety classes. Sufficient data from British Columbia are available to allow examination of these hypotheses about the possible links between hunter numbers, quality of the emergency services, hunter training, and the frequency of accidental deaths. Safety courses for hunters have been the responsibility of the British Columbia Wildlife Branch since they became mandatory in 1974. [73] The province kept track of numbers of hunting licences, as this was a source of income to the government, and it also recorded the number of hunting accidents and accidental deaths that occurred during hunting expeditions. [74] These data provide an opportunity to test these hypotheses.

[73] Voluntary safety courses for hunters had been offered by the British Columbian government from 1969. Prior to that time, many fishing and hunting clubs had organized voluntary safety classes.

[74] Data on non-fatal hunting accidents in British Columbia have not been collected or published by the Wildlife Branch since the early 1990s when the British Columbian government turned over hunter training to a non-governmental body.

Figure 12: Fatal hunting accidents and number of hunters, British Columbia (1963–1993)



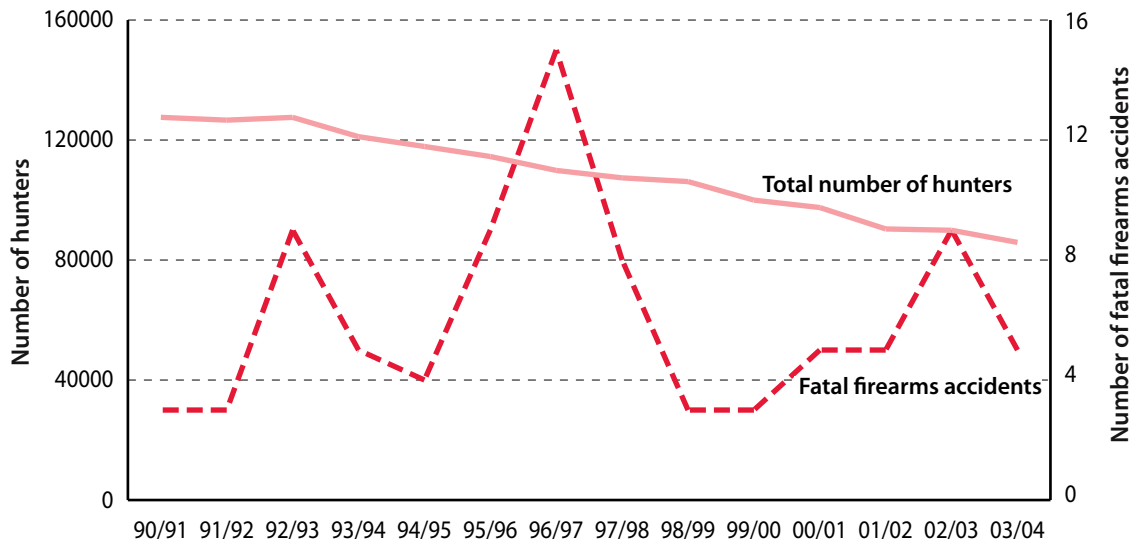
Source: Swannell, 1994.

The numbers of accidental hunting deaths in British Columbia has no correlation with the numbers of hunting licences over this time period [figure 12]. [75] If we focus on accidental firearm deaths since 1990 in British Columbia, again there is no decline in firearm deaths corresponding to the drop in the number of hunters [figure 13]. Neither of these findings is consistent with the hypothesis that accidents are declining because of the declining number of firearm owners or hunters. To be sure, these inferences should be considered tentative, as further research is required.

Another hypothesis is that improvements in medical emergency services accounted for the observed decline in accidental firearm deaths. It would be reasonable to suppose that a greater number of lives will be saved over this time period as a result of improvements in either emergency transportation services (e.g., the increased availability of helicopters or small planes to transport seriously injured patients to a larger metropolitan hospital) or because there have been improvements in the medical technology available at smaller regional medical facilities. To test this hypothesis, we need to find a ratio between hunting or firearm accidents and deaths stemming from those accidents. There are no national data that I could find that bear directly on this question, so again we must look to provincial data. To stay with our earlier example, in British Columbia data have been collected by the government on both the frequency of hunting accidents and hunting deaths. These data are quite limited and unfortunately the government stopped collecting them in the early 1990s when

[75] The correlation is virtually zero ($r = .01$, ns.).

Figure 13: Fatal firearms accidents and number of hunters, British Columbia (1990/91–2003/04)



Sources: British Columbia, Ministry of Environment, Fish and Wildlife Branch, 2006; Statistics Canada, 2007.

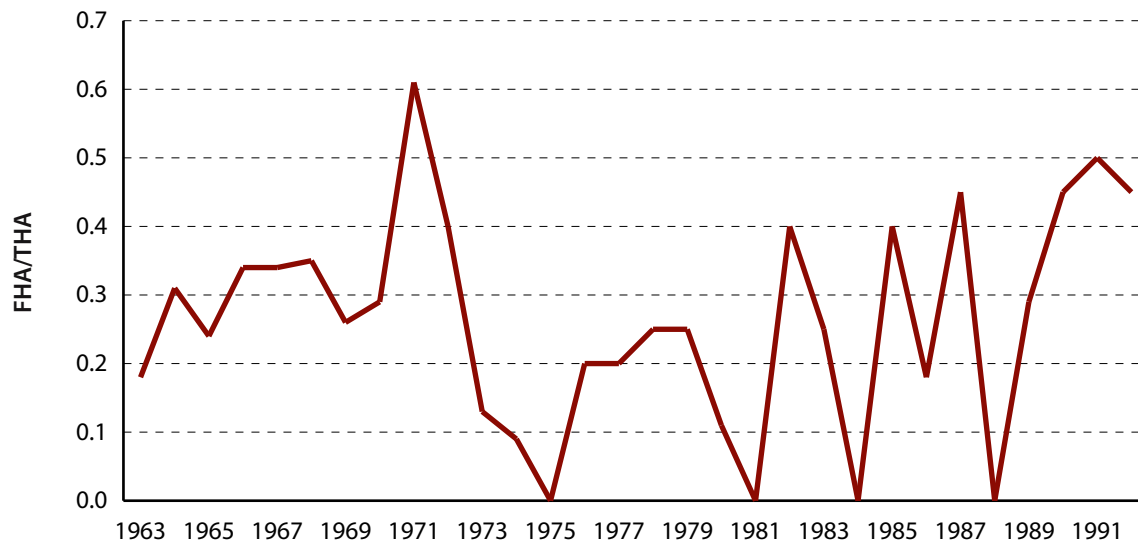
the province privatized firearms safety training. Nevertheless, they are indicative.[76] During the period when emergency services were presumably improving, there was no consequent increase in the percentage of lives saved from hunting accidents. As we can see in figure 14, there is no obvious change in the share of hunting accidents that result in fatalities over this time period. This lack of change suggests that emergency medical services have not improved in British Columbia from the 1960s to the 1990s. The explanation for this lack of improvement may lie in the poor economic conditions in the province during the 1990s. This prompted the government to make drastic cutbacks in services, so it would be unlikely that there were any improvements in emergency services. This suggests that organizational problems have increased faster than did improvements in emergency transportation services. [77]

In summary then, the drop in firearm accidents and hunting accidents does not appear to be due to either falling hunter numbers or due to improvements in emergency medical services. This leaves us with the question of explaining the decline in accidental firearm deaths. There appear to be two periods where firearm accidents fell: the number of fatal firearm accidents plummeted at the national level around the time provincial firearm safety courses became mandatory—the 1970s and early 1980s—and

[76] Hunting accidents and firearms accidents reflect similar, but not identical, phenomena: non-hunters have firearm accidents and hunters die from other types of accidents. For example, in Quebec the single largest cause of hunting deaths is drowning.

[77] Unfortunately, this is a common observation by emergency physicians.

Figure 14: Ratio of fatal hunting accidents (FHA) to total hunting accidents (THA), British Columbia (1963–1992)



Source: Swanell, 1994.

then they dropped again during the 1990s when changes to federal firearms legislation were introduced. These declines coincide with the two periods when provincial or federal governments were introducing changes to improve legislation governing firearm safety. This is consistent with the hypothesis that these drops are due to the increased requirements of firearm safety training, both provincially and federally. Hence, I tentatively conclude that this decline is due to improvements in screening (of either hunters and firearm owners or both) and firearm safety training although, because of the limited data available, alternative hypotheses cannot be ruled out.

Conclusion

This paper is a preliminary effort to evaluate the effects of the 1998 firearms registry on public safety. I have examined only broad trends in the overall national rates, although I have also collected a few, more specific, trend analyses. Clearly, further work needs to be done to confirm these preliminary findings. I focused on the firearms registry because it was presented in 1995 as the key to the government's plan to combat criminal violence and to save lives through reducing impulsive suicides and firearm accidents. For the federal government, the key to improving public safety lay in controlling the availability of firearms, and Alan Rock, then the Justice Minister and instigator of the long-gun registry, believed firearms registration was the way to achieve this. Registration would control the availability of firearms, which would reduce misuse of firearms, which in turn would reduce criminal violence, not just gun violence, and total suicides, as well as domestic abuse.

At the time this legislation was introduced into the Canadian Parliament, expert opinion was divided on the question of the potential of firearms registration. One prominent Canadian criminologist thought the legislation was more symbolic than substantial [Gabor, 1995]. While he supported firearms registration because of its symbolic value, he doubted it would have any sizable impact. On the other hand, Professor Gary Kleck thought the basic elements of this legislation—screening prospective firearm owners and licensing owners—were among the most promising ways to reduce homicide and suicide [Kleck, 1991, 1997].

The results show that, since the firearms registry was implemented, the number of firearms owners has significantly declined, as well as the number of firearm crimes and the number of firearm-related deaths. While the reduction in the number of firearm owners appears to have contributed to the drop in firearm-related violence and suicide, this does not appear to have caused a significant reduction (or increase) in the overall homicide or suicide rates. My analysis did not find evidence that the firearms registry has been an important factor in the small increases or decreases in homicide or suicide rates.

On the basis of my research, public safety cannot be said to have improved because overall criminal violence and suicide rates remain stubbornly stable. The violent crime rate has declined by 4%, but the homicide rate has actually increased by more than 9% since the registry was implemented. Perhaps the most striking change is that gang-related homicides and homicides involving handguns have increased substantially. Overall suicide rates have declined by 7% since the registry was implemented. Despite a drop in suicides involving firearms, hangings increased, nearly cancelling out the drop in firearm suicides. No persuasive link was found between the firearms registry and these small changes, although further research should be conducted. The

provincial hunter-safety programs, in comparison, have more modest goals, to reduce hunting and firearm accidents, but limited evidence suggests that these programs have been effective.

As New Zealand discovered decades ago, a firearms registry is an expensive proposition that may not be worth the effort. It is exceptionally difficult to maintain such a large detailed database, which of course also ensures that it is necessarily expensive. Most importantly, benefits are difficult and perhaps impossible to demonstrate.

My conclusions, although they may be somewhat pessimistic, are consistent with other research on the general ineffectiveness of most gun laws [Kleck, 1997; Wellford, 2004; Hahn, 2003]. As noted earlier, a large body of research has been unable to find a strong empirical link between firearms availability and either criminal violence or suicide. These conclusions imply that more and better research is required before governments embark on massive expenditures on gun control programs [Wellford, 2004].

Gun laws that are generally believed to be beneficial may not be found to be effective. For example, it is widely believed that safe-storage laws (i.e., laws that require guns to be stored unloaded and with a trigger lock) help to reduce firearms accidents. Only one methodologically solid study of safe-storage laws could be found in the literature [Lott, 2003: 137–89]. In this study, Lott compared accidental death rates in 16 American states that have safe-storage laws with rates in states without such laws. Despite analyzing the results in various ways, he could not find any convincing evidence that these laws had any statistically significant impact on accidental gun deaths. This finding may be counter-intuitive, and it is certainly discouraging for proponents of this type of gun law.

The Canadian government's approach to public safety relied upon an analysis of firearms and violence that greatly exaggerated the dangers of firearm ownership. In this paper, I have set out to draw attention to the way that this misrepresentation stemmed from public-health researchers who ignored basic scientific principles in favour of advocacy. These activists drew conclusions that were not supported by their research studies and they compounded their errors by recommending legislative solutions that fell outside the boundaries of their research. Such studies are not properly scientific but sagecraft—the use of the scientific trappings of research to “prove” claims rather than testing hypotheses. The public-health approach to public safety often results in a moralistic campaign and may be contrasted with more consultative approaches, such as community-oriented policing or the United Kingdom's crime-reduction approach. As shown by the campaign against alcohol early in the twentieth century in the United States, high moral aims do not guarantee success. Despite costing an estimated CDN\$2 billion, the firearms registry remains notably incomplete and has an error rate that remains embarrassingly high. This legislation was flawed from the beginning in that it was a moralistic and overly simplistic approach to a complex social problem.

Almost a decade after the firearms registry was introduced, it has failed to win the trust of the public or the police. The legislation remains controversial among government officials, the police, the general public, and of course firearms owners themselves. Perhaps the public fails to understand the logic that banning a particular type of firearm will protect public safety. The 1995 Canadian legislation prohibited small-calibre handguns as a crime-prevention measure. Interestingly, Australia has done exactly the opposite—banning large-calibre handguns—for allegedly the same reason. How can such divergent bans be justified by the same argument? No strong empirical justification can be found for banning either type of handgun. This has been called the “Goldilocks approach” to firearm legislation: some guns are too big, and some guns are too small, and none are “just right.” This arbitrary approach to firearms legislation violates common sense.

The firearms registry does appear to have one clearly demonstrable effect: a large number of formerly law-abiding firearm owners have declined to cooperate with the new licensing or registration. It is difficult to assess accurately the percentage of firearms owners who are participating, but between 900,000 and 2.5 million hunters and target shooters have failed to obtain a licence or register a firearm. Despite its limitations, or possibly because of them, the legislation appears to have contributed in an unknown degree to the decline in the number of people who own firearms and who hunt. The decline in the number of firearm owners has exacerbated the problems caused by the declining numbers of hunters. This decline in hunters has reduced provincial revenues, increased human-wildlife conflict, and has harmed conservation efforts. The collateral damage from the gun legislation is rarely considered, yet, paradoxically, such consequences may be more readily determined than are changes in criminal violence or suicide.

One of the conclusions that I draw from this research is that policy makers should be more cautious in applying moralistic or simplistic solutions to complex problems. Solutions are elusive. Research to date has not been able to demonstrate convincingly that sweeping gun laws of general application are effective at reducing general homicide or suicide rates. These substantial uncertainties remain largely unacknowledged in the public-health community. The low incidence rate of firearms misuse means that there are large numbers of false positives, with substantial attendant financial costs, as well as implications for democratic society. We lose much of our inherited democratic freedom if we treat mature citizens as if they were patients rather than responsible adults.

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