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**FIREARMS, ACCIDENTAL DEATHS,
SUICIDES AND VIOLENT CRIME**

**An Updated Review of the Literature
with Special Reference
to the Canadian Situation**

Yvon Dandurand

**International Centre for Criminal Law Reform
and Criminal Justice Policy, Vancouver, Canada**

September 1998

WD1998-4e

EDITED

**Canadian Firearms Centre /
Centre canadien des armes à feu**

**Policy Sector /
Secteur des politiques**

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Department of Justice Canada. The views expressed herein are
solely those of the author and do not necessarily
represent the views of the Department of Justice Canada.*

*For more information on firearms research and statistics please visit our World Wide Web site at -
http://www.cfc-ccaf.gc.ca/Research/firea_research.htm.*

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EXECUTIVE SUMMARY

Firearm Ownership in Canada

In Canada, there are currently at least seven million firearms, including as many as 1.2 million handguns, for an overall rate of about 241 per 100,000 population. The national household ownership rate is assessed to be approximately 26 percent, based on survey research. The precise number of firearms in Canada is difficult to determine and regular data collection is needed to assess patterns in ownership. Over time, the Universal Firearm Registration Regime may provide a better basis for measuring the stock of legally owned firearms.

A recent comparison of western countries found that 48 percent of U.S. households owned at least one firearm. Canada's rate was in the mid-range of countries, at 22 percent.

In Canada, hunting is the main reason for owning a firearm; self-protection is very rarely cited as the main reason. Legal firearm owners tend to be male and to reside in smaller communities. Further research could expand current knowledge on the sources of legally owned firearms and the number, types and origins of firearms available in illegal markets.

Overview of Firearm Deaths and Injuries

In 1995, there were 1,125 cases of fatal firearm injuries, representing a rate of 3.8 per 100,000 population. Eighty percent of these were classified as suicides, 12.4 percent as homicides, and 4.3 percent as accidents. The rate of fatal firearm injuries has been decreasing steadily since 1978, and, in 1995, was at its lowest in at least 25 years. Internationally, Canada is in the mid-range of countries with respect to total firearm deaths.

There is no reliable national data available on non-fatal injuries involving firearms. Future research and data collection might aim to further our understanding of the role firearms play in injuries. An adequate incident-monitoring scheme is needed to support research on firearm injuries.

Firearm Suicide

Firearm suicides account for 80 percent of all firearm deaths in Canada, but the proportion of suicides involving firearms has declined over the last two decades. Less than a quarter of the 4,000 suicides in 1995 involved a firearm, which was usually a long gun. While suicides are more frequent in urban areas, the percentage involving a firearm is higher in rural areas.

Current regulations and restrictions on firearms may have prevented some firearm suicides in Canada, but the extent to which they did so is unclear. The Canadian experience seems to prove that regulation can lower the number of firearm suicides without reducing the level of firearm ownership.

While firearm suicides seem to be preventable, additional research is needed to determine what kind of incidents can be prevented and how this can be done. Successful suicide attempts, especially among adolescents, are often preceded by unsuccessful attempts. Research might usefully focus on incidents of repeated suicide attempts to determine situational determinants in these cases. Additional studies could examine the issue of method selection and method substitution in suicides. This would include an examination of the availability of various methods and the evolution of individuals' choice of method.

Firearms and Violent Crime

Since 1975, the homicide and firearm homicide rates have declined in Canada, with no simple explanation for the observed decrease. Different strategies are required to prevent homicides in the home as opposed to homicides in the streets. The growing literature on the subject makes it clear that spousal homicide is rarely a spontaneous single event, and is more generally the end of a cycle of violence that takes place in the home. A better understanding of how violence is seen to escalate may lead to more effective prevention strategies.

In 1996, of the 31,242 robberies reported in Canada, 21.3 percent involved a firearm. While the frequency of robberies has increased over the last 20 years, the percentage involving a firearm has decreased. Most robberies are committed in large urban areas. Research on offenders' decision-making processes, in relation to various kinds of robbery and assault incidents, is still at a very early stage in Canada.

Canada's experience with youth violence, especially firearm violence, is significantly different from that of the United States. Research indicates that differential access to firearms, especially handguns, by youth in the two countries appears to be the main factor explaining the difference in the levels of youth violence. More comprehensive comparative research may yield important findings.

Firearm Accidents

In 1995, 49 people died of unintentional firearm injuries, which represents about 4 percent of the 1,125 firearm deaths reported that year. Fatal injuries have been declining steadily in Canada and most other industrialized countries over the last few decades. Little is known about the characteristics and circumstances of firearm accidents, and further research is needed, particularly on the case-fatality rate for accidental firearm injuries.

Some estimates assess the frequency of non-fatal accidents at between 10 and 13 times the number of fatal accidents, with considerable variations across the country. Long guns are more often involved than handguns in accidental injuries. Victims are frequently children and adolescents, with most cases involving children at play. Further research on the circumstances surrounding fatal incidents is needed.

Preventive Effects of Firearm Ownership and Use

There are fundamental differences between Canada and the United States in relation to the ownership of a firearm for self-defence or crime prevention. Since most research on the subject takes place in the United States, the findings cannot be assumed to hold true for Canada. Research findings on the potential deterrent effect of firearm ownership on crime are controversial and inconclusive. Yet, research to date has consistently indicated that victims who resist with a gun or other weapon are less likely than other victims to lose their property or be injured. Existing research fails to support any firm conclusions about the extent to which successful defensive uses of firearms and the deterrent effects of firearm ownership for self-protection offset the adverse effects of ownership for this purpose.

The Impact of Firearm Regulation

While Canada has seen three rounds of legislative amendments, in 1977, 1991 and 1995, evaluative research has focussed almost exclusively on the 1977 amendments. The findings remain somewhat inconclusive and controversial, partly because the studies have attempted to isolate the impact of the 1977 legislation, and because of the theoretical and methodological challenges, and issues of data quality and availability, inherent in this type of evaluative research. Future evaluations may benefit from an examination of the effectiveness of the legislation's implementation and the various components of the legislation, to assess the impact on fatal and non-fatal incidents across the country.

Illegal Firearm Transactions

Measures to control and regulate the legal firearms market must be accompanied by equally vigorous measures to control or disrupt the illicit market. In Canada, research is lacking regarding the types of firearms used in crime, their origins, and the methods and means through which they were acquired. Systematic information on the nature and extent of illegal firearm transactions, including smuggling, trafficking, and illegal manufacturing, is practically nonexistent. There are some indications that firearm smuggling into Canada may be increasing. Better information regarding the nature and extent of this problem is needed to support efforts to curtail it.

It is imperative to obtain more systematic information about how criminals, especially young criminals, acquire firearms. U.S. studies on the acquisition and use of firearms by criminals and young offenders can be replicated in Canada. New studies can focus on the prevalence of firearm thefts, the circumstances under which they occur, the types of firearms involved, how they reach the illicit market, and on the role of stolen weapons in criminal activities.

1.0 INTRODUCTION

1.1 Objectives of this Review

The Department of Justice Canada contracted with the author to conduct a critical review of literature on major issues related to civilian-owned firearms. The review examined the role firearms play in injuries, unintentional deaths, suicides and violent crimes; it looked at the extent to which firearm regulation may help reduce such incidents; and it addressed other means intended to promote the responsible use of firearms. This report presents the main findings of that review, particularly those that pertain to the Canadian situation, in a concise, non-technical and non-partisan manner.

In 1994, the Department of Justice Canada published a similar literature review, conducted by Thomas Gabor, under the title *The Impact of the Availability of Firearms on Violent Crime, Suicide, and Accidental Death: A Review of the Literature with Special Reference to the Canadian Situation* (Gabor, 1994). That review covered literature available to 1993. Further to this earlier work, this report focuses on studies and articles published from 1990 to 1997. It summarizes research findings, identifies areas in which these may not be consistent, and draws attention to various gaps in existing information and in the scientific understanding of certain issues. It also invites readers to draw some conclusions wherever the research evidence permits.

1.2 Method

The author attempted to systematically identify and collect all documents pertinent to this review. The Department of Justice Canada conducted a literature search of bibliographic and abstract databases, providing 380 articles and reports. The author conducted a further bibliographical search to uncover about 200 more titles. To build on research material on countries other than Canada and the United States, the author included documents from members of the United Nations Crime Prevention and Criminal Justice Programme Network of Institutes, the United Nations Ad Hoc Committee of Experts on Firearm Regulation, and the Research and Statistics Directorate of the Home Office, United Kingdom. Studies published in English during the last few years were nearly all conducted in one of four countries: Canada, the United States, the United Kingdom and Australia.

1.3 The Influence of Ideology on Firearms Research

The author of the previous literature review suggested that the literature on the social impact of firearms has tended to be driven by ideological considerations and vested interests (Gabor, 1994: 1). He also observed considerable differences in the nature and sophistication of the research methods employed.

A considerable portion of the research that has been reviewed in this report is best characterized as “advocacy research.” The research was conducted and often also funded for the conscious or unconscious purpose of advancing a particular point of view or advocating a particular social response to perceived problems. However, the fact that advocacy research tends to be conducted by people who really care about a problem, or conversely by people who are deeply concerned about the impact of a proposed policy to address that problem, does not necessarily imply that the conclusions of such research are less valid.

Indeed, as observed by Gilbert (1997: 101), the development of social policy in industrialized society has benefited from a long and honourable tradition of advocacy research. But advocacy research has a tendency to “inflate problems and redefine them in line with the advocates’ ideological preferences” (*Idem*, p. 142; see also: Kates *et al.*, 1995 and 1995a). The motivation of scientists who overstate or understate the gravity of a particular problem is not always conscious, and “the motives in question are far more likely to be humanitarian than venal” (Murray and Schwartz, 1997: 39; see also response by Pinner, 1997).

Clearly, one must be cautious in interpreting and using the findings of advocacy research, despite at least two difficulties: the first is that advocacy research rarely identifies itself as such, making it difficult to distinguish it from other research. The second problem is that it is often difficult to criticize advocacy research, a prerequisite to making progress in a particular field of scientific inquiry, without creating the impression of caring less about an issue than those who would accept the findings of such research without critique.

This may seem to cast a shadow on the ability of science to provide clear answers and a solid, non-controversial frame of reference for making policy on firearms. The problem is not unique to this particular field of research; it relates to the broader issue of how scientific research contributes legitimately to social policy.

There are still gaps in our knowledge of the social impact of firearms and of the usefulness of various strategies to control, prevent or mitigate the negative impact of firearms. Readers may, at times, feel disappointed by the tentativeness and the controversy surrounding current scientific conclusions concerning firearms. Nevertheless, collective choices will still have to be made and, hopefully, they will continue to be informed as much by worthwhile scientific information.

1.4 Recent Progress and Remaining Challenges

In addition to the above, there are three other difficulties that have yet to be resolved by research on firearms. First, much of the current research lacks a strong conceptual or theoretical framework (Stenning, 1994: 1996b). Unnithan and his colleagues observed that “there is scant evidence of much cumulative progress in our understanding of the sources of lethal violence or the factors that influence its direction” (1994: 79). In

their view, this “theoretical stagnation” and the unifying perspectives lacking in some research reflect the notion that researchers studying firearms issues come from a range of disciplines. Secondly, most studies rely on aggregated data collected for other purposes, with substantial gaps (Kellermann, 1993: 146) and limited usefulness (Department of Justice Canada, 1996: 103; Murbach, 1996). Finally, it can be expensive to conduct research (Kellermann, 1993:142-143; Stenning, 1996: 22) and necessary studies may tend to be postponed indefinitely. These difficulties will become evident to the reader through the following chapters.

In spite of these difficulties, the present author notes significant progress with research on firearms and their social impact during the period covered by the review. Several Canadian studies were designed to assess the feasibility and advisability of using certain data or methods to conduct more comprehensive studies. These studies have paved the way for research that is still required and, possibly, for further evaluation of the Canadian legislation.

Recent research has paid more attention to specific issues, such as the role of firearms in violence and suicide involving children and youth. Researchers are looking at the role of firearms in domestic violence. They are examining how firearms can cause injuries and what the resulting costs are. More studies were conducted on firearm theft, other sources of illegal firearms, and trafficking in firearms; issues that have previously received little attention.

Researchers are also doing more comparative research on firearms and their regulation (Block, 1993; Department of Justice Canada, 1995; Killias, 1993, 1993a, 1993b; Kopel, 1993; Nay, 1994; Stenning, 1996; United Nations, 1996; 1997; 1997a; 1997b; 1998). There are limitations on this type of research, however, because there still is not enough comparable data. In the past, critics have accused researchers of failing to consider work done in other countries (Gabor, 1994: 75). However, it is difficult to make valid international comparisons, and researchers should be cautious about assuming that research findings from other countries, such as the United States, necessarily hold true in the Canadian context.

1.5 The Organization of this Report

The material in this report is organized according to main themes and issues. A summary of the findings is presented at the end of each chapter.

Chapter 2 discusses how prevalent firearms are in Canada. Statistical information describes the characteristics of the gun owner, the types of firearms that Canadians are likely to own and the reasons they own them.

Chapters 3 through 6 examine the role of firearms in death and injuries. Chapter 3 presents an overview of the topic and looks at recent research on the costs of firearm

injuries; this chapter also introduces issues that are further developed in subsequent chapters. Chapter 4 focuses on firearm suicides. Chapter 5 looks at violent crime involving firearms, and Chapter 6 examines research on firearms accidents.

Chapter 7 outlines existing research on the preventive effects of civilians owning firearms and, in particular, the use of firearms for self-protection. Chapter 8 is devoted to research literature on the effectiveness of firearm legislation and other measures to ensure the responsible use of firearms.

Chapter 9 reviews evidence of illegal sources of firearms such as theft, trafficking and smuggling, illegal importation, exportation and manufacturing.

Chapter 10 summarizes the research findings and suggests some directions for future research.

2.0 FIREARM OWNERSHIP IN CANADA

2.1 The Problem of Measurement

The author of the previous review noted that “the precise number of usable firearms is hard to determine from either official sources or through surveys” (Gabor, 1994: 9) and that any measure of the volume of firearms in Canada was a “crude estimate” (*Idem*:10). He indicated that this ambiguity applied both to the overall volume of firearms in the country, including the stock of any given type of firearm, as well as the per capita number of firearms or “gun density.” This conclusion remains valid.

Survey research, usually measuring the number of firearms in a household, is still the best way to estimate the prevalence of firearms in a country or region. However, some suggest that this may not be adequate (Stenning, 1994: 16; 1996: 4-5), arguing that such data neglect to account for such things as the presence of a “non-household gun stock” (Stenning 1996:4) and stolen and otherwise illegally owned firearms that are not likely to be reported in a survey (*Ibidem*). The fact that survey respondents may systematically understate the number of firearms they own may also be an issue.

The estimates produced by survey research are usually insufficient to monitor fluctuations in the levels of ownership, in regional variations or in other patterns of firearm ownership and use. The absence of more precise measurements may limit research on the social impact of civilian-owned firearms. It may also limit evaluations of the impact that various regulatory measures have had in reducing harms from firearm misuse. Over time, the universal firearm registration regime to be implemented in Canada may provide a better basis for measuring the stock of legally owned firearms.

2.2 The Prevalence of Firearm Ownership in Canada

In the previous literature review, the author indicated that about 25 percent of Canadian households own some sort of firearm (Gabor, 1994: 9). A recent Department of Justice Canada report indicated that, based on the combined findings of several studies, 26 percent may be the most reliable figure (See Block, 1998:3). In total, it is estimated that about 3 million civilians in Canada own firearms.

The percentage of households owning at least one firearm varies considerably across Canada (Angus Reid, 1991; Block, 1998). The results of a 1991 Angus Reid survey indicate that 67 percent of households in the Yukon and the Northwest Territories owned firearms, compared with 15 percent of Ontario households (Angus Reid, 1991: 7). More recently, the 1996 International Crime (Victim) Survey (ICVS), which did not include the two territories, found that 35.8 percent of households in the Atlantic provinces owned firearms, compared to the 32 percent reported by Angus Reid. Households in Ontario still had the lowest percentage of firearms at 14.2 percent (Block, 1998:7).

Overall, surveys suggest that more people in rural areas own firearms than in urban locations. For example, 37.3 percent of respondents from small towns own a firearm compared to 2.8 percent in communities with populations over one million. Residents of small towns are also more likely to own long guns than people living in large cities: 33.6 percent compared to 1.2 percent respectively (Block, 1998: 24).

The 1991 Angus Reid survey asked respondents to indicate how many firearms household members owned. The data suggested that 60 percent of Canadian households with firearms have one or two; 13 percent own three; 14 percent own five; and 10 percent own seven or more firearms. On average, firearm owners possess approximately 2.7 firearms (Angus Reid, 1991:6). Few other surveys have included such a question.

Available estimates for Canada indicate that private individuals collectively own approximately 7 million firearms (Gabor, 1997:3) and, of these, about 1.2 million are restricted firearms (RCMP, 1997). Surveys consistently indicate that Canadians typically own more long guns than other types of firearms. The 1996 ICVS found that 95 percent of households that owned firearms possessed at least one long gun, while fewer than 12 percent claimed to own a handgun (Block, 1998: 3-4). Again, the author noted some regional variations with respect to the type of firearm respondents claimed to own. In all regions except Quebec, more households were likely to possess a rifle than a shotgun (Block, 1998: 7). At 16 percent, more respondents in British Columbia reported owning handguns than elsewhere in Canada; persons in Quebec reported the least at six percent (Block, 1998: 9).

Estimates of the number of firearms circulating in Canada refer to those that are owned legally; they do not account for stolen firearms, or those that are imported and purchased illegally.

2.3 International Comparisons of Firearm Ownership

Two international surveys, the United Nations International Study on Firearm Regulation (UNISFR) (United Nations, 1998) and the ICVS (Alvazzi del Frate, 1997; Block, 1998), showed that the number of people who own firearms varies considerably among countries. According to the UNISFR data, both the estimated number of firearm owners and the percentage of households owning at least one firearm ranged considerably among the countries who reported such estimates. Canada's estimated 7.1 million firearms in civilian hands, representing a rate of 241.5 per 100,000 population, place it in the same range as other countries, such as Australia and New Zealand, where hunting is still a significant activity (United Nations, 1998, 52-53). Canada reported that approximately 22 percent of all households owned at least one firearm. That percentage was reported to be as high as 50 percent in Finland, and as low as less than one percent in such other countries as Japan, Malaysia, and Tunisia (*Ibidem*).

Based on the ICVS data, it seems that owning firearms is more common in certain regions of the world than in others. The highest rates of ownership were seen in the New World and Western Europe, followed by Latin America, countries in transition, Africa, and Asia (Alvazzi del Frate, 1997: 13)¹. In countries in transition and developing countries, handguns were more widespread than long guns.

Block's analysis of the results of the ICVS data for Canada and eight other Western countries showed that 48 percent of U.S. households owned at least one firearm, while only 2.5 percent of households in the Netherlands had one or more firearms (Block, 1998). Canada's rate of 22 percent of households owning firearms was in the middle range of the nine countries (*Ibidem*).

In all nine countries, more households owned long guns than handguns. According to the survey, 95 percent of households in Canada owning firearms had a long gun and less than 12 percent owned handguns. Similarly, in England and Wales, nearly 94 percent of households owning firearms possessed a long gun, while 13 percent owned handguns. In the United States, 81 percent of firearm-owning households had long guns and 58 percent had handguns (Block, 1998:3-6).

Block (1998: 21-23) also found that the number of residents who owned firearms was related to community size. Residents in the smallest communities were most likely to own firearms whereas residents of the largest communities were least likely to own a firearm.

2.4 Sources of Firearms Owned

There is not enough reliable data to know where Canadians who legally own firearms get them. Gabor (1994: 13) reported that, in 1990, close to ten times as many firearms were imported into the country than were exported from Canada. That ratio (10:1) has fallen in recent years and, in 1996, the ratio of imported versus exported firearms was only 1.1:1. In the last decade, between 16 percent and 32 percent of firearms that were brought into Canada were handguns (Hung, 1997).

From available statistics, Gabor found that firearms sold in Canada were imported rather than manufactured in the country (Gabor, 1994: 13). Although this may be the case, the number of firearms manufactured in Canada for the domestic civilian market is unclear. The 1996 Annual Firearm Report of the Commissioner of the RCMP to the Solicitor General reported that 23 businesses were issued permits in that year to manufacture firearms or firearm components (RCMP, 1997). Gabor (1994: 11) also reported that the

¹The countries included in each region are: Western Europe (Austria, England and Wales, Finland, France, The Netherlands, Northern Ireland, Scotland, Sweden and Switzerland; New World (Canada and USA); Countries in Transition (Albania, Czech Republic, FR of Yugoslavia, FYR Macedonia, Georgia, Hungary, Kyrgyzstan, Latvia, Mongolia, Poland, Romania, Russia); Africa (South Africa, Uganda and Zimbabwe); Asia (India, Indonesia and The Philippines); and, Latin America (Argentina, Bolivia, Brazil and Costa Rica).

number of permits issued annually to businesses selling firearms or ammunition had been fairly constant since 1980 at about 10,000. More recent statistics (Hung, 1997), however, indicate that the number of firearm businesses decreased between 1988 and 1996 by a total of nearly 42 percent. In 1996, there were 6,271 businesses that were licenced to sell firearms or ammunition.

Although as indicated by Gabor (1994:13) the source of firearms used in crimes is largely unknown in Canada, there have been a few recent studies that give us some preliminary information. Chapter 9 provides an overview of this research and presents data on the number of firearms lost, stolen, and missing in Canada.

2.5 Factors Related to Firearm Ownership

The previous review touched on the reasons for owning firearms. Based on the findings of three surveys, Gabor reported that about 70 percent of firearm owners said hunting was the primary reason they owned firearms (Gabor, 1994: 12). These findings were since confirmed by ICVS data (Block, 1998) where nearly 73 percent of respondents said they owned firearms to hunt. They also owned them to target shoot (18.4 percent), and because there has always been a firearm in the respondents' homes (10 percent). Another 7.4 percent of those surveyed collected firearms, and 4.6 percent had them for protection (Block, 1988: 12).

The extent to which Canadians own firearms to protect themselves from criminals or animals is the subject of some controversy. However, survey findings have consistently shown that the proportion of Canadians who state self-defense or self-protection as a reason or their main reason for owning a firearm is very low. Even when those who use a firearm in their job are included in that figure, it is still likely to be lower than five percent (Block, 1998: 12-13; Gabor, 1997:5; Sacco, 1995). These findings are different from international figures. Block (1998) found that protection was a common reason to own firearms for 39 percent of owners in the United States, 26 percent of owners in Austria and 22 percent of those in France. This issue is discussed further in Chapter 7.

2.6 Summary

- Little new research was conducted in the last five years on firearm ownership in Canada.
- Research continues to rely on surveys to estimate the number of firearm-owning households, firearm owners and firearms in circulation. Survey findings are fairly consistent but may underestimate the prevalence of firearms in Canada.
- Recent estimates indicate that 26 percent of Canadian households own at least one firearm.

- Ninety-five percent of firearm-owning households in Canada possess long guns and less than 12 percent own handguns.
- The prevalence of Canadian households that own firearms varies considerably across regions.
- Canadian firearm owners tend to be male and are more likely to reside in smaller communities.
- Approximately 7 million firearms are estimated to be owned by private individuals; this number includes as many as 1.2 million restricted firearms. The overall rate of firearm ownership is at least 241 per 100,000 population and is comparable to ownership rates in other countries where hunting is a significant activity.
- Little is known about the sources of legal firearms in Canada and even less information is available about the sources of firearms on the illegal market.
- During the last 10 years, the number of firearms imported into Canada for use by private individuals has declined considerably.
- There has been little new research on the reasons for owning a firearm. Hunting continues to be the main reason for owning a firearm. Self-protection is rarely cited as a main reason for owning a firearm.

3.0 OVERVIEW OF FIREARM DEATHS AND INJURIES

3.1 Introduction

Much of the research on firearms focuses on injuries and deaths that occur when people misuse firearms, and the role that firearms play in the rising violence of some societies. Injuries caused by firearms are classified as either fatal or non-fatal. Homicide, suicide and accidental death are the three types of fatal injuries caused by firearms. Non-fatal injuries are called assaultive, self-inflicted and accidental.

This chapter presents an overview of the role of firearms in deaths and injuries in Canada and introduces issues that will be further developed in subsequent chapters. It provides national statistics on firearm deaths and breaks down these data for firearm suicides and homicides, and for unintentional, or accidental, firearm deaths. It compares international statistics relating to firearms deaths. This chapter provides an overview of the limited information on firearm injuries in Canada, the difficulties researchers encounter in classifying injuries as intentional or unintentional, and the consequent inability to calculate the case-fatality rate for firearm injuries. The chapter then looks at the types of firearms involved in injuries and deaths, and the possible link between the availability of firearms in a society and levels of firearm injuries and death; it also reviews recent research on the costs of firearm injuries and deaths.

3.2 Firearm Deaths in Canada

Over the past 25 years, there have been an average of 1,300 firearm deaths per year. Of the 1,125 firearm deaths in 1995, about 80.1 percent or 911 were classified as suicides; there were 145 homicides, representing 12.4 percent; and 49 unintentional deaths, for 4.3 percent of the total (Hung, 1997). These percentages have remained relatively stable over the past decade.

In 1995, there was a lower rate of firearm deaths per 100,000 population than there had been in the previous 25 years. In 1970, the rate per 100,000 population was 5.2. It increased to a peak of 7.2 in 1977, and declined steadily to a rate of 3.8 in 1995 (Hung, 1997).

3.3 Firearm Deaths—International Comparisons

Most countries have produced data on firearm deaths, allowing researchers to estimate the number of suicides, homicides and unintentional deaths by firearms, and to make international comparisons. Such comparisons must be made cautiously because of the different approaches that countries take in keeping records of public health and crime

statistics. The data collected through the United Nations International Study on Firearm Regulation (1998) allow for some preliminary comparisons. Twenty-nine countries submitted statistics on the rate of firearm deaths per 100,000 population. The highest rates were reported by Columbia at 55.8, Brazil at 26.9 and the United States at 14 per 100,000 population. About 21 of the countries reported a rate of less than 5 per 100,000 population, including Canada at 4.1; Australia at 3; New Zealand at 2.9; and Sweden at 2.3. Nine countries reported a rate of one or less, including Japan at 0.07 and the United Kingdom at 0.6 (United Nations, 1998: 108).

3.4 Firearm Injuries in Canada

Injuries caused by firearms that do not result in death are more difficult to determine. Canada, like most countries, does not keep track of all injuries that people suffer and, therefore, cannot point to how many of these involve firearms. However, there are some data on hospitalizations reported by Statistics Canada as well as a database maintained by the Canadian Hospital Injuries Reporting and Prevention Program. Statistics Canada hospitalization data from 1993 and 1994 show that 25 percent of firearm injuries requiring acute care were self-inflicted, such as in an attempted suicide. Nearly 43 percent of injuries were classified as accidents, 22 percent were caused by others, almost nine percent were left undetermined, and the remaining 1.7 percent resulted from legal intervention (Hung, 1997). That profile is quite different from what is known about the intent of actions causing fatal injuries.

3.5 Problems in Classifying Firearm Injuries

The problem of placing firearm-related incidents into such categories as intentional or unintentional, and self-inflicted or assaultive can be complex. We may also underestimate the implications for research.

Researchers often risk misinterpreting data because of the varying number of cases classified as undetermined. Undetermined cases have declined over the last decade since the system used to classify and report incidents has improved. The proportion of undetermined cases does, however, remain significantly higher when someone is injured than when someone dies from a firearm wound.

The previous literature review noted that statistics on accidental deaths involving a firearm were likely inflated because some of them are later classified as suicides or homicides (Kleck, 1991). The argument was dismissed on the basis that the reverse could also be true (Gabor, 1994: 53). Researchers have noted that, while suicides and homicides may be misclassified as fatal accidents, the proportion of misclassified cases is likely to be small because undetermined firearm deaths tend to prompt investigations about possible homicides that are more thorough than general suicide or accidental death investigations

(Dudley *et al.*, 1996: 372). Incidents that are wrongly classified may be more misleading when the national figures are relatively small, as they are for Canada.

3.6 Fatality Rate of Firearm Injuries

The concept of *case-fatality rate* refers to the proportion of cases that result in death among all firearm injury cases (Barber *et al.*, 1996: 487). It is most often expressed as the ratio of non-fatal injuries per death. Given the limited data on non-fatal injuries in Canada, we do not know our country's case-fatality rate.

Databases on non-fatal injuries for the United States are available, and several national or regional estimates of case-fatality rates have been produced in that country (e.g., Annest *et al.*, 1995; Barber *et al.*, 1996; Bretsky *et al.*, 1996; Kellermann *et al.*, 1996; Mercy, 1993). The estimated case-fatality ratio varied considerably from one study to another. Based on the National Electronic Injury Surveillance System, for example, the national case-fatality rate was estimated at 2.6:1; that is, 2.6 injuries for every one death (Annest *et al.*, 1995: 1751-1752).

Most studies indicate that case-fatality rates varied markedly according to the intent of the shooter. A study of three U.S. cities showed that the case-fatality rate for unintentional injuries was 16:1; the ratio for assaults was 5.3:1; and the ratio for suicide attempts was 0.16:1 (Kellermann *et al.*, 1996: 1443). Unintentional injuries seemed to be less serious and to lead to fatal consequences less often: they were associated with the lowest risk of serious harm. A recent Canadian study found that of those who required emergency care for firearm injuries, 47 percent sustained injuries through an accident, 32 percent had attempted suicide, and 19 percent had been assaulted (Injury Prevention Centre Edmonton, 1996). These percentages change considerably when looking at firearm deaths: 80 percent were suicides, 15 percent were homicides, and five percent were accidents. Quite likely, we are seeing this different picture emerge because, compared to self-inflicted injuries and assaults, unintentional injuries are less likely to involve vital organs.

We observed substantial regional variations in case-fatality rates, relating to the type of firearm, the type of incident and the relative availability of emergency and hospital medical care. Isolated communities and communities that lack sophisticated emergency medical services systems may be less successful at saving the lives of patients who are critically injured (Kellermann *et al.*, 1996).

3.7 Type of Firearms Involved in Injuries

There is no national data available in Canada on the types of firearms involved in injuries, but research suggests that more people are injured by long guns than by

handguns. For example, the 1993-94 Alberta study found that the majority of firearm-related visits to emergency rooms and acute hospitalizations resulted from injuries involving long guns (Injury Prevention Centre Edmonton, 1996). Conversely, in the United States, handguns are more often involved in firearm injuries than are other types of firearms (Sadowski and Muñoz, 1996: 1763; Vassar and Kizer, 1996).

3.8 Prevalence of Firearms and the Rate of Violent Crime, Suicide and Accidents

Much of the research on fatal firearm injuries is concerned with the possible link between the number of available firearms and the rate of violent crime, suicide and accidental deaths in a given population. Such research is based on *opportunity theory* (Mayhew, 1996) and more specifically on what may be termed the *general firearm availability theory*, which assumes that the more firearms available in a society, the more injuries will occur (e.g., Leonard, 1994: 128).

Epidemiological studies of firearm availability and firearm injuries meet with methodological and conceptual problems that are difficult to resolve. For example, there is no way to measure precisely how many people own firearms (Stenning, 1996; 1996b: 10), nor is there currently a way to take into account the fact that the number of people who own firearms varies over time and between jurisdictions. It is quite likely that this issue will never be resolved because such precision is not possible. Furthermore, research has so far been unable to adequately specify, theoretically or empirically, the nature of the link between firearms and violence. Although few people would question that there must be a link between the relative availability of lethal means of violence and the actual level of violence, the exact nature of that link is not obvious. Theoretically, at least, the presence of violence can be conceptualized as either the cause or the result of the increased prevalence of firearms in some societies. In the international context, Lock concluded that widespread availability of firearms does not automatically translate into violent conflict (1996:2).

Where researchers do consider that firearm injuries may be related to the prevalence of firearms, or to specific types of firearms such as handguns, they should consider each type of incident separately (Stenning, 1996: 18). Intentional injuries may show a different pattern than unintentional ones, just as access to firearms may affect the rate of assaultive injury compared to ones that are self-inflicted. These issues will be explored further in some of the following chapters.

3.9 Costs of Firearm Injuries and Deaths

Research on the costs of injuries related to firearms has commonly taken one of two approaches: the first compares the relative cost-effectiveness of various types of medical intervention in the case of firearm injuries. This type of research is often called for but rarely conducted. For example, Ordog and colleagues, studying the costs and benefits

of outpatient treatment versus hospitalization for gunshot wounds, reviewed the records of all patients discharged without hospitalization at the King/Drew Medical Centre in Los Angeles between 1977 and 1991. They found that 60 percent of patients had been treated as outpatients after an emergency department evaluation and treatment; all of the patients were considered to have minor gunshot wounds. The complication rate was fairly low at 1.8 percent, and most often involved an infection. The cost savings were estimated at \$37 million U.S. (Ordog *et al.*, 1994). Examples of such research were not found in Canada.

The second and most frequent type of research quantifies the medical or economic costs of firearm injuries for a country or a specific jurisdiction. Such costs include emergency transport and services; emergency and other medical care; burial; mental health care; loss of productivity; administration; and costs of pain, suffering and lost quality of life (Miller and Cohen, 1996: 49). Since detailed data on the specific costs of injuries is generally not available, researchers often have to make assumptions and rely on estimates to attribute a dollar figure to certain injuries. The estimates may vary broadly depending on the types of costs that researchers consider and the nature of the assumptions and calculations they have made. For a recent review of this literature, see Injury Prevention Centre Edmonton, 1996.

Some have questioned the usefulness of this type of research. Its purpose is often to express in financial terms the serious harm that can result when people misuse firearms. However, many studies of this type fail to compare the costs to those that result from other forms of injury (Mauser, 1996c: 5). It has been argued that, to be more useful, studies that assess the costs of firearm-related injuries would also have to consider that the majority of these are caused intentionally (*Ibidem*), leaving researchers little basis to assume that there would be no injuries and no resulting costs if firearms were not available.

The previous literature review (Gabor, 1994:15) quoted a few U.S. studies, but noted that these costs had not yet been systematically assessed in Canada. Researchers should be cautious about drawing conclusions from U.S. data and applying them to the Canadian situation (Gabor *et al.*, 1996: 323). The two countries differ, sometimes greatly, in terms of health care systems and costs, the prevalence and nature of firearm injuries, the context in which they occur and the types of weapons that are commonly used. As well, many of the U.S. studies have methodological limitations and problems with data availability, not the least of which is that accurate data on the incidence and seriousness of non-fatal firearm injuries are generally missing (Max and Rice, 1993: 182; Kellermann *et al.*, 1996: 1442). Max and Rice (1993: 183) concluded that estimating the costs of firearm injuries given available data really amounts to “shooting in the dark.” The statement apparently remains valid, whether applied to the United States or to Canada.

Miller, taking a broad approach, attempted to estimate the total costs of gunshot injuries and deaths in Canada in 1991. Based largely on previous U.S. research, extrapolations from U.S. data, and various secondary data sources, Miller estimated that

these costs totaled \$6.6 billion, or \$235 per capita (Miller, 1995), with the largest component reflecting lost quality of life. When the author listed the costs according to the intent of the shooter, suicides and attempted suicides topped the list at \$4.7 billion, followed by homicides and assaults at \$1.1 billion, and accidental shootings at nearly \$602 million. The study was criticized for a number of reasons, including relying too heavily on extrapolations from U.S. data (Mauser, 1996c: 4-6; Nakamura, 1996; Rosenberg, 1996; Smart, 1996; Sobrian, 1996a; Suter, 1996; and a reply by Miller, 1996).

Recently, the Edmonton Injury Prevention Centre conducted a pilot project to collect primary data on the direct medical costs of firearm injuries in Alberta in a one-year period between 1993 and 1994. The Centre collected data from a written survey of hospitals and supplemented that information with secondary data. The study produced cost estimates based on the actual services for these injuries and the actual or estimated costs associated with these services. Excluding the costs of non-hospital physician visits, community rehabilitation visits for physiotherapy or other treatments, and medications or long-term care costs, the total direct medical costs of firearm injuries in Alberta in that period were \$869,404. The cost of acute hospitalization services accounted for nearly 70 percent of the total estimated cost. In that province, hunting rifles were most often the cause of injuries requiring emergency room treatment and acute hospitalization. The study also revealed that the highest costs of treating individual firearm injuries were from self-inflicted firearm injuries and from shotgun injuries (Injury Prevention Centre Edmonton, 1996).

The pilot project also involved telephone interviews with officials from nine other provinces to find out if data on medical costs were available and to determine the feasibility of replicating the Alberta study. The authors concluded that the study could be replicated, but that researchers would encounter challenges similar to those found by the Centre, and that the results would likely suffer from the same limitations. They suggested that more accurate estimates could be produced, given sufficient resources, by identifying all firearm injuries in a given population and collecting primary cost data instead of relying on secondary data sources to estimate the relevant costs (Injury Prevention Centre Edmonton, 1996: 48).

3.10 Prevention Methods

In an article entitled *The Role of the Health Community in the Prevention of Criminal Violence*, Gabor, Welsh and Antonowicz (1996) proposed that people should consider fatal and non-fatal injuries resulting from violent incidents involving a firearm as a critical public health problem and as a threat to community health as opposed to community order. They argued that crime should be viewed within the wider context of health problems such as illnesses or accidental injuries and that risk factors associated with crime and victimization should be identified and addressed as early as possible, not just by the criminal justice system, but also by the health community (Gabor *et al.*, 1996:324).

Many U.S. authors believe that injuries and deaths caused by firearms can be prevented, and that the most promising approach is through public health (Camosy 1996; Cohen and Swift, 1993; Elders, 1994; French, 1995; Goetting, 1995; Hargarten *et al.*, 1996; Johnson, 1993; Kellermann, 1993; Kellermann *et al.*, 1991, 1996; Lee and Harris, 1993; Mercy 1993; Powell *et al.*, 1996; Roth, 1994; Teret and Wintemute, 1993; Weiss, 1996; Zwerling and Merchant, 1993; Zwerling *et al.*, 1993). From that perspective, public health sources can provide primary and secondary prevention methods once the risk factors associated with firearm injuries are identified (Camosy, 1996: 971). That view follows the theory that the most cost-effective way to control disease is to prevent it from occurring (Kellermann *et al.*, 1991: 19). Kellermann and his colleagues proposed ten strategies for preventing firearm injuries (*Idem*: 34-35). According to them, “experience with other public health interventions has shown that prevention is best accomplished by first identifying, then breaking, the chain of disease causation at its weakest link” (*Idem*: 19). They added that the weakest link may not always be obvious or proximate to the illness or injury (*Ibidem*).

Weiss (1996: 201) remarked that, within the public health or epidemiological model, violent behaviour is likely to follow a similar pattern to that of any public health epidemic. Kellermann and his colleagues noted that, although the strategies they proposed were developed as countermeasures to prevent unintentional injuries, they may apply to intentional ones as well (Kellermann *et al.*, 1991: 21). Hargarten and colleagues expressed a similar view (Hargarten *et al.*, 1996). Blackman, on the other hand, argues that this generalization to intentional injury is still very much an “untested assumption” (Blackman, 1996: 1273; see reply by: Hargarten *et al.*, 1996a).

The public health approach has inspired many calls for comprehensive firearm injury prevention programs, and many of its proponents prefer strategies that will reduce the number of firearms that are available. Gabor stated that, “to achieve a significant effect on public safety, measures would have to achieve considerable reduction in the proportion of households with firearms” (Gabor 1996: 106). Similarly, Chapdelaine and Maurice argue that injuries, “always involve access to a firearm by a person who can discharge it” (1996: 1286). They added: “This access constitutes the universal link; the one against which we can take action in the chain of events leading to an injury from a firearm” (*Ibidem*). Others have said that even if the public health approach would dictate that the root causes of violence can be addressed, the lethality of firearms is such that reduced access to firearms and, in particular, to handguns is necessary to reduce the lethality of violence (Powell *et al.*, 1996: 208).

3.11 Summary

- In 1995, 1,125 people died from firearm injuries in Canada, representing a rate of 3.8 per 100,000. At 80.1 percent, the most common type of fatal firearm injury

was suicide. Homicide accounted for 12.4 percent of the deaths, and 4.3 percent were classified as accidental deaths.

- The 1995 rate of firearm death was the lowest in at least 25 years.
- Canada's firearm death rate is similar to Australia, New Zealand and Sweden. Higher rates are reported in Columbia, Brazil and the United States while countries including Japan and the United Kingdom report lower rates.
- Information on the frequency and nature of non-fatal firearm injuries in Canada is generally lacking.
- Our understanding of the role firearms play in injuries may be limited by the fact that it is based almost exclusively on the information available about firearm deaths.
- The case-fatality rate refers to the proportion of cases resulting in death among all cases of firearm injury. The case-fatality rate of firearm injuries in Canada is unknown. However, research suggests that these rates vary considerably according to the intent of the shooter and geographical location of the incident.
- The link that may exist between firearm injuries and the prevalence of firearms in general or specific types of firearms, such as handguns, should be considered separately for each type of incident.
- In the past five years, several studies—including two Canadian ones—have examined the costs of firearm injuries and deaths. One took a broad approach, attempting to estimate the total cost of gunshot injuries and deaths in Canada during one year. The other focused on the direct medical costs of firearm injuries in Alberta over one year.
- From a public health perspective, we can identify the risk factors associated with firearm injuries and provide effective primary and secondary prevention.
- Although many proposed firearm injury prevention strategies are worthy of serious consideration, little research exists on their effectiveness.

4.0 FIREARM SUICIDES

4.1 Suicide and Firearm Suicide

In Canada, about 80 percent of firearm-related deaths are suicides (Hung, 1997). The total number of suicides, including those committed with a firearm, rose consistently during the 1960s and most of the 1970s. In the late 1970s, suicide rates leveled out and decreased modestly, and fewer people used firearms to commit suicide. Researchers also noted considerable regional variations in these trends (Department of Justice, 1996: 45; Hung, 1997a).

In the 1970s, firearm suicides represented 35.6 percent of the total number of suicides in Canada. That figure fell to 32 percent in the 1980s and to 27.8 percent in the first six years of the 1990s (Department of Justice Canada, 1996: 46; Hung, 1997). In 1995, almost a quarter of the 4,000 people who committed suicide in Canada used a firearm.

In contrast with the prevailing situation in the United States, where handguns are more commonly used in suicide attempts, it is clear from available data that when a firearm is used in a suicide attempt in Canada, it generally tends to be a long gun. The report of The Firearms Smuggling Group included information on all firearms recovered in one year by ten police agencies across the country. Eighty percent of the 264 recovered firearms that had been involved in an attempted or completed suicide were long guns (Department of Justice Canada, 1995b; see also: Proactive Information Services, 1997).

4.2 International Comparisons

Total suicide and firearm suicide rates per 100,000 population vary considerably from one country to another. Canada's total suicide rate of 12.9 is similar to Australia (12.7), Norway (12.3), and the United States (11.5). Estonia (40) and Japan (17.9) are among the countries that have higher rates than Canada, while several other countries have rates below one per 100,000 population (United Nations, 1998: 112-113).

When examining firearm suicides, the Canadian rate of 3.3 per 100,000 population is similar to Australia (2.4), and New Zealand (2.5), and much lower than Finland (5.8), and the United States (7.2). Firearm suicides are less common in the United Kingdom, Japan, and 11 other countries that had rates well below one per 100,000 population (United Nations, 1998: 108-109; see also: Cantor *et al.*, 1996). The percentage of suicides committed with firearms for the 34 countries that reported data through the survey ranged from 0.2 percent in Japan, to 70 percent in Brazil (*Idem*: 105). The average percentage

was 18.7 (*Ibidem*). The proportion of suicides committed with firearms was 26 percent in Canada and 62.7 in the United States (*Idem*: 112-113).

4.3 Factors Associated with Suicide

Suicide is a complex phenomenon, and one that has received much attention since the early beginnings of social and behavioural sciences. Some of the factors associated with suicide, both at a societal level and at an individual one, are well known. Among social, cultural and economic factors are, in particular, rapid social changes and urbanization, which affect the way in which individuals integrate into society and adjust socially. Relevant individual factors may include sex, age, race or ethnicity, marital status, physical, mental and spiritual health, social adaptation and integration, and an individual's capacity to cope successfully with painful or stressful life events. Drug and alcohol consumption, as well as other forms of escapist individual adaptation to stress, are also and not surprisingly associated with suicidal tendencies.

In the last 20 years, researchers have paid more attention to another set of factors: those related to the physical environment. They include proximal risk factors such as the presence of a potential rescuer, the availability of sophisticated emergency treatment facilities and, in particular, the relative availability of culturally-acceptable lethal means of committing suicide. It is believed that these factors may mediate between the societal and individual risk factors.

The patterns of firearm suicides are not identical to the overall patterns of suicide. Men are four times more likely to commit suicide than women (Statistics Canada, *Causes of Death*) and they are 13 times more likely to do so with a firearm. Among males who commit suicide, age seems to be another factor which affects the choice of firearms as a suicide method. Male suicide rates, in Canada as well as in most western countries, tend to be the lowest for adolescents, although these rates have increased without explanation during the 1970s and 1980s.

Alcohol and drugs appear to play a different role in firearm suicide than in suicides in general (Carrington and Moyer, 1994a; Marzuk *et al.*, 1992). The kind of mental health problem involved may also play a role in the choice of a suicide method (Carrington and Moyer, 1994a; Cooper *et al.*, 1994).

The percentage of suicides involving a firearm, for both males and females, varies considerably across regions and is associated with, among other things, the availability of firearms. For example, while current research indicates that suicides are more frequent in urban areas (Carrington and Moyer, 1994), the percentage of suicides involving a firearm tends to be lower in urban areas than in rural ones (Moyer and Carrington, 1992).

Ethnic factors may also affect the choice of suicide method (Lester, 1994). In Canada, firearm suicide rates are highest among aboriginal people; however, the percentage of suicides involving a firearm, as opposed to other methods, is lower among

aboriginal people than it is for non-aboriginal victims (Carrington and Moyer, 1994a; Malchy *et al.*, 1997; Royal Commission on Aboriginal Peoples, 1994; Sigurdson *et al.*, 1994: 400). In Australia, Burnley (1995) found that some regional and social class factors were associated with the means of committing suicide.

All of these observations confirm there are several factors that intervene in the choice of suicide methods.

4.4 Attempted Suicide and Firearms

Most studies on the role of situational determinants or on the availability of firearms in suicide attempts look only at fatal attempts. In Canada, estimates of the number of non-fatal attempts that occur in relation to the number of fatal suicides have produced ratios ranging from 26:1 to 49:1, depending on the methodology (Sakinofsky and Leenaars, 1997). The absence of data on unsuccessful suicide attempts limits the conclusions that one can draw.

The role of a given situational determinant of suicide compared to others is perhaps best understood by comparing successful and unsuccessful attempts. Unfortunately, few studies so far have done so. A notable exception is a case-control study in New Zealand that compared 197 individuals who committed suicide and 302 individuals who made unsuccessful suicide attempts with 1,208 randomly-selected community control subjects (Beautrais and Joyce, 1996). The study indicated that access to a firearm was not associated with a significant increase in the overall risk of suicide, although such access was associated with an increased probability that a firearm would be chosen as the method of suicide (*Ibidem*).

There has not been enough research on multiple suicide attempts and on the role of situational determinants such as accessibility of a firearm, in such instances. It is not known, for example, whether an unsuccessful attempt will bring an individual to switch to a more lethal method. In Manitoba, researchers looked at all cases of youth suicide between 1984 and 1988. They examined the files of 204 youths under 24 years old who had previously attempted suicide and who eventually succeeded in their attempt (Sigurdson *et al.*, 1994). The findings revealed that the youths most often tried numerous times to commit suicide before being successful. One or more previous suicide attempts were reported in 65.2 percent of the cases for females, and 35.2 percent of the cases for males. The authors suggested that males were more likely to use a lethal method, such as a firearm or hanging, and were therefore more likely to be successful in an early attempt than females, who most frequently chose drugs (Sigurdson *et al.*, 1994: 399).

4.5 Lethality of Attempted Firearm Suicides

Firearms constitute a particularly lethal and effective method of attempting suicide. Because of their very nature, firearm injuries resulting from a suicide attempt are frequently fatal. Research in Canada and the United States indicates that more people who attempt suicide with firearms succeed than those who choose other methods (Gabor: 1994). A New Zealand study that looked at successful and unsuccessful suicide attempts showed that among serious suicide attempts, the rate of fatality varied with the method used. The methods with the highest fatality rate were: gunshot (83.3 percent); hanging (82.4 percent;) and carbon monoxide poisoning (66.7 percent) (Beautrais and Joyce, 1996: 744).

In the United States, where more information exists on non-fatal suicide attempts, researchers noted that some survivors wounded themselves in non-vital areas, indicating that some suicide attempts were not necessarily intended to cause death (Barber *et al.*, 1996). However, several studies have shown that self-inflicted firearm wounds are more likely to result in death than firearm wounds inflicted under other circumstances, such as an accident (Bretsky *et al.*, 1996; Barber *et al.*, 1996).

4.6 Link Between Overall Availability of Firearms and Suicide

The observed correlation between firearm availability and suicide in general (Killias, 1993; 1993a; 1993b; 1996; Gabor, 1994; 1995) is not as solid as some might expect. In Canada, provincial comparisons of firearm ownership levels and overall rates of suicide found that levels of firearm ownership had no correlation with regional suicide rates (Carrington and Moyer, 1994a: 172). Furthermore, the Canadian rate of firearm suicides has dropped without evidence of a similar reduction in the rate of firearm ownership.

At the very least, this observation suggests that the overall availability of firearms is not the only factor that affects the suicide rate, or even the rate of firearm suicides. There are frequent variations in firearm suicide rates that cannot be attributed directly to a change in the availability of firearms or of alternate methods. Carrington and Moyer (1994) observed that in some provinces, the rate of suicides involving other methods has declined since 1978 in a manner similar to that of the firearm suicide rate. They discovered no obvious reason for this and none attributable directly to the prevalence of firearms or the existence of new firearm regulations.

On the other hand, the firearm suicide rate is higher where firearms are more widely available (Carrington and Moyer, 1994: 169; Dudley *et al.*, 1996). A case-control study among members of a large health maintenance organization showed a positive association between the legal purchase of a handgun and a higher, long-lasting risk of violent death, including suicide (Cummings *et al.*, 1997). While availability most certainly affects the choice of method (Beautrais and Joyce, 1996; Gabor, 1994: 39; 1995), it is

equally clear that other factors, such as social customs or cultural acceptability, play a role in that decision.

In Australia, data on male suicide between 1992 and 1995 revealed noticeable changes in choices of suicide methods. The clear decrease in suicide by firearms was compensated by an increase in suicide by hanging, strangulation and suffocation. These changes did not seem to be accompanied by a change in the overall availability of firearms in the country (Mukherjee, 1997).

In Finland, an analysis of violent methods associated with the high and increasing suicide mortality rate among young adults aged 15 to 24 between 1965 and 1975 showed that firearms and hanging accounted for most of that increase (Ohberg *et al.*, 1996). However, the authors stated that “these changes were not accompanied by similar changes in the availability of firearms during that period. Moreover, an increased total suicide rate as well as that by automobile exhaust fumes in young adults after 1982 coincided with a widely presented Finnish movie which featured this method of committing suicide” (*Ibidem*).

The main question is whether the increased availability of firearms is more likely to facilitate completed suicides. If it does, the overall rate of firearm ownership should be related to the rate of suicide. So far, however, the evidence about that particular hypothesis is contradictory (Gabor, 1994: 40-41) and mostly inconclusive. Perhaps this is because few studies were able to accurately measure changes in overall availability of firearms.

4.7 The Accessibility and Lethality of Firearms as a Suicide Method

While national or provincial studies examine the impact of the availability of firearms on suicide rates at the macro level, other studies examine the impact that an accessible firearm may have on an individual contemplating suicide.

Some of the research cited in the previous review showed that accessible firearms were generally a risk factor for suicide (Gabor, 1994: 41; 1995: 203). There is also clear evidence that when firearms are available, it is statistically related to how often that particular suicide method was chosen (Carrington and Moyer, 1994a).

However, even when someone has access to a firearm, that person does not necessarily choose it to commit suicide. A case-control study conducted in New Zealand of 452 serious suicide attempts (Beautrais and Joyce, 1996) suggested that, while people who had access to a firearm were more likely to choose it as a method of suicide, the access itself did not necessarily mean that the person was more likely to commit the act (*Idem*: 746). Of the subjects who had access to a firearm at home, one-third used one to make a serious suicide attempt and two-thirds employed other methods. Of the 387 people who did not have access to a firearm at home, only two chose that method (*Ibidem*).

Whether firearms are accessible, and then choosing one to commit suicide, are related in a complex way. For instance, military personnel are familiar with firearms and have easy access to them. A U.S. study found that military males committed suicide about half as often as their counterparts in the national population, and were not more likely to choose a firearm over another method. The rate of overall suicide for females in the military was comparable to that of the national female population, but military females chose firearms more frequently as a method of suicide (Helmkamp, 1995).

Because suicides are intentional acts and because a variety of methods exist for which availability cannot be controlled, there is disagreement among researchers on whether controlling the availability of one method, such as firearms, would significantly contribute to preventing suicide in general. Rich and Young argue that “removing one available method may not offer much in the way of protection in individual cases” (1995: 1105).

Perhaps little can be done to prevent someone who is strongly determined to commit suicide from doing so. However, in many cases, the suicidal intent may not be very strong and may only be temporary. According to Gabor (1994: 49; 1995: 204) there is clear evidence that many suicide attempts are impulsive. Many attempts are not carefully calculated or planned but are precipitated by stressful events and facilitated by the consumption of intoxicants. One can hypothesize that in such cases, the absence of a readily accessible firearm could contribute to preventing a fatal outcome in one of three ways:

- If the method of choice is not available, an individual considering suicide may not be able to act on the intention, and that intention may eventually disappear.
- If effective lethal means are available, such as a firearm, the weakly motivated or ambivalent individual may use it impulsively, particularly under the disinhibiting influence of alcohol or drugs (Carrington and Moyer, 1994a: 177).
- The individual may choose another, less lethal method to carry out the attempt and possibly fail.

In sum, the individual and situational factors influencing the choice of a firearm as the suicide method, given its accessibility, are still not well understood. Controlling the accessibility of firearms may affect existing behaviour patterns and prevent some suicides. What remains unclear is how, in what circumstances, and for what kind of suicide attempts this might be the case. Lester (1993: 49) concluded his own review of the research on the preventive effect of controlling suicide facilitators by suggesting that far more research is required to document under what conditions a preventive effect may operate.

4.8 Evidence of Method Substitution in Suicide

Much of the research on preventing firearm suicides focuses on substituting or displacing the method of choice. These terms refer to how certain methods to commit suicide in a given population may change when a particular method is no longer available. This research has produced competing claims about whether the displacement effect exists, about the period of time over which it can be expected to occur, and whether it tends to be more present in some types of suicides as opposed to others (Carrington and Moyer, 1994a; Mayhew, 1996: 22).

One must be able to measure the changes in both successful and unsuccessful suicide attempts to determine whether methods are being substituted and, if so, to what extent, given what is known about the relative lethality of different suicide methods. This is not usually possible since we don't have reliable information on non-fatal attempts. Most studies to date have focused simply on examining the relative variations in rates of total suicides, fatal firearm suicides, and fatal suicides from other methods, under different conditions of firearm availability.

When fewer people commit suicide with a firearm and the overall suicide rate does not increase, displacement is not occurring. This general method of assessing the presence of a method substitution effect has resulted in conflicting evidence on whether or not it occurs, and almost no evidence on how the effect might actually work. However, Carrington and Moyer (1994; 1994a), analysing trends in fatal suicide attempts in Canada concluded that there was a decrease in levels of firearm and total suicide rates and that there was no indication that other methods were being substituted.

There is another explanation for the changes that are sometimes observed in suicide methods for a given population, such as the shift from firearm suicides to hanging, strangulation and suffocation observed in Australia around 1995 (Mukherjee, 1997), and that do not appear to be explained by significant changes in the availability of the methods. These changes are better described as method *shifts* rather than method *substitutions*. These may be precipitated by factors other than whether a particular method has become more or less available.

4.9 Firearm-Related Suicide in Children and Youth

After World War II and until the late 1970s, there was an increase in the number of adolescents who committed suicide in North America and in many European countries (Sakinofsky and Leenaars, 1997; Cantor *et al.*, 1996). Despite this increase, the phenomenon of suicide among children and adolescents has fortunately not reached the proportions that it has for young adults (Moyer and Carrington, 1992; Hung, 1997). During the last 10 years, the number of Canadian adolescents who have committed suicide has remained fairly stable, while the overall rate of firearm suicide has decreased slightly.

In Canada, as is the case for adults, suicide among adolescents is predominantly a male phenomenon; however, the percentage of girls committing suicide is significantly higher among aboriginal youths. A Manitoba study of suicides committed between 1984 and 1988 by individuals under the age of 24 confirmed the high ratio of 5.2 male suicides to every female suicide. The study also revealed that 61 percent of these suicides were committed by young adults between the ages of 20 and 23 (Sigurdson *et al.*, 1994). The study observed a statistically significant difference between the sexes in the choice of methods; males were more likely than females to use a more lethal method. Overall, most of the victims hanged themselves; firearms presented the next most common choice (*Ibidem*).

In Canada, the phenomenon of suicide among aboriginal youths is particularly alarming. Based on data gathered between 1987 and 1991, the Royal Commission on Aboriginal Peoples (1994), found that an aboriginal between the age of 10 and 19 was 5.1 times more likely to die from suicide than a non-aboriginal youth. Aboriginal girls were eight times more vulnerable than non-aboriginal girls, and aboriginal boys were 4.7 times more vulnerable than non-aboriginal boys.

The study by Sigurdson and colleagues (1994) revealed that native youths were less likely than non-natives to use a firearm and more likely to use hanging to commit suicide. Firearms were used in 28.3 percent of cases involving Métis and native youths, as opposed to 55.6 percent of cases of non-natives (Sigurdson *et al.*, 1994: 400). Similar findings were also reported by Malchy and his colleagues (1997), who examined suicide incidents among Manitoba's aboriginal people between 1988 and 1994. In addition, their data did not show significant differences between suicides committed by aboriginal people who lived either on or off a reserve (Malchy *et al.*, 1997).

There currently is no evidence that children and youths are necessarily more or less likely than other age groups to use a firearm as opposed to another method. However, because adolescents who commit suicide seem to do so impulsively, many researchers hope that situational prevention methods, such as reducing access to firearms, may be an effective way to prevent adolescent suicide (e.g., Brent *et al.*, 1993; Brent and Perper, 1995; Dudley *et al.*, 1996).

4.10 Various Approaches to Suicide Prevention

The observed decrease in firearm suicide in Canada could be unrelated to the efforts that have been made since 1977 to regulate access to firearms more effectively. However, the Canadian experience appears to demonstrate that regulating the ownership and use of firearms can significantly affect the level of firearm suicides without reducing the level of firearm ownership. This is a conclusion that seldom receives attention in discussions about the prevalence of firearms and suicide.

Since 1977, Canadian legislation has included a number of measures that did not affect the level of firearm ownership but may nevertheless have contributed to preventing firearm suicide. Although these legislative measures can theoretically help prevent firearm suicides, there has been little research on the extent to which they were effectively implemented or enforced, and even less research on whether they have had a measurable impact.

Existing restriction and registration measures applying to handguns may have contributed to suicide prevention. However, the extent to which they did is still largely a matter of speculation. Given the problems that have been observed with the consistent enforcement of these measures (Wade and Tennuci, 1994: 32) and given that handguns are less frequently used in suicide attempts than unrestricted weapons, it is not clear what contribution these control measures have effectively made to preventing suicide.

Canadian legislative measures include a system of firearm acquisition certificates and a process to screen out applicants who represent a risk to themselves or to public safety. They provide for a *cooling-off period* in cases where a person does not yet have a firearm acquisition certificate. Some researchers believe that the cooling-off period could be one of the reasons that the number of firearm suicides was successfully reduced in Canada (Carrington and Moyer, 1994; 1994a). Although this explanation is certainly plausible, it is only a hypothesis. Little is known about when people acquire the firearm they subsequently used to commit suicide, or about who owned the firearms that were used in suicides. Firearms are rarely acquired specifically to commit suicide (Brent and Perper, 1995; Gabor, 1994) and this would seem to suggest that in many cases, the victim had owned the firearm for some time or otherwise had access to a firearm.

Cantor and Slater (1995) measured the impact of the 28-day cooling-off period that was introduced in Queensland, Australia, in 1992. The legislation was based on the rationale that a distressed but unlicensed firearm purchaser could be restricted. The study compared the two years before and after enactment of the legislation, and examined firearm suicide patterns in non-metropolitan areas, where firearms were more prevalent, to those of the metropolitan areas. The study produced some tentative evidence that the 28-day cooling-off period could reduce suicide rates, especially among younger men.

The Canadian legislation also includes requirements on safe handling and storage of firearms by businesses and individual owners, and a requirement for persons who wish to acquire a firearm to complete a firearm safety course. Promoting and ensuring the safe storage of firearms is a popular way to prevent firearm suicides. Research evidence on the effectiveness of this particular strategy is generally lacking. It has been argued that firearms that are not safely stored or that are kept loaded for self-protection or other reasons create a risk. In particular, it is often argued that impulsive adolescent suicide can be prevented by restricting immediate access to lethal agents such as a loaded gun (Brent *et al.*, 1993). However, the relevance of this method of prevention is less clear among adolescents who suffer from psychiatric disorders (*Ibidem*).

The legislation also provides for the possibility of prohibition orders against certain persons, when it is deemed that their safety or the safety of the public could be threatened if they acquire a firearm or remain in possession of the firearms they already own. Prohibition orders may also be useful to remove a firearm or limit firearm access for people who have been identified as suicidal. The number of prohibition orders issued each year in Canada has increased rapidly in the last 18 years (Hung, 1997; Wade and Tennuci, 1994: 21). In 1996, 21,535 prohibition orders were issued. At the end of 1996, the Canadian Police Information Centre System recorded 58,094 persons prohibited from possessing firearms, ammunition or explosive substances (Hung, 1997). What remains unknown, however, is how frequently prohibition orders are used specifically to prevent suicide. There is no research on whether that particular method has proved effective in preventing firearm suicides, or suicides in general.

Depending on the circumstances, the police are also authorized to search and seize firearms with or without a warrant, when they have reasonable grounds to believe that a person's safety is at risk. All of these measures could theoretically help prevent firearm suicides; however, there has been little research on the extent to which these measures have been effectively implemented and enforced, and even less research on whether they have had a measurable impact.

Controlling when and how firearms are available, accessible, or used by persons is one method of suicide prevention; unfortunately, research evidence has contributed fairly little to an understanding of how effective this approach can be. Such prevention strategies must be part of a broader suicide prevention approach. Therefore, it will remain very difficult to isolate the effect of a particular measure from the combined effect of all the others. To paraphrase the question asked by Martin and Goldney (1997), with so many important and poorly understood changes occurring simultaneously, how do we know which program or set of events is responsible for the observed changes?

4.11 Summary

- At 80 percent, firearm suicides account for the majority of firearm deaths in Canada.
- The firearm suicide rates for Canada rose consistently during the 1960s and most of the 1970s, stabilized toward the end of the 1970s and then tended to decrease.
- The percentage of suicides involving a firearm appears to be decreasing, but it remains a source of concern. In 1995, there were close to 4,000 suicides committed in Canada and almost a quarter of these involved a firearm.
- Where a firearm is used for suicide in Canada, it generally tends to be a long gun.

- Internationally, both total suicide rates and firearm suicide rates vary considerably. Canada's total suicide rate is similar to Australia, Norway and the United States, while Estonia and Japan share the highest rates of suicide.
- With respect to firearm suicide, Canada is once again similar to Australia and to New Zealand, but is situated at a rate considerably higher than the U.K. and lower than that of Finland and the United States. Japan has very few firearm suicides.
- Men are more likely than women to commit suicide, and are much more likely to use a firearm. Among males who commit suicide, age is a factor that affects the choice of firearms as a suicide method. Alcohol, drugs and mental health problems all seem to be variables that may also affect the method chosen.
- Although suicides are more common in urban areas, the percentage of firearm suicides is higher in rural jurisdictions.
- Aboriginal Canadians, particularly youths, have a much higher overall suicide rate than others, but the percentage of firearm suicide is lower than that for non-aboriginal victims.
- Non-fatal suicide attempts have been estimated to outnumber successful ones by a ratio ranging from 26:1 to 49:1.
- Access to a firearm may not necessarily be associated with a significant increase in the risk of suicide, although such access appears to be associated with an increased probability that a firearm would be chosen as the method of suicide.
- The individual and situational factors that may influence individual choices of a method, given its relative availability, are still not well understood. Controlling the availability of some means of committing suicide may affect existing behaviour patterns and perhaps prevent some suicides. What is not clear is how, under what circumstances, and for what kind of suicide attempts this might be the case.
- There has been insufficient research conducted on multiple suicide attempts and on the role of situational determinants in such instances. It is not known whether, generally, an unsuccessful attempt will bring an individual to switch to a more lethal method.
- The fatality rate of firearms as a suicide method is highest among all methods, although it is followed closely by hanging and carbon monoxide poisoning.
- The observed correlation between firearm availability and suicide in general is not as solid as some might expect. In Canada, provincial comparisons found no correlation between suicide rates and overall levels of firearm ownership.

However, it is empirically indisputable that where firearms are more widely available, the firearm suicide rate is higher.

- Perhaps little can be done to prevent a person who is strongly determined to commit suicide, although prevention may be possible in the majority of cases where the suicidal impulse is temporary. In such instances, the absence of a readily available firearm may stall the individual long enough to prevent a suicidal act.
- The relative availability of culturally acceptable suicide methods is only one of the many factors that affect the choices individuals make when considering suicide.
- Since a large proportion of youth suicides are impulsive, prevention techniques tend to focus on preventing such a situation, through such methods as making firearms less available to youth.
- Authors have emphasized the importance of integrating various methods to prevent suicide, increasing cooperation between mental health professionals and other authorities, and recognizing and caring for people at high risk of suicide.

5.0 FIREARMS AND VIOLENT CRIME

Violent crimes, including homicide, will never disappear entirely. Research identifies several factors to be associated with violence; the availability of firearms clearly being one of them. The extent to which violent crime can be prevented by reducing or controlling access to firearms is widely debated. Different types of violent crimes call for different prevention methods. The role of various factors associated with violent crime, including such situational determinants as the accessibility of firearms, is not necessarily the same in one kind of violent crime as in another.

5.1 Firearms and Homicide

Although instructive, trends in Canada's homicide rate are sometimes difficult to interpret. For instance, there were fewer homicides in 1950 than in any year between 1926 and 1998. From 1950 to 1965, the rate rose gradually. Between 1966 and 1975, the rate increased by a dramatic 250 percent; from 1.2 to 3.0 per 100,000 population (Silverman and Kennedy, 1993: 34). Since then, there has been a fairly consistent decline in the homicide rate, from 3.0 in 1975 to 2.1 in 1996 (Hung, 1997). Research evidence does not explain why the homicide rate began to turn around in 1975; it may relate to social, demographic and other factors, not to mention the impact of new criminal justice practices to incapacitate offenders and deter recidivism.

Between 1961 and 1990, 40 percent of murderers killed their victims with a firearm (Silverman and Kennedy, 1993: 97). In 1996, the firearm homicide rate was 0.7 per 100,000 population. Based on police reports, 211 people were murdered with a firearm, representing one-third of the 633 homicides committed during that year. That rate is consistent with that of the previous 20 years, during which the proportion of homicides involving a firearm averaged about 32.9 percent. The percentage was higher before 1975 when it used to fluctuate between 40 and 48 percent. The proportion of homicides that involve a firearm varies regionally as well: in 1996, it was highest in Nova Scotia at 44 percent; it was 41 percent in Quebec; 38 percent in British Columbia; 18 percent in Manitoba; and it was lowest in Saskatchewan at 13 percent (Hung, 1997a).

5.2 Characteristics of Firearm Homicide

Firearms play different roles in homicides depending on the circumstances behind the incident; what type of incident it is; the age and sex of both the victim and the offender; the relationship between them, and other factors. For instance, a distinction is often made between a *primary homicide*, in which the offender intends to cause serious injury or death to the victim, and a *secondary homicide*, which happens when another crime is being committed (Goetting, 1995). Primary homicides are more common. They

are usually directed at an acquaintance, and often one with whom the offender has had an intimate relationship.

Most murderers are male. According to the Canadian Centre for Justice Statistics, when the murderer and the victim are strangers, the murderer is extremely likely to be a male (96 percent of the cases) and is younger than 26 years old in half of the cases. Murderers who are younger than 18, as in about eight percent of cases, tend to beat or strangle their victims to death; this happened in 33 percent of murders committed by youths between 1991 and 1993. The young murderers stabbed or shot their victims 29 percent of the time during the same period (Wright and Federowycz, 1996: 71).

Between 1961 and 1990, female murderers accounted for only 12 percent of all murders in Canada and, in three-quarters of these cases, the victim was a family member. Female murderers are less likely to use a firearm than male offenders; they did so in 23 percent of cases (Silverman and Kennedy, 1993: 141).

During the 30-year period ending in 1990, about 71 percent of firearm-related homicide victims were male. In fact, when the victim of a homicide was a female, a firearm was somewhat less likely to be used than when the victim was male (Silverman and Kennedy, 1993).

When the murder victim is female, she is as much as nine times more likely to be killed by a spouse or by someone whom she has known intimately than by a stranger (Rodgers and Kong, 1996; Wilson *et al.*, 1995; Wright and Fedorowycz, 1996: 68). In the 30 years between 1961 and 1990, 2,129 husbands killed their wives. They used a firearm 47 percent of the time, and even more frequently when they were older than 65 (Silverman and Kennedy, 1993: 69-76). Where the murderer was male, he then committed suicide 27 percent of the time, compared to three percent of female offenders (*Ibidem*). Among the 782 wives who killed their husbands during the same period, 35 percent used a firearm.

Silverman and Kennedy (*Ibid.*) point out that 41.7 percent of victims of firearm-related homicides between 1961 and 1990 were between 18 and 34 years old, and 40.7 percent were between 35 and 54 years of age. Victims who were younger than 18 accounted for 9.4 percent of all victims, and those over the age of 55 represented eight percent.

When the murder victim is an infant or a child, the murderer is often a parent. In 620 cases of a parent killing a child in Canada between 1961 and 1990, 323 involved the fathers and 289 involved the mothers. Mothers killed their children with a firearm in nine percent of cases; fathers 25 percent of the time. Parents were more likely to kill their infants and young children than their older children. In 43 percent of cases involving the mother, the child was less than two years old. When examining the method used, as the age of the victim increased, firearms were used more often (Silverman and Kennedy, 1993).

These statistics show how complex the question of homicides can be. In the last ten years, about 2,100 people were murdered by a firearm. When looking at how many of these could have been prevented, there are unresolved questions. For example, there were fewer firearm homicides in Canada in the last decade, while there were no significant changes in the number of firearms that were available in the country (Department of Justice Canada, 1996). And the reduced firearm homicide rate cannot be explained by measures that made handguns and other types of firearms less accessible; the proportion of homicides involving handguns has been increasing.

Some answers may be found in the changing patterns of different types of homicides. Changes in patterns of armed robberies, for example, may affect the number of secondary homicides—those committed during another criminal offense.

5.3 Type of Firearms Used in Homicide

Homicide data from 1974 to 1996 indicate that 55 percent of all firearm homicides were committed with rifles and shotguns. However, since 1991, offenders have increasingly tended to murder their victims with a handgun, and have done so less often with a rifle or shotgun (Hung, 1997). Axon and Moyer (1994) examined homicides that occurred in Toronto from 1991 to 1993. In cases where they knew what type of firearm was used, 72 percent of the time it was a handgun; rifles or shotguns were used 20 percent of the time; and a sawed-off long gun was used in seven percent of cases. The percentage of cases involving handguns in this study was higher than the national average.

In 1996, among all firearm homicides:

- 50 percent were committed with handguns;
- 39 percent involved a rifle or shotgun; and
- 11 percent involved a fully automatic firearm, a sawed-off rifle or shotgun, or an unknown type of firearm (Hung, 1997).

5.4 Firearms and Domestic Violence

In recent years, increased attention has been given to family homicide, and to spousal homicides in particular. Between 1975 and 1990, firearms were involved in approximately one-third of all domestic homicides (Dansys Consultant, 1992).

When there is a history of fights in the home, or when one or more members of the household abuses illegal substances, there is a greater risk of homicide. Research evidence shows that having a firearm in the home is also associated with a higher risk of homicide by a family member or intimate acquaintance (Boyd, 1995; Gabor, 1994; Kellermann *et al.*, 1993). According to Reiss and Roth (1993: 262), the choice of a weapon in violent domestic disputes may well be “the nearest available object that can project force.” In

contrast to other types of homicide, the authors concluded, it would seem likely that in domestic disputes “the instrumentality rather than intent contributes most of the firearm’s lethal effect” (*Ibidem*).

Different strategies may be called for to prevent homicide in the home than to prevent homicide on the street (Tardiff *et al.*, 1995). The murder of one spouse by another is usually preceded by other violent incidents that are often known to the police. Domestic homicides should be preventable, at least in some cases, by reducing the likelihood that a firearm is present during such conflicts.

Crawford and her colleagues studied intimate femicides in Ontario between 1991 and 1994. They found evidence that “intimate femicides were not the isolated and unpredictable acts of passion they are often believed to be” (1997: 50). In one-half of the cases, the offender had previously attacked or threatened the victim, and in at least one-third of the cases, the couple had had some contact with the police before the killing.

Prohibition orders and, to a lesser extent, measures to ensure the safe storage of the firearms that are kept at home, are other means that have been proposed to prevent incidents of domestic violence (Department of Justice Canada, 1995a). The effectiveness of such measures in preventing spousal homicides has not been empirically assessed. It is also unlikely that the measures in question can affect situations where the firearm used was obtained or possessed illegally by the offender. According to Dansys Consultants (1992: 26), as much as one-fifth of the firearms used in spousal homicide cases may fall within this category.

5.5 International Comparisons

International studies tend to show a positive correlation between levels of firearm ownership and homicide rates, even if the relationship is not exact (Gabor, 1994:35; 1995: 199), and indicate a strong statistical association between gun ownership levels and gun-related homicides (Killias, 1993b). Yet, the observed presence in some cases of a positive correlation between firearm ownership and non-firearm homicides suggests that other factors are at play in producing the observed correlations.

While there may be many reasons behind the different homicide rates in Canada and the United States, a comparison strongly suggests that the difference in the amount of available firearms in the two countries is an important factor. A recent analysis conducted for the Department of Justice Canada (Hung, 1996) revealed the following:

- On average, between 1985 and 1995, the per capita homicide rate in the United States was 3.8 times higher than in Canada.
- For the same period, twice as many homicides involved a firearm in the United States than in Canada.

- In 1995, the U.S. per capita firearm homicide rate was 9.7 times higher than in Canada.

The killing of police officers in the line of duty is another area that illustrates the difference between firearm violence in the two countries. According to Gabor (1997: 12), when the relative number of sworn officers in the two countries is taken into account, a U.S. police officer is seven times more likely to be killed than a Canadian officer. In the United States, out of the 74 police murders which occurred in 1995, 83.7 percent involved the use of a firearm; it was a handgun in 58.1 percent of cases (Federal Bureau of Investigation, 1997).

5.6 Youth and Firearm Crime

5.6.1 Youth as Perpetrators of Firearm Homicides

From 1985 to 1992, the rates for homicides committed by children and youth remained much lower in Canada than in the United States; the rates have not increased since then (Silverman and Kennedy, 1993: 164). According to Moyer (1996:95), for homicide and attempted murder, the number of suspects between the ages of 12 and 17 fluctuated in the past 17 years, with no consistent trend. Between 1961 and 1990, children under the age of 18 committed 794 homicides (Silverman and Kennedy, 1993: 162). Firearms were used in 45 percent of cases involving children under the age of 15, and in 31 percent of cases involving an offender between 15 and 17 years of age (*Ibidem*).

5.6.2 Firearm-related Youth Crime

The Federal/Provincial/Territorial Task Force on Youth Justice concluded a review of violent youth crime by stating that there were clear differences between public perceptions of youth crime in Canada and reality (1996: 18) (See also: Schissel, 1997; Roberts, 1994: 46). Their report argued that the public is “undoubtedly influenced by the American media and popular culture, and is probably unaware of the very large differences between Canada and the United States in the amount and seriousness of violent youth crime” (*Idem*: 17). Similar misconceptions, based on the U.S. experience with youths using firearms and becoming violent, may also affect how serious the Canadian public perceives the problem of youth violence involving firearms to be. To date, there is no consistent evidence that more youths are using firearms in violent incidents today than in the last 20 years.

The public is concerned about the situation in the United States, where violent youth crime has reached alarming proportions. Although such incidents seem to have decreased in the last few years, the decrease is in relation to record-high rates in the previous decade. For example, the number of juveniles under 18 years of age who

committed homicides doubled between 1985 and 1992. Beginning in 1985, the number of firearm homicides grew steadily, with no corresponding upward trend in homicides not involving a firearm (Bilchik: 1996; Blumstein: 1995; 1996; Blumstein and Cork, 1996; Cornell, 1993; Donzinger, 1996; Kellermann: 1995; Powell *et al.*, 1996; Zimring, 1996).

The rates of youth crime in Canada remained much lower than in the United States during the same period. The rate of juveniles charged with using a firearm, imitation firearm or air gun compared to other types of robberies remained low (Moyer, 1996). There is little research on youths who participate in violent gangs (e.g., Mathews, 1993) and even less on how these groups use firearms. Some anecdotal evidence suggests that members of youth gangs in Canada are less likely than their U.S. counterparts to carry a firearm as opposed to another kind of weapon.

Moyer noted that the increase in violent youth crime in the United States occurred despite a toughening of juvenile justice legislation in some states. It was therefore most likely associated with social factors, and not legislation (Moyer, 1996). In fact, it would appear that one of the most significant factors in the levels of youth violence between the two countries may indeed be the ease, or lack of it, with which youths from the two countries can get firearms and, in particular, can obtain handguns.

5.6.3 The Diffusion Hypothesis

Several U.S. authors explain the unprecedented increase in youth violence involving firearms as the *diffusion* or *contagion* hypothesis (Bilchik, 1996; Blumstein, 1995; 1996; Blumstein and Cork, 1996; Travis, 1997). According to this hypothesis (Blumstein, 1996), juveniles who became increasingly involved in the drug trade acquired firearms to protect themselves; a relatively easy task, given the availability of firearms in the United States. Then, many youths not involved in the drug business may have felt it necessary to have a firearm to protect themselves from armed drug dealers. The increased presence of guns in the community has meant that disputes once settled by fights escalated to more lethal incidents involving shootings (Zimring, 1996). The end result, Blumstein observed, is that “gun possession escalated into an arms race that diffused the weapons broadly throughout the community” (1996: 2).

With this hypothesis many researchers conclude that, for U.S. youth, acquiring a firearm and committing violent crimes with firearms is no longer as closely related to drug trafficking as it once was (Kennedy *et al.*, 1996: 153). Fear, self-protection and self-defence emerge as overwhelming reasons why a large proportion of U.S. youth, particularly in cities, have taken to carrying concealed weapons on a regular basis (Bilchik, 1996; Hemenway *et al.*, 1996; Sheley and Brewer, 1995; Sheley and Wright, 1995). This is particularly true of youths involved in crime or in gangs (Ash *et al.*, 1996; Bjerregaard and Lizotte, 1995; Callahan *et al.*, 1993; Decker *et al.*, 1996; Hutson *et al.*, 1994; Kennedy *et al.*, 1996; Koper and Reuter, 1996; Sheley and Wright, 1993; 1995).

At the centre of the *diffusion* hypothesis is the fact that the youths have easy access to firearms, particularly to handguns (Blumstein and Cork, 1996; Zimring, 1996). It is illegal in both Canada and the United States for a youth to possess or carry the type of firearm that Canada defines as restricted or prohibited. In contrast to the United States, however, where possession and carrying of such firearms is widespread among youths and particularly among youths involved in crime (Callahan *et al.*, 1993; Decker *et al.*, 1996; Kellermann, 1995; Sheley and Wright, 1993;1995), there is no evidence that this is the case in Canada. In this country, most cases of youths charged with possession of offensive weapons did not have handguns or prohibited weapons, such as switch blades, martial arts items or automatic firearms, but instead were carrying such things as bats, knives and sticks. In fact, incidents involving restricted weapons have been fairly rare over the last decade (Moyer, 1996: 100).

5.6.4 Violence in Schools

There are significant differences between Canada and the United States with respect to violence in schools and the prevalence of firearms in schools. A two-year U.S. study of 25 states, found that 105 people were killed in school incidents, and the offender used a firearm in 77.1 percent of the cases. About 95.6 percent of victims were male, and 72 percent were students. Victims were more likely to belong to a minority racial or ethnic group in a secondary school within an urban school district (Kachur *et al.*, 1996; see also: Sheley *et al.*, 1995; 1994a).

To date, the level of school violence observed in the United States is unmatched in Canada. Nevertheless, Canadian teachers, school board representatives and law enforcement officials have indicated in local surveys that they are concerned about an increase in the amount of violence in schools and in the number of students who carry weapons to school (e.g., Walker, 1994).

A 1995 survey of Canadian school board and police representatives indicated that 80 percent of respondents believed that violence was more common and intense than ten years ago (Gabor, 1995). A national mail-out survey of police officials and educators indicated that it is rare to find and seize firearms in junior and senior high schools and that seizures tend to take place in urban centres of 50,000 or more people. Most weapons seized were knives, shop-crafted or homemade weapons and clubs, bats and sticks. The use of weapons in violent confrontations between youths in schools was not believed to be common (Walker, 1994: 8).

While police seizures of weapons may be relatively rare in Canada, another study indicates that weapons may be more present in urban high schools. A 1995 survey of 962 Calgary secondary school students found that 28 percent of respondents admitted to carrying a weapon at school or having a weapon in their lockers during the past year. The weapon in question was most often a knife, at 15.9 percent, a homemade weapon, at 11.6 percent, or a club or bat, at 9.1 percent. With respect to firearms, the students had

handguns 2.6 percent of the time; followed by pellet guns 5.1 percent of the time, and replica firearms 6.5 percent of the time (Smith *et al.*: 1995; 1995a). Four out of five students who had brought a handgun to school—mostly male students—reported doing so once or a few times (Smith *et al.*, 1995a: 60).

5.7 International Comparisons—Assaults

In Canada, most assaults and threats do not involve a weapon. According to the 1996 ICVS, 12.7 percent of Canadian respondents reported having been assaulted or threatened during the previous five years. In all, 0.4 percent of Canadians reported being assaulted or threatened with a firearm (Block, 1998). Block, who compared the survey findings for nine western industrialized countries, reported that less than one percent of respondents, in all countries except the United States, reported being assaulted or threatened with a firearm during the previous five years. In the United States, both armed threats and assaults with a firearm were more frequent than in other countries. The risk of being threatened or assaulted with a firearm was 5.9 times higher in the United States than in Canada (Block, 1998: 18; Mayhew and van Dijk, 1997).

5.8 Characteristics of Armed Robberies

Robbery frequently involves firearms. According to Statistics Canada's *Canadian Crime Statistics*, there were 31,242 robberies reported in Canada in 1996. Of these, 21.3 percent were classified as firearm robberies and 33 percent involved other weapons. In the last 20 years, the number of robberies has increased, but the percentage of those involving a firearm has decreased by 45 percent (Department of Justice, 1996; Hung, 1997).

Sometimes the firearm used to intimidate a victim may not be a real firearm. A very small percentage of robberies result in an arrest, and since the firearm used is even less frequently recovered, it is difficult to estimate with precision the proportion of real versus fake firearms used in robberies. In Toronto, from 1991 to 1993, Axon and Moyer (1994) found that in the few cases of armed robbery where they were able to obtain information on the type of firearm, 43 percent involved handguns and 36 percent involved imitation firearms or air guns.

Researchers have noted an increase in the criminal use of restricted firearms in other countries, including England and Wales (Mayhew, 1996: 4). In the United States, offenders use handguns in nearly 80 percent of the robbery cases for which the type of weapon is known (Goetting, 1995: 158).

There is no exact estimate of the proportion of legal versus illegal firearms that are used in crime. The firearm is often not recovered and, when it is, it may have been tampered with to obscure its origin (Mayhew, 1996: 15). When an illegal firearm is used, it frequently has been stolen from the legitimate owner (Corkery, 1994; Don, 1995). In

their exploratory study on the use of firearms in crime in Toronto, Axon and Moyer (1994) found that in homicide and robbery cases where the firearm was recovered, the offender had acquired it illegally in 52 percent of cases. They also noted that many firearm offenders had a criminal record and were not in legal possession of the firearm when they committed the offence. Nearly two-thirds of murderers and robbers had criminal records (*Idem*). In England and Wales, most firearms used in crime were held illegally (Mayhew, 1996: 3; Home Office, 1997).

5.8.1 Types of Robberies

It is important to distinguish between types of criminal incidents when looking at the role firearms may play. The term *robbery* refers to a wide variety of circumstances in which force or the threat of force is used. Robberies of banks and other financial institutions are different from other commercial robberies, and these vary from individuals getting mugged (Desroches, 1995). Whether these incidents involve a firearm depend on the characteristics of the offender, the victim, and the target of the robbery. For instance, muggings are more likely to be committed by young offenders, where bank robberies are more likely to be committed by men in their twenties (Desroches, 1995: 42). Weapons used in street robberies are different from those used in commercial or financial robberies (Seto, 1994: 10).

A growing body of research on robbery incidents and the thought processes of offenders shows that robberies are often opportunistic. To the offender, the priority is to manage the victim. The offender uses speed, surprise, intimidation and force to minimize the victim's resistance and the risk of violence or apprehension, as well as to optimize the chance of success (Desroches, 1995: 31). Desroches (*Ibidem*) noted that, since robbery is seldom planned in detail, offenders are likely to use whatever weapons are at their disposal. Lone offenders apparently use a firearm more often than groups of offenders. The perception that the victim may also be armed influences the offender's decision to use a firearm, and probably whether or not to commit the robbery (*Ibid*). Offenders who are convicted of using a firearm in a robbery may receive additional charges and tougher sentences. However, we are not certain of the extent to which this is an important element in the decisions made by most offenders.

Some robberies result in murder. Between 1961 and 1990, 31 percent of robberies turned into homicides as criminals who set out to steal or rob someone ended up shooting their victims. Victims of fatal robberies were beaten in 30 percent of cases and stabbed 27 percent of the time. When a firearm was used, it was a handgun in almost half of the cases (Silverman and Kennedy, 1993: 119). The incidents generally occurred within the same race. About 82 percent of the victims were males and 60 percent of them were older than 44 (*Ibidem*). The Winnipeg Police Service examined a sample of 127 robberies in 1995. Of the 145 victims, none were killed but 12 percent of them were injured during the incident (Proactive Information Services, 1997).

5.9 International Comparisons—Robbery

Block (1998) found that the frequency of robbery in the past five years varied from 2.5 to four percent in seven countries, with Canada situated at 3.4 percent. The differences, according to Block, are probably not statistically meaningful. Indeed, excluding the United States, there was no meaningful difference in the reported rates of armed confrontation during a robbery. In contrast, in the United States, respondents were about twice as likely as elsewhere to have been confronted with a weapon during a robbery in the past five years. In the United States, the weapon was twice as likely as in Canada to be a firearm (*Idem*: 15-17; Zawitz, 1995).

5.10 The Presence of a Firearm and the Probability of Attacks and Serious Injuries

The author of the previous literature review concluded that a person who is attacked by someone with a gun is more likely to be killed or seriously injured than if the attacker had used another type of weapon (Gabor, 1994: 31). Since then, an analysis of data in the Massachusetts surveillance system for 1994, comparing lethal and non-lethal violence revealed that shootings were 12 times more likely to result in death than assaults with a sharp instrument. The case-fatality rate was at 16.2 percent in incidents involving firearms, as opposed to 1.3 percent in those involving knives (Barber *et al.*, 1996: 488). While firearms are surely lethal weapons, the severity of an injury sustained in an attack also depends on the intention of the attacker. The previous review (Gabor, 1994: 31-35) looked at the question of intent and noted its complexity. Among other considerations, the author outlined how the offender does not always premeditate the crime, nor is the offender always motivated to kill. The judgement of the offender may be impaired by alcohol or drugs; and the decision to shoot may be impulsive. Each of these empirical observations remain valid (see also: Mayhew, 1996).

Researchers continue to debate whether the violence is determined more by the motivation of the offender or by the nature of the instrument used, such as a firearm (Gabor, 1994: 31). Instead, intent and instrumentality should be seen as interconnected. The author found no research evidence in the previous review, nor in subsequent research, in which findings offered a clear distinction between the respective contribution of these two determinants in producing a lethal outcome. Since two-thirds of homicides committed in Canada are committed without firearms, other methods of attacking and killing are also lethal. When one looks specifically at secondary homicides; that is, those occurring as a result of another offence, firearms are involved in a surprisingly small number of offences (Silverman and Kennedy, 1993). There is no research available on failed homicide attempts or on robberies and assaults that have gone wrong. Some studies could help establish a link between the type of weapon involved and the seriousness of the outcome.

The previous review addressed another aspect of this question: is there a greater chance that an offender will launch an attack during a crime or a confrontation if there is a

firearm present? The various studies considered in the previous review (Gabor 1994: 26; also, 1995: 201) indicated that robbers armed with guns were less likely to attack and injure victims than those using other weapons or no weapons. In assaultive violence, according to Kleck's review of research to date, "the net effect of an aggressor gun possession on whether the aggressor attacks is negative" (1995: 22).

When all of these research findings are considered, it would seem that the chances of a serious firearm injury may be offset by the greater likelihood of an attack when knives or other weapons are used (Gabor, 1994: 31). If such is the case, it would seem that the victim's risk of sustaining a serious or lethal injury depends on whether the offender is using a firearm, the victim's reaction and whether or not the firearm is discharged. The power which weaponry confers cannot be treated as exclusively violence-enhancing. Kleck (1995: 24) summarized existing research findings as follows:

"{an} aggressor's possession and use of a gun apparently *reduces* the probability of attack, *reduces* the probability that the attack will result in an injury, and *increases* the probability that the injury will be fatal. Therefore, it is not at all obvious that the threatening situations with a gun-armed aggressor are more likely to result in the victim's death, since it is not obvious what the relative balance of these countervailing effects is."

The previous review reported that when firearms are used in a crime, this may increase the risk of injuries to bystanders (Gabor, 1994: 23). Obviously, the firing of high-velocity projectiles will increase the risk of injury to bystanders. Frequent drive-by shootings in the United States have drawn attention to injuries caused to innocent bystanders, but that risk is a direct result of the nature of the offense. To date, no studies have looked at the risks for witnesses and bystanders during various types of violent crimes, nor at the relative impact of firearms when present in such incidents.

Finally, the previous literature review examined a number of studies on the *weapons effect*, or the notion that a weapon stimulates impulsive reactions including aggression (Gabor, 1994: 25-26). To date, research does not confirm that a "triggering effect" (Kleck, 1995: 21) is the only possible result or even the most frequent reaction. The effect exists, but it appears to be contingent on settings and conditions that are not yet very well specified (*Ibidem*).

5.11 Summary

- One of the factors associated with violence is the availability of firearms. The extent to which violent crimes can be prevented by reducing or controlling the availability of firearms is still widely debated.
- In 1996, offenders used a firearm to commit 211 homicides, constituting about one-third of all homicides committed during that year. The proportion of firearm

homicides has remained relatively consistent, at about 33 percent of all homicides over the past 20 years.

- Since 1975, the total number of homicides and the number committed with firearms have declined. There is no simple explanation for the observed decrease.
- The role of firearms in homicides depends on the circumstances behind the incident; the type of incident; the age and sex of the victim and the offender, and the nature of their relationship.
- Homicide data from 1974 to 1996 indicate that 55 percent of all firearm homicides were committed with rifles and shotguns. However, since 1991, offenders have increasingly tended to murder their victims with handguns, and decreasingly with a rifle or shotgun.
- In recent years, increased attention has been given to family homicide, and in particular to spousal homicide. Approximately one-third of all domestic homicides involve a firearm.
- Spousal homicide is rarely a spontaneous single event; it is more generally the end of serial violence in the home.
- Of all types of interpersonal confrontation, the outcome of domestic disputes may be most influenced by the presence of a firearm.
- International comparisons indicate a strong association between owning a firearm and firearm homicide. Such studies also tend to show a positive correlation between levels of firearm ownership and homicide rates, even if the relationship is not exact. This is not the case with violent crime in general.
- Youth violence involving firearms in the United States was not paralleled in Canada. Youth access to firearms and, in particular, to handguns is likely one of the main factors explaining the observed differences in the levels of youth violence between the two countries.
- Misconceptions based on the U.S. experience with youth violence and firearms may be affecting public perception of the seriousness of firearm-related youth violence in Canada. There is no consistent evidence that this type of violence has been increasing in Canada over the last two decades.
- In Canada, most assaults and threats do not involve a weapon. The risk of being threatened or assaulted with a firearm is nearly six times greater in the United States than in Canada.

- There were 31,242 robberies reported in Canada in 1996. Of these, 21.3 percent involved a firearm. In the past two decades, the number of robberies has increased, but the percentage of those involving a firearm has decreased.
- The term robbery refers to a wide variety of incidents where force or the threat of force is used. An offender's decision to use a weapon, and to use a firearm rather than another weapon, are structured around several factors: the characteristics of the victim, the target, and the offender. Whether a firearm is accessible to the offender is only one of the many factors that structures such decisions.
- There is an ongoing debate among researchers on whether the motivation of the offender or the nature of the instrument itself determines a violent episode. The two should be seen as interconnected.
- A victim's risk of sustaining serious injury or death in a confrontation involving a firearm seems to depend on a number of factors which are not well understood.

6.0 ACCIDENTS

6.1 Frequency of Accidental Firearm Deaths

Over the last few decades, the rate of unintentional firearm deaths in Canada and most other industrialized countries has been declining steadily. In Canada, that decline actually began in the 1950s, and was particularly evident in the 1960s and early 1970s (Kopel, 1992; Mauser, 1995a). Steady decreases in the rate of unintentional deaths were also reported in many other countries, including Denmark (Thomsen and Albrechtsen, 1991: 166), Australia (Mukherjee and Carcach, 1996: 8-9) and the United States (Jacobs, 1995: 325; Kates *et al.*, 1995; Kleck, 1991; Lee and Harris, 1993: 16).

In 1995, 49 people died in Canada because of an unintentional firearm injury. This represents about four percent of the 1,125 firearm-related deaths reported that year. In other countries, similar data are not always reliable, making international comparisons difficult. According to the United Nations Survey on Firearm Regulation, the rate of accidental deaths resulting from a firearm, per 100,000 population, was 0.02 in the United Kingdom, 0.11 in Australia, 0.13 in Canada, 0.29 in New Zealand, and 0.58 in the United States (United Nations, 1998: 108-109).

The case-fatality rate of unintentional injuries can probably be assumed to be smaller than the case-fatality rate of intentional firearm injuries. There is limited information on which to base a valid Canadian estimate of the case-fatality rate for accidental firearm injuries. When the number of patients admitted to the hospital for an accidental firearm injury and discharged after one night was compared to data on the number of people who died from their firearm injuries, the data suggest that unintentional injuries are ten times more frequent than unintentional deaths (Gabor 1995: 205). In the past several years, this gap has been increasing. In the most recent year for which data is available (Hung, 1997), there were 13 times more unintentional injuries than unintentional deaths.

6.2 Characteristics of the Individuals and Circumstances Involved

Relatively little is known about the characteristics and circumstances of firearm accidents in Canada. Existing national data provide information on the number of people who die each year from unintentional firearm injuries; the age and sex of the victim; and the jurisdiction in which the person died. A few coroner's offices have conducted some preliminary research on these deaths. The provincial departments of Natural Resources collect some data on firearm accidents, but they are generally limited to hunting incidents and do not provide sufficient detail about the individuals or circumstances involved.

Canadian research is limited on the circumstances of firearm accidents, such as hunting and other types of accidents, and individual and environmental factors.

Researchers recently conducted a study in Quebec and found that 37 percent of accidental deaths resulted from a hunting incident; five percent occurred when the shooter was carrying a firearm; and 48 percent occurred during other activities. In 55 percent of cases, the shooter accidentally shot himself. In half of the incidents, the shooter owned the firearm (Bureau du coroner, 1994: 64-66), implying that half the time the incident involved a borrowed or stolen weapon. The Quebec study also found that 95 percent of the accident victims were male (Bureau du coroner, 1994: 64-66).

Gabor (1995: 205) reported that, between 1979 and 1988, 25 percent of people who died from an unintentional firearm injury were under the age of 15, and 30 percent of victims were between the ages of 15 and 24. The Quebec coroner's office recently conducted a study of 38 unintentional firearm deaths that occurred in the province between 1990 and 1992. The findings indicated that, of these, 13 percent of the victims were younger than 15, and 39 percent were between 15 and 24 years old. When the researchers examined the per capita rates, they found a bi-modal distribution: the highest rates were found in the 15 to 24 age group and the second highest in the 55 and older group (Bureau du coroner, 1994: 11).

The U.S. Centers for Disease Control and Prevention (1997: 103) examined the causes of death in 26 developed countries among children up to 14 years of age, using national health statistics provided by the countries. The research showed that the death rate for children who were victims of unintentional firearm injuries was nine times higher in the United States—0.36 compared to 0.04—than in all of the other countries combined.

According to one national study in the United States, seven male children died from firearm injuries for every female child victim in 1989. The ratio increased to 15:1 among adolescent and young adult victims (Lee and Harris, 1993: 17). Children aged 10 to 19 and living in non-metropolitan areas were twice as likely to die from an unintentional firearm injury (*Ibidem*). This trend may depend on whether victims had easy access to emergency or hospital care in the areas of the study.

The Cook County Medical Examiner's Office in the United States holds records on 45 children under the age of 10 who died from firearm injuries between 1984 and 1992. Choi and colleagues reviewed all of these cases (1994). Fourteen, or 31 percent of these were accidents resulting from children playing in the home; the remaining 69 percent were homicides. Approximately 53 percent of the children were younger than six when they were killed, and 78 percent of the victims were male. Handguns were used in 89 percent of cases. No comparable studies were found for Canada.

6.3 Predisposition to Accidental Injuries

In the previous literature review, Gabor (1994:56) considered whether people who are injured or killed because of firearm injuries are part of a highly predisposed group or whether the injuries and deaths are owed to the dangerousness of firearms. He concluded

that considerably more research is required to establish whether those involved in firearm accidents are reckless or merely unfortunate individuals. He added that “the existing evidence suggested that although reckless individuals may be more likely than others to be involved in accidents, the majority of cases involve product design shortcomings or ordinary people—often young people—who had access to a firearm and made an error in judgement or were the victims of misfortune” (*Idem*: 58). Since then, there has been no research to shed new light on this question.

6.4 Children and Youths Injured in Firearm Accidents

The previous review raised a point concerning the age of the victims of firearm accidents (Gabor, 1994: 53). The author noted how some supporters argued that the relative youthfulness of victims who die from an accidental firearm injury should incite greater restrictions on firearms, while others insisted that the number of fatal firearm accidents involving children is small in comparison to other causes of death for children and that it should not be used to justify further firearm restrictions (Gabor, 1994: 54).

When researchers examined Connecticut hospital records of children up to age 19 who were treated for gunshot wounds between 1988 and 1992, they found that more victims had suffered non-fatal injuries that were classified as accidental or were undetermined than had died under these circumstances. In total, these two categories accounted for only seven percent (6 percent and one percent respectively) of fatal incidents, compared to 57 percent (39 percent and 18 percent respectively) of the non-fatal cases (Zavoski *et al.*, 1995: 279). In contrast, twice as many incidents in which a child had died were attributed to assault than ones in which the child was injured but did not die (81 percent and 41 percent respectively). About 25 non-fatal incidents were motivated by suicide for every one in which the child died (*Ibidem*). These data may lead to questions about how firearm incidents involving children, particularly the non-fatal incidents, were being classified and how many of them were truly accidental.

Li *et al.* (1996) analyzed data from the National Pediatric Trauma Registry for the period between 1990 and 1994. They examined patients 14 years of age and younger who were admitted to trauma centres for unintentional firearm injuries (n=292) and assaultive firearm injuries (n=457). The researchers found the frequency of unintentional firearm injuries rose in the afternoons peaking between 4:00 and 5:00 p.m., with 89 percent having occurred at home. Over 80 percent of the patients were male, and 58.9 percent were between 10 and 14 years of age. The study concluded that unintentional firearm injuries involving children occurred while parents were still at work and children were playing with loaded guns.

6.5 Firearm Injury and Prevalence of Firearms

Very few studies have probed how accidents caused by firearms may be linked to the availability of firearms (Gabor, 1994: 55;1995: 205; Mayhew, 1996:23). The author of the previous review concluded that, in his opinion, “the preponderance of evidence suggests that increasing the number of firearms in circulation will lead to more fatal accidents” but that more research was required before researchers could draw definitive conclusions (Gabor, 1994: 56). Some Canadian researchers argue that studies have often demonstrated a strong link and that national comparisons bear out the relationship between the number of people who own firearms and the number who die from unintentional firearm injuries (Gabor *et al.*, 1996: 324). Others suggest that a number of factors affect the relationship (e.g., Kopel, 1995). Data collected from about 20 countries that participated in a recent United Nations survey and that had information on the levels of firearm ownership and on the rates of accidental deaths caused by firearms, suggest that there may be a relationship between the two (United Nations, 1997b: 36). However, as with previous research, one cannot determine if this is a causal relationship because of other variables that come into play.

The lack of measures on how accessible firearms are in countries has restricted comparisons of international data (Mayhew, 1996:23; Lester, 1993a: 167). None of the studies referenced above proposed an international comparison of data on people who were injured by firearms and data on people who were killed by them. Until more is known about the prevalence of non-fatal injuries suffered from firearm accidents, researchers are unlikely to answer the question satisfactorily.

6.6 Prevention Strategies

6.6.1 Safe Storage

Loaded firearms within reach are quite possibly responsible for a number of spontaneous homicides, suicides and accidents, particularly involving children (Morrison *et al.*, 1995: 364). Many authors have argued that preventing easy access to a loaded firearm can reduce the risk of firearm accidents. In the United States, many see preventing a child’s access to a handgun as the first step in preventing firearm morbidity and mortality against children (Goldberg *et al.*, 1995; Laraqe *et al.*, 1995; Senturia *et al.*, 1996; Wiley and Casey, 1993; Zavoiski *et al.*, 1995: 281). In support, Kleck argued that in none of the studies he had reviewed where the firearm was kept under lock, was a child killed in an accident involving a firearm (Kleck, 1991: 279). There have been various strategies proposed to reduce firearm accidents, including firearm safety courses, laws mandating safe storage of guns, restrictions on who may buy guns, educating children about the dangers of firearms, and strategies that focus on the design of firearms. These measures and others may be able to reduce firearm injuries and deaths among children and adults.

Several U.S. studies have examined how owners store their firearms. National random telephone surveys of firearm owners (Hemenway *et al.*, 1995a; Cook and Ludwig, 1997) found that as many as 20 percent of owners kept a loaded firearm unlocked in the home (Hemenway *et al.*, 1995a: 49; Cook and Ludwig, 1997: 7). A 1991 survey indicated that as many as 53 percent of the respondents did not keep firearms locked up. Owning a handgun as opposed to a long gun, purchasing the weapon for protection, and having no children in the household were all positively correlated with keeping a loaded gun in the home. The strongest predictor of respondents keeping loaded firearms, however, was the type of gun. Handgun owners were up to five times more likely than owners of long guns to keep the firearms loaded at least some of the time (Cook and Ludwig, 1997: 7; see also: Hemenway *et al.*, 1995). Two telephone surveys of firearm owners in Oregon, conducted in 1991 and 1992, strongly suggested that unsafe firearm carrying and storage practices were associated with alcohol consumption patterns (Nelson *et al.*, 1996).

Relevant U.S. studies confirm that when a person owns a handgun for work or to protect himself, this strongly indicates that a firearm is likely to be found loaded in the home, even in a home with children (e.g., Goldberg *et al.*, 1995: 160; Senturia *et al.*, 1996: 268; Morrison *et al.*, 1995: 364). A survey of 102 police departments in cities with a population of 10,000 or more was conducted. In this study, an interviewer, posing as a parent of a three-year-old and a ten-year-old telephoned for advice on how to store a firearm safely (Denno *et al.*, 1996). The interviewer asked the respondents about their own storage practices at home and discovered that trigger locks were frequently recommended but infrequently used by police officers themselves; portable lock-boxes were also recommended and were more frequently used by officers (*Idem*: 929). The researchers noted that “there was a remarkable contrast between what police recommended to the interviewer and what they used themselves. Over one-third of respondents reported using no storage method at all” (*Ibidem*).

6.6.2 Safety Training

Training firearm owners and prospective owners in the proper use and storage of firearms is often cited as a preferred method of preventing firearm accidents (e.g., Becker *et al.*, 1993: 282). The previous literature review suggested that the provisions for the safe storage of firearms, introduced by the Canadian legislation in 1991, could play a role in preventing some tragedies (Gabor, 1994: 58). In 1991, a national survey showed that in 49 percent of the households in which at least one firearm was owned, at least one person took training on firearm safety during the previous five years (Angus Reid, 1991). More recent data on the number of individuals who took such training were not available nor was there any new Canadian research that examines the effectiveness of such strategies in reducing firearm accidents.

Some safety programs are designed to teach children about the risks of firearms. An experimental U.S. study of 48 children, aged four to six years, compared children’s play with toy guns and disarmed real handguns before and after an information-based

intervention. Its results indicated that the intervention did not change the children's behaviour (Hardy *et al.*, 1996). Many of the children had difficulty differentiating real guns from toy guns. While children who had access to a firearm at home were better able to tell the difference, some of these children too were not aware that they had just played with a real handgun (*Ibidem*). The researchers concluded that only providing children with information is insufficient; parents must be responsible for protecting their children from the potential hazards of firearms.

6.6.3 Safety of Firearms

Improvements to the safety of firearms are often recommended as a way to prevent accidental injuries and deaths. Chapdeleine and colleagues noted that self-inflicted accidental injuries can be related to faulty firearm design and poor maintenance. Many of them are preventable. A better design—one focused on preventing children and adults from inadvertently discharging a firearm—may have a greater impact than years of safety training (Chapdeleine *et al.*, 1991:1220).

In the United States, several authors have advocated a product-safety oriented focus as part of a larger firearm injury prevention approach (e.g., Donzinger, 1996; Kellermann *et al.*, 1991; Marwick, 1995; Sinauer *et al.*, 1996; Wintemute, 1996). Often noting the significant progress made in reducing the rate of motor vehicle deaths by improving the design of motor vehicles, they emphasize the need to identify those trends in the design and marketing of firearms that affect the likelihood of firearm injuries or appear likely to do so in the future (Wintemute, 1996: 1749). Donzinger argued that technology has reached a point where “fingerprinted” weapons are made that can be fired only by the legal owner (1996: 214). On the question of firearm design and safety features, some authors noted the importance of providing protection that does not depend on users' behaviour (Sinauer *et al.*, 1996: 1743). They argued that design modifications such as loading indicators, or minimum standards for trigger-safety mechanisms, could reduce the likelihood of unintended discharges (*Ibidem*). While some of these technological advances have been made, they are not widespread and there does not appear to be any research on their effectiveness.

6.6.4 Hunting Regulations

Other specific measures are aimed at preventing hunting accidents. These are often implemented as part of hunting and gaming laws and regulations. Researchers have evaluated the *Hunter Orange* law in North Carolina, and found that fewer hunters were being killed because they were mistaken for game. These numbers were statistically significant (Cina *et al.*, 1996: 395). No Canadian studies have examined how wearing blaze orange hunting gear can reduce hunting accidents.

6.7 Summary

- The rate of unintentional firearm deaths in Canada and most other industrialized countries has been declining steadily over the last few decades.
- About four percent of firearm-related deaths in 1995 were due to unintentional firearm injuries, representing 49 people.
- The case-fatality rate of unintentional injuries can probably be assumed to be smaller than the case-fatality rate of intentional firearm injuries. In the most recent year for which data was available, there were 13 times more unintentional injuries than unintentional deaths.
- Little is known about the circumstances and characteristics of firearm accidents in Canada. Most of the available data provide only basic information, including the age and sex of the victim, as well as the jurisdiction in which the individual died. Data from coroners' offices and provincial ministries can supplement this data, but it is limited.
- A U.S. study found the rate of childhood death as a result of firearm accidents to be greater in the United States than for 26 other industrialized countries combined.
- There have been no recent studies examining the link between actions or characteristics that suggest a predisposition to injury, and firearm deaths.
- Despite an apparent link between accidents and the availability of firearms, we cannot infer a causal relationship.
- Improperly stored and loaded firearms within easy reach may be responsible for a large proportion of spontaneous homicides, suicides and accidents. It is widely agreed that preventing such access may be the most effective way to prevent firearm accidents.
- Training firearm owners in the proper use and storage of firearms is a popular way to prevent firearm accidents. There is little research, however, examining the effectiveness of such strategies.
- New firearm product-safety strategies are beginning to appear, including better design and safety features, and "fingerprinting" technology. These are not widespread and there is little research on their effectiveness.
- Research indicates that the wearing of blaze orange by hunters appears to reduce hunting fatalities.

7.0 FIREARMS, SELF-PROTECTION AND CRIME PREVENTION

7.1 Research Issues

Few questions in the firearms research literature are as controversial as those relating to individuals who own firearms to protect themselves or to prevent crime. Further, several authors do not clearly distinguish between the descriptive and the normative aspects of the issue.

The descriptive aspect is concerned with whether or not firearms are owned and used for protection or to prevent crime, by whom, under what circumstances, and with what consequences. The normative aspect of the issue centres on whether it is desirable to allow civilians to own and use firearms to protect themselves or to prevent crimes. The distinction between these two aspects becomes blurred when researchers try to show that a *net-benefit* effect can result from people owning firearms for these reasons. This research orientation raises questions that are nearly impossible to answer.

There are at least two main versions of what Mayhew (1996: 19) refers to as the net-benefit argument in normative research. In the first version, the risk of a suicide, homicide or unintentional death resulting from an individual owning a firearm is weighed against any potential benefit (e.g., Kellermann, 1997).

The second version of the net-benefit argument is couched in broader terms: “is society better-off?” (Cook *et al.*, 1997: 467). According to Boyd (1995: 564), the best evidence available so far indicates that Canadians will be safer if they do not have firearms in their homes and if they are discouraged from using firearms to protect themselves. Lapierre (1994:567), on the other hand, suggested that there would be more crime if citizens in the United States were not allowed to exercise their right to self-defense, a view which the U.S. public supports more than people in Canada (Gabor, 1997). Kleck has argued that the effects of owning a firearm may inhibit crime to a roughly equal degree that it generates crime (Kleck, 1991: 143; 1995; see also Alba and Messner, 1995; 1995a). Others argue that the defensive use of firearms exceeds harmful use (Mauser, 1993).

7.2 U.S.-based Research

Research on cost-benefit questions is difficult to find in countries where people do not tend to own firearms to protect themselves, or where it is severely restricted by the law. Most of the research has been conducted in the United States (Gabor, 1994: 59), where people are not as discouraged from owning firearms for self-protection by the law or other cultural factors as they are in Canada and in many other industrialized countries. Since there seem to be many differences between Canada and the United States with respect to firearms, we must use caution in assessing the findings of relevant U.S. studies.

One author has argued that Canadians do not differ from U.S. citizens as much as we have thought in using firearms defensively (Mauser, 1996a: 395). However, the Department of Justice Canada recently released a report highlighting of some of the differences between Canada and the United States in relation to armed self-defense (Gabor, 1997). Some of these are:

- the prevalence of firearms is approximately 30 times greater in the United States than in Canada;
- U.S. households are five times more likely than Canadian households to possess a handgun;
- residents of the two countries differ in terms of the fear of crime they experience in their own neighbourhoods;
- the rates of firearm misuse and crime differ significantly between the two countries;
- there are significant cultural and historical differences that account for distinct public attitudes towards how firearms are used and regulated; and,
- there is a difference between the two countries' constitutional and legislative histories and general approach to firearms control.

Even the use of force, either in self-defense or to protect one's property, tends to be legally circumscribed differently in the United States than in Canada (Gabor, 1996c; Mauser, 1996a).

7.3 Owning Firearms for Self-protection

As discussed in Chapter 2, survey findings have consistently shown that the proportion of Canadians who say that their main reason for owning a firearm is self-defense or self-protection is very low (see also: Gabor, 1997). It has been argued, however, that the numbers could be higher (e.g., Mauser 1996). In a country where such a rationale for owning firearms is dissuaded by law, survey respondents are less likely to volunteer self-protection as their main reason for owning a firearm even if that is the case.

In the United States, self-protection is one of the leading reasons for owning a firearm, particularly a handgun (Block, 1998: 11; Gabor, 1997: 5). A national survey on private ownership of firearms estimated that as much as 46 percent of owners had firearms primarily for protection against crime and almost three-quarters of those who owned only handguns kept them for self-protection (Cook and Ludwig, 1997: 2).

As noted in the previous literature review (Gabor, 1994: 13 and 59), firearm owners in the United States cite victimization and fear of crime as main reasons for owning a firearm. Nevertheless, the evidence supporting a strong link between owning firearms and crime variables such as recent victimization, fear of crime, or confidence in the criminal justice system, remains somewhat ambiguous (Sheley *et al.*, 1994: 222). This is partly because none of these variables is easy to measure consistently. Fear of crime, in

particular, is a complex and difficult phenomenon to measure (Haghighi and Sorensen, 1996). Research evidence is more consistent in linking people who own firearms to protect themselves, in jurisdictions where it is allowed or tolerated, to real or perceived vulnerability to victimization (Luxenburg *et al.*, 1994; McDowall, 1995).

Owning firearms for self-protection is often conceptualized by researchers as one of many self-help strategies that may be adopted by an individual to avoid victimization (Kleck and Gertz, 1995: 151; Luxenburg *et al.*, 1994, Mauser, 1996a). As one of a number of potentially injurious means of self-help protection, albeit a particularly lethal one, firearm ownership is distinguished from other means such as installing locks, or moving to a different area.

Individual views on self-reliance and a lack of confidence in law enforcement and the criminal justice system are fairly consistently linked with the choice of a particular self-help strategy. However, not much is known about how individuals choose between self-help protection strategies that are potentially injurious, and others, or between passive versus active strategies (Luxenburg *et al.*, 1994: 162). Some researchers have argued that owning a firearm is a passive means of self-protection that, in some contexts, may be more readily available to people with low incomes who cannot afford more expensive measures (Kleck, 1991: 104). Alternatively, this choice may be influenced by other variables that may prevent one from being able to rely on the official protection of the police or the criminal justice system: participation in illegal activities, a risky life-style, or status as an illegal immigrant (Cook and Ludwig, 1997: 8; Decker *et al.*, 1997).

There is much evidence that, among criminal elements and gang members, self-protection is one of the leading reasons for possessing a firearm illegally (Blumstein and Cork, 1996; Callahan *et al.*, 1993; Sheley and Wright, 1993). U.S. studies examining the reasons that children and adolescents seek illegal firearms, especially on and around school grounds, have clearly shown how a youth's decision to acquire and carry a firearm is influenced by his or her fear of being a victim (Kennedy *et al.*, 1996: 153-154).

It has been suggested that, at least in the United States, women are increasingly arming themselves for self-protection (Zeiss Stange, 1995). Indeed, data from the U.S. national survey on private ownership of firearms (Cook and Ludwig, 1997: 3) indicated that 67 percent of female owners owned a firearm primarily for self-protection, as opposed to 41 percent of male owners (Sheley *et al.*, 1994: 233). However, there is no clear evidence that more Canadian and U.S. women are owning firearms than ever before. In fact, the gender gap in owning a firearm in the United States appears to have remained relatively constant (Arthur, 1994: 261; Cook and Ludwig, 1997: 3; Sheley *et al.*, 1994: 232; Smith and Smith, 1995: 143; Thompson *et al.*, 1996:70). Neither is there evidence that women who fear crime or who have been victims of crime are more likely to own a firearm in that country (Arthur, 1994: 261; Smith and Smith, 1995: 144). Further, there is little evidence that these experiences are more related to owning a firearm for women than for men (Sheley *et al.*, 1994: 232).

7.4 International Comparisons

A majority of the countries surveyed by the United Nations International Study on Firearm Regulation allow residents to possess a firearm for self-protection (United Nations, 1998: 58). Most impose restrictions on carrying a firearm as well (*Idem*: 57-61). However, comparative analyses of the reasons that people own firearms in various countries are rare. The best ones available to date (Alvazzi del Frate, 1997; Block, 1998) are based on data collected through the 1996 ICVS. Every respondent whose household possessed at least one firearm was asked the purpose for owning that firearm. Out of the nine western industrialized countries compared by Block (1998: 12), protection was a common reason to own a firearm in only three: France, at 22.1 percent; Austria, at 25.9 percent; and the United States, at 38.9 percent.

In a separate analysis of data on crime prevention from the 1996 survey, owning a firearm to prevent crimes was reported in vastly different percentages among countries with varied economic status and social structures. Owning a firearm for this purpose varied: 79.4 percent in Africa to 65.7 percent in Latin America, 34.6 percent in Asia, 28.7 percent in countries in transition, 21.8 percent in the New World and 8.6 percent in Western Europe²(Alvazzi del Frate, 1997).

The data allowed some analysis of the possible link between owning a firearm and recently having been a victim of crime. No significant correlation was observed between respondents reporting a recent burglary or attempted burglary and owning a firearm. However, there was a strong correlation between a recent incident having occurred and owning a firearm for the specific purpose of crime prevention (*Idem*: 14). Furthermore, according to Alvazzi del Frate, respondents who declared owning a weapon to prevent crime also believed they were likely or very likely to be burglarized within the next 12 months (*Ibidem*).

7.5 Civilian Use of Firearms for Self-protection or Crime Prevention

As noted in the previous review (Gabor, 1994: 60-65), surveys looking at whether people used a firearm to protect themselves, and how often they did so, faced serious definitional and methodological difficulties. These problems are not presented in this report in detail.³

Among them, though, is the difficulty of measuring how often firearms are actually used for self-defense or protection. A victim who has averted a crime by using a weapon may be less likely to report the crime, particularly in Canada, where the use of a firearm

² See chapter 2 for a list of countries included in each of the regions.

³ See the following for literature on this issue: Adams, 1996; Alba and Messner, 1995; 1995a; Boyd, 1995a; 1996a; Cook and Ludwig, 1997; Cook and Moore, 1995; Cook *et al.*, 1997; Gabor, 1994; 1996a; 1996b; 1997; Kleck, 1991; 1995; Kleck and Gertz, 1995; Mauser, 1995; 1996; 1996a; McDowall, 1995; McDowall and Wiersema, 1994; Wolfgang, 1995; 1996.

for self-protection is mostly prohibited by law and the victim may be uncertain of the legal status of the firearm. There are also difficulties created by the ambiguous nature of what respondents may report as defensive action (Cook *et al.*, 1997; Cook and Ludwig, 1997; Cook and Moore, 1995; Gabor, 1997).

The question of how often Canadians use firearms to defend themselves against human threats has produced a heated debate over the validity of the limited research that has been conducted in this country (see Boyd, 1995; Buckner, 1995; Gabor, 1994; 1996c; 1997; Mauser, 1993; 1994; 1995; 1996a; 1996b).

When national estimates are produced using percentages that are based on a small sample of respondents reportedly having used a firearm defensively, the resulting number can be surprisingly large (see Mauser 1996a). These estimates remain controversial because of definitional issues and because survey respondents rarely report using firearms defensively.

U.S. estimates vary considerably depending on whether they are based on data collected through victimization surveys not specifically designed for that purpose (McDowall, 1995; McDowall and Wiersema, 1994; Marshall and Webb, 1994) or other special surveys (Cook and Ludwig, 1997; Kleck and Gertz, 1995; Rand, 1994). Theoretically, there are valid reasons why the total number of defensive uses can be underestimated (Kleck, 1991: 109) or overblown (Cook and Ludwig, 1997). As Cook and Moore (1995: 272) have argued, the puzzle of the disparities in the survey-based estimates is not yet resolved.

One of the ways that a person may use a firearm for self-protection, albeit a mostly passive one, is by carrying it on their person or in their vehicle. It is generally assumed that few gun owners do so in Canada. In the United States, where 31 states permit the carrying of firearms, recent estimates indicated that approximately one-third of firearm owners, or 14 million adults, carried firearms at least once during the 12 months preceding the survey (Cook and Ludwig, 1997: 8).

7.6 Effectiveness of Protective Firearm Ownership and Use

Since it is rare for a firearm owner to use the firearm for self-defense, many people negate its significance as a protection strategy (e.g., Boyd, 1995; Gabor, 1996c). However, others have argued that it is indisputable that firearms can be useful for self-protection, even if not fired (Mauser, 1995: 561; Mauser, 1996a).

Kleck argued that, when considering how effective it is to own a firearm to protect oneself, it is important to distinguish between two questions:

- “the effectiveness of the individual instances of civilian gun use against criminals in preventing injury and the commission of the crimes involved, and

- whether such actions deter criminal attempts from being made in the first place” (Kleck, 1991: 122).

With respect to the first of these two questions, current research consistently indicates that victims who resist with a firearm or other weapon are less likely than other victims to lose their property in robberies or burglaries (Kleck, 1995: 8). As well, these victims are less likely to be injured (Gabor, 1994: 61; Kleck, 1995: 18; Kleck and Gertz, 1995: 151-2). From this information, some authors concluded that restricting firearms may result in lost opportunities for self-protection (Kleck, 1995: 19; Kleck and Gertz, 1995: 151; Mauser 1996a).

Research findings are far less clear with respect to the second question, concerning whether criminal attempts are deterred (Gabor, 1994: 61-63). To identify a deterrent effect, many authors continue to quote the findings of Wright and Rossi (1984), who state that criminals are, in fact, concerned about armed victims. An equivalent study has yet to be conducted in Canada. Some researchers suggest that the more firearms that are owned in a particular area, the more likely it is that burglars will be deterred from entering occupied premises, reducing confrontation with residents and the likelihood of deaths and injuries (Kleck, 1995: 18-19). Kleck noted that there may never be a definitive answer to the deterrence question, “since it revolves around the issue of how many crimes do *not* occur because of victim gun ownership” (*Ibidem*). Furthermore, one may not be able to find out to what extent criminals are deterred by victims with firearms; they may simply find a different group of victims or a different type of crime to achieve the same purpose. If that is the case then crime has not been prevented with this deterrence method; it has only been displaced.

Over the last decade, there has been a trend in the United States to adopt Carrying Concealed Weapons/Firearms Laws (Cramer and Kopel, 1995; Gabor, 1997). As mentioned earlier, 31 states have reacted to public concerns about crime by enacting laws under which most citizens can obtain a concealed-carry permit (Cook and Ludwig, 1997). This trend presents the question of whether liberalizing citizens’ access to firearms to protect themselves helps deter crime or merely adds to the existing crime problem (Gabor, 1997; McDowall *et al.*, 1995; 1995a; Lott and Mustard, 1997; Polsby, 1995). Current evaluations of such laws are still rare and leave a lot of doubt about their effect. However, evaluating the impact of such measures is at least as complex a task as evaluating the impact of firearm control measures. Researchers encounter all the usual theoretical, methodological and data availability difficulties when they try to isolate the impact of one legislative initiative. They also must deal with the fact that legislation varies considerably from state to state. The impact of legislation on owning and using firearms for self-protection is difficult to ascertain, let alone the impact on criminal behaviour patterns. One analysis of cross-sectional time-series data for U.S. counties found that allowing citizens to carry concealed weapons deterred violent crimes without increasing accidental deaths (Lott and Mustard, 1997). Other researchers have questioned the methodology used by this study as well as its main findings (Webster, 1996).

7.7 The Risks Associated With Protective Firearm Ownership and Use

Firearms may protect people, but they can also yield tragic consequences (Lee and Harris, 1993). In the United States, the question of accidental deaths due to firearm injuries is increasingly linked with the issue of protective use of firearms. A study conducted by Kellermann and his associates is frequently cited as evidence that the immediate availability of a firearm is also related to a greater likelihood of both suicide and homicide in the home (Kellermann *et al.*, 1993). The interpretation of the findings of this particular study remains controversial (Cook and Moore, 1995: 276; Mauser, 1996c). The study relied on a case-control method which is particularly suitable for an exploratory study, but it has not yet been replicated.

U.S. surveys have consistently found that keeping a firearm loaded or unlocked is related to owning it for self-protection (Gabor, 1994; Goldberg *et al.*, 1995; Hemenway *et al.*, 1995a; Morrison *et al.*, 1995; Senturia *et al.*, 1996). Firearms that are readily available for protection are also readily available to children (Lee and Harris, 1993) as well as to people who are considering suicide (Bonderman, 1995). The risks of keeping a gun in the home for self-protection or crime prevention may outweigh the potential benefits (Kellermann, 1997), particularly for women in cases of possible domestic violence (Bonderman, 1995; Boyd, 1995).

7.8 Summary

- Whether or not it is desirable for citizens to own and use firearms to protect themselves is the subject of controversy among several authors.
- There is little research on the extent to which Canadians use firearms for self-protection. The proportion of Canadians who state self-defence or self-protection as their main reason for owning a firearm is very low. This contrasts with the situation in other countries where firearms are considered to be an effective means to prevent crime and protect citizens. In the United States, self-protection is one of the leading reasons for owning a firearm, particularly a handgun.
- There are several fundamental differences between Canada and the United States in relation to citizens arming themselves for self-defence.
- Research findings consistently link owning a firearm for self-protection, in jurisdictions where it is permitted, to being or feeling vulnerable to victimization.
- Internationally, most countries allow residents to possess a firearm for self-protection but also impose restrictions on carrying a firearm.

- Surveys measuring self-protective uses of firearms often face serious definitional and methodological difficulties. In Canada, the question of how often Canadians use firearms to defend themselves against human threats has given rise to a heated debate.
- Research consistently indicates that victims who resist with a gun or other weapon are less likely than other victims to lose their property in robberies or burglaries; victims are also less likely to be injured than those who do not resist or who do so without a weapon.
- Research findings on the potential deterrent effect of owning firearms are controversial and inconclusive.
- There is limited research addressing the risks of owning and using firearms for protection. It is clear, however, that firearms that are kept for self-protection tend to be kept loaded and unlocked in the home more often, so that firearms that are readily available for protection may also readily be misused.
- The risks of keeping a gun in the home for self-protection may outweigh its potential benefit, particularly for women who face the risk of domestic violence.
- The conclusion reached in the previous literature review remains valid: existing research fails to support any firm conclusions about the extent to which successful defensive uses of firearms and the deterrent effects of firearms ownership for self-protection offset their adverse effects.

8.0 THE IMPACT OF FIREARMS LEGISLATION

8.1 Evolution of the Canadian Legislative Approach to Regulating Firearms

In Canada, private ownership of firearms has been the object of some form of regulation throughout this century. The provisions in the 1892 *Criminal Code* were amended and enhanced several times during the first part of the twentieth century. The rationale for firearm control evolved during these years. By 1968, legislators had introduced the basis of the firearm control scheme that we have now. Since then, there have been three rounds of legislative amendments: in 1977, 1991 and 1995. The rationale for these initiatives was based on the premise that deaths and injuries from firearm misuse can be prevented (Department of Justice Canada, 1996: 1). These initiatives addressed public health and safety issues by banning the use or possession of certain types of firearms and by preventing access to firearms by high-risk users. The most recent provisions, for example, have introduced a requirement for the universal licensing of owners and registration of firearms. They also touched on criminal justice issues aimed at deterring offenders from committing crimes or from using firearms in criminal activities (*Ibidem*; see also: Stenning, 1996a).

8.2 Research Issues

Evaluative research to date has focused almost exclusively on the impact of the 1977 amendments, despite it being conceptually and empirically difficult to isolate the impact of these amendments from those of the previously existing regime of firearm regulation. Both regimes pursued the same objectives and were complementary.

Researchers have not yet scrutinized the 1991 and 1995 amendments to the same degree. These amendments were implemented too recently, or were not fully implemented. Several researchers have interpreted existing research findings, and have offered their views on the potential impact of these amendments and whether the most recent initiatives will succeed (Boyd, 1995; 1996; Buckner, 1995; Chapdeleine and Maurice, 1996; Gabor, 1995; Hastings, 1995; Stenning; 1995; 1996a).

Before discussing the research on the impact of Canadian legislative initiatives in the area of firearms control, it is important to make two general observations:

1. the various firearms control initiatives were “never oriented towards reducing the availability of firearms in Canada, except for guns designed for military use and other high-power firearms that have limited sporting purposes” (Department of Justice Canada, 1996: 2); and

2. firearm control legislation, regulation and programs were not implemented at a specific point in time, but were the result of a gradual process over several decades.

8.3 Research on the Impact of Canadian Firearms Legislation

The previous review noted differing opinions on the impact of firearm control in Canada. At that time, only a few exploratory studies were available and these had yielded contradictory findings (Gabor, 1994: 66). It was not clear that the Canadian legislation passed in 1977 had a measurable impact. If it did, the impact appeared to be “modest” (*Idem*, p. 67). The rates of firearm homicides and robberies did not decline after the law, and there was disagreement about the impact of the legislation on suicides. There were some indications that the number of suicides involving firearms had declined slightly, but there was no conclusive evidence that it could be attributed to the changes in the law. The author of the previous review suggests that the changes may have resulted from an increase in the total volume of firearms in Canada during the period under review or that some of the dispositions of the new law had perhaps not been implemented consistently or with enough vigour (*Idem*, 79). In 1993, the Auditor General of Canada recommended that the Department of Justice Canada evaluate the firearms program to ensure that the legislative objectives were being met (Department of Justice Canada, 1996).

Since the last literature review, a few more attempts were made to analyse the relationship between firearm availability and suicide rates (Carrington and Moyer, 1994; 1994a; Leenaars and Lester, 1994; 1996; 1997; 1997a; Lester and Leenaars, 1993; Rich and Young, 1995). Also, the federal government made a significant attempt to evaluate the impact of the 1977 legislation (Department of Justice Canada, 1996). While the original intention was to analyze the impact of both the 1977 and 1991 firearm control legislation, there was not enough relevant data to examine the latter legislation. Finally, the study posed two questions:

- What changes occurred over time in the proportion of people who died from a firearm wound, and to what extent could these changes be attributed to the 1977 firearm control legislation?
- Did the number of firearm offenses change over time, and to what extent could the difference be attributed to the 1977 firearm control legislation?

The study focused on homicides, suicides and fatal accidents involving firearms. The statistical analysis was comprehensive and sophisticated, proceeding from exploratory analysis through time-series modelling and then structural modelling.

The findings of the study were largely inconclusive, and offered only some tentative answers to the questions it had set out to explore. Empirically, the study supported the proposition that the legislation was correlated with a reduction in homicides

caused by firearm injuries. With respect to firearm suicides, the results were less conclusive. The study did not attempt to ascertain whether reductions in such deaths were accompanied by similar reductions in non-fatal incidents. It could neither completely address the issue of a possible method displacement effect, nor provide a conclusive answer to the question of whether any observed change could be attributed to the legislation or to some other concurrent factors. None of these shortcomings was attributable to the study itself. As Murbach (1996) noted, the study “demonstrated the limitations of a research model that is purely quantitative and is dependent on data collected for other purposes” (1996: 13). It also showed that the “theoretical foundation” on which a statistical model can be built is not at present “overly solid” (*Ibidem*). Nevertheless, the study represents a significant contribution to our understanding of the methodological and theoretical difficulties associated with this type of evaluation. It showed that the data needed to fully assess the impact of the law are currently not available; this should assist researchers in defining criteria to guide similar future research (for detailed reviews of the study, see: Boyd, 1996; Murbach, 1996; Sacco, 1996).

In the majority of Canadian jurisdictions, the upward trend in suicide rates after the legislative changes in 1977 has begun to reverse itself (Carrington and Moyer, 1994; 1994a). However, we do not know whether this is because of the law, or simply the natural end of a 20-year trend (Carrington and Moyer, 1994). More clearly, there was a significant downward trend in the firearm suicide rate and in the proportion of suicides in which the victim used a firearm (Carrington and Moyer, 1994; 1994a; Lester and Leenaars, 1993, Leenaars and Lester, 1997). However, as Carrington and Moyer (1994a) noted, there was no accompanying decrease in the number of people owning firearms during this period. Again, it is not clear as to what we can attribute this reduction.

It has been argued that research on firearm control has lacked some theoretical sophistication (Taylor, 1995) and that it has tended to remain grounded in unspecified and largely untested assumptions about the links between firearms and violence, firearms and suicide, and about the expected impact of various control measures (Stenning, 1996).

Some social scientists would argue that it is not possible to isolate the effect of one out of scores of other relevant factors involved in social phenomena as complex as violence or suicide. Furthermore, even if it were somehow possible to control for the contribution of other factors to such phenomenon, how could one distinguish between the respective impact of one single legislative initiative and that of hundreds of other measures taken simultaneously through the criminal law, the criminal justice system, social programs, education and various other sectors that are also concerned with the problem? A final authoritative statement is not, perhaps, something that science can currently deliver. However, this does not mean that we should cease to pursue future evaluations.

8.4 Unresolved Difficulties in Determining the Effects of Firearm Control Legislation

One must keep in mind the multiple evaluation issues already identified in the research literature. The following compilation of issues may help us to better understand just how preliminary some conclusions are about the effectiveness of firearm control measures.

In Canada, the process of implementing a comprehensive firearm control regime has been ongoing. As a result, it is difficult to isolate the impact of one particular initiative from that of all the others.

The actual implementation of firearm control measures are frequently phased in over a period of time, and it is difficult to identify the exact moment at which the measures can be expected to have an effect on the problem.

Every new firearm control initiative to date has included a package of various measures and it is not usually possible to distinguish between the impacts of the various components. One cannot always assume that each element of the package has an effect, or even that the effect is necessarily a desirable one.

Some measures included in a firearm control strategy are designed to address specific types of firearm abuses such as suicide or domestic violence and may therefore have a very specific impact on a particular problem. Evaluation studies have so far concentrated on measuring the overall impact of a firearm control package as a whole and have paid insufficient attention to the possibility of partial and differential effectiveness of individual measures (Stenning, 1996b: 12).

Researchers who attempt to evaluate firearm control initiatives should assess the extent of program implementation, to avoid assumptions about whether the programs and legislation have been implemented consistently across the country. The success of the firearm control regime depends on effective enforcement of firearm control laws, including the investigation and the prosecution of firearm crimes (Gabor, 1994: 70). We have little systematic information on the level, coherence, consistency and effectiveness of law enforcement efforts in this area. Nor is there much information on the relative effectiveness of any of the existing law enforcement strategies.

Any observed change over time in the rates of fatal injuries resulting from suicide and homicide attempts, assaults or unintentional injuries involving firearms may be compensated by changes in non-fatal injuries. The ratio of fatal to non-fatal injuries cannot be assumed to be constant. Advances in emergency medicine and the greater availability of emergency medical services may also be partly responsible (Gabor, 1994: 67) for the decline in firearm deaths. It must be recognized that these same factors can also be responsible for some of the modest variations that can be observed in the rates of fatal suicide attempts and violent crimes.

Evaluation studies have all had to rely on data collected for other purposes. Evaluation attempts have been limited by the lack of available data on firearm incidents, their nature, the circumstances under which they occurred, the characteristics of the offenders and the victims, the type of firearms used, and how they were acquired.

The absence of data makes it particularly difficult to measure any displacement effect that might occur. A systematic displacement effect could prevent public health and public safety objectives of firearm control initiatives from being reached. Researchers most often try to determine whether a displacement effect is taking place by examining trends in the proportion of firearm-related incidents versus incidents involving other methods. However, the assumption that only a few other factors besides firearm control measures can affect that proportion may not be realistic (see: Britt *et al.*, 1996: 337).

All evaluation studies have relied on correlations between the rate of firearm abuses and more restrictive firearm laws. These correlations do not allow researchers to make firm conclusions about causality (Gabor, 1994; 1995) and other factors unrelated to firearm control.

8.5 Legislation Evaluations in the United States

The previous review encountered contradictions and inconclusive findings about the impact of firearm control in other countries, mostly in the United States (Gabor, 1994: 79). A number of studies have been conducted since the last review, but there are still many contradictions.

Some U.S. studies have attempted to measure how firearm control laws have affected the number of firearm-related deaths. One researcher, for example, used multiple linear regression models to evaluate the relationship between homicides and unintentional deaths from firearms in 1990 and a number of other factors, such as whether they occurred in a state with or without restrictions on firearm possession and use. The study indicated that firearm control laws had a very mild effect on the number of firearm deaths while socioeconomic variables such as a state's poverty level, unemployment and rate of alcohol consumption had an apparently significant impact (Kwon *et al.*, 1997).

U.S. researchers have noted for some time the importance of recognizing that "there is a wide variety of different strategies of control and no reason to suppose that all should be equally effective or ineffective" (Zimring, 1995: 9; see also: Teret and Wintemute, 1993 and Roth, 1994). The U.S. context offers unique opportunities to compare the effectiveness of various approaches to controlling firearms because of the range of approaches to firearm control at federal, state and city levels. The fact that there are an estimated 20,000 laws and regulations in the United States trying to contain the use of firearms (Kwon *et al.*, 1997) presents the possibility of comparing a highly-regulated state to one with relatively low levels of regulations. On the other hand, it would also seem evident that uneven regulation would allow firearms to be easily transported across state lines, thus potentially mitigating the effect of regulations.

The previous review concluded that the strongest evidence uncovered by U.S. studies is on restrictions on carrying firearms and enhanced sentences for the criminal use of firearms (Gabor, 1994: 79). This continues to be the case, although the evidence concerning the effectiveness of enhanced sentences is still far from being conclusive. Kleck and Patterson (1993) examined the impact of U.S. firearm control legislation in reducing violent crime. The study looked at how 19 types of legislation affected rates of homicide, robbery, aggravated assault and rape in 170 major U.S. cities. They concluded that most restrictions did not appear to produce a significant negative effect on total rates of violence, although some firearm control approaches did appear to have such an effect. The latter included approaches focusing on: screening firearm buyers; licensing local firearm dealers; banning possession of firearms by criminals and mentally ill individuals; stronger control on the illegal carrying of firearms; and, increased penalties for committing felonies with a firearm.

Early research on the effectiveness of the District of Columbia's 1976 handgun ban, using a univariate interrupted time series design, concluded that the ban did reduce the homicide rate (Loftin *et al.*, 1991; see also: Gabor 1994). However, subsequent research, using monthly statistics and a refined statistical analysis, suggested that the observed effectiveness of the handgun ban was more likely an artifact of the method of analysis (Britt *et al.*, 1996; 1996a; reply by McDowall *et al.*, 1996). Neither study could measure whether the ban was effectively enforced and had, in fact, resulted in a change in the prevalence and availability of handguns within the District.

Several U.S. authors have argued that carrying a firearm is an essential proximate cause of firearm violence outside the home (Sherman and Rogan, 1995: 675; Sherman *et al.*, 1995). They also argue that firearm density and the carrying of firearms may be correlated over time, but that "the carrying frequency per gun may be the behavioural mechanism by which gun density is translated into gun crime" (*Ibidem*). Enforcing firearm carrying laws may, therefore, be essential to reduce violence. Several authors have suggested that the police can reduce violence involving firearms by emphasizing enforcement in high-risk places, by high-risk people, at high-risk times. The Kansas City experiment was set up to evaluate that proposition and showed that firearm crimes could, indeed, be decreased through an enhanced and strategic enforcement of the law with no significant displacement effect (Sherman and Rogan, 1995). However, the short-term nature of the experiment did not allow the researchers to determine whether the effect was a lasting one.

Policies to prevent violence involving firearms by enhancing mandatory sentences for firearm crimes are very popular, and are often said to reduce the number of people who are killed intentionally by a firearm (Roth, 1994). However, the deterrent value of such measures is difficult to evaluate. Furthermore, when such measures are implemented, various unintended consequences may defeat their purpose. An initial review of studies of mandatory sentencing for firearm offences conducted in several U.S. cities suggests that the mandatory sentencing laws had substantially reduced the number of homicides, but had no demonstrable effect on the rates of assault and robbery (McDowall *et al.*, 1991; see

also Loftin *et al.*, 1993). The impact of the laws on murder rates varied considerably from city to city, so it was difficult to reach a conclusion about the impact of mandatory sentences (Meredith *et al.*, 1994: 13). Canadian researchers, Meredith and his colleagues (1994), reviewed the empirical research literature on mandatory minimum sentencing provisions and concluded among other things that: such charges are frequently the subject of plea negotiations; the public is largely unaware of which offences have mandatory minimum penalties; and police, lawyers and judges may alter their behaviour to mitigate the impact of a mandatory minimum penalty where it is perceived to be unduly harsh.

8.6 Summary

- Research efforts have focused on evaluating the 1977 firearms legislation. Evaluations have tended to focus on variations in the rates of various types of fatal injuries, since data on non-fatal ones are less complete.
- To date, the research has been unable to demonstrate that the 1977 legislation had a clear and conclusive impact on the role of firearms in fatal injuries in Canada. Considering the complexity of the objectives of such legislation and the lack of data, it is not surprising that more definitive answers are not available.
- Attempts to determine whether a particular policy initiative had a significant impact have focused on the levels of fatal incidents.
- Research conducted in other countries, mainly the United States, has produced contradictory and inconclusive findings about the impact of firearm control.
- The strongest U.S. research evidence relates to restrictions on carrying firearms and enhanced sentences for the criminal use of firearms. In both cases, however, the effect of these measures is strongly mitigated by the level, the intensity and the consistency of enforcement practices. Policies to prevent firearm violence through mandatory minimum sentences and enhanced mandatory sentences for firearm crimes are popular. However, the deterrent value of such measures is difficult to evaluate.
- The imposition of waiting periods before a firearm can be legally acquired is also widely believed to have an impact on certain types of crime and on suicide attempts. No clear research evidence is available to confirm this hypothesis.

9.0 ILLEGAL ACCESS TO FIREARMS

9.1 The Need to Curtail the Illegal Firearms Market

Research on the misuse of firearms has tended to focus on how many firearms are legally available. Similarly, firearm regulation schemes control the legitimate or authorized market for firearms. However, preventing firearms from falling into the wrong hands, and limiting irresponsible uses of firearms means curtailing the illegal firearms market. In fact, a priority should be placed on concurrent strategies to control and regulate the legal firearms market and to deter the illegal trade; if this does not occur, it is possible that the illegal market may become more lucrative and create new opportunities for criminals. Axon and Moyer (1994: xiii) emphasized the importance of controlling the circulation of illegal firearms and of preventing criminals from getting them.

Some U.S. researchers have indicated concern that law enforcement officials do not devote enough attention to illicit gun markets. Authors have analysed various proposals to suppress or disrupt the illegal market for firearms, particularly markets serving youths (e.g.: Bilchik, 1996; Cook *et al.*, 1995; Kennedy *et al.*, 1996; Weil and Knox, 1996). Some have suggested that undercover police work could disrupt and shrink the illicit gun market; others contend that law enforcement should give a higher priority to investigating and prosecuting cases in which firearms were stolen (Cook *et al.*, 1995; Cook and Leitzel, 1996). Without necessarily disagreeing with such suggestions, others have also argued that the characteristics of the illegal firearm market make it a poor target for law enforcement (Koper and Reuter, 1996: 137).

9.2 Sources of Illegal Firearms

It is important to know more about how offenders get firearms, their motives for owning and carrying them, and the nature of the local firearm markets. Canadian studies have not yet focused on these issues, and U.S. research findings cannot be transposed to the Canadian situation.

Several U.S. studies have documented the relative ease with which criminals, including juvenile offenders, can illegally obtain firearms (Decker *et al.*, 1996; Sheley, 1994; 1994a; Sheley and Brewer, 1995; Sheley and Wright, 1993; 1995). Approximately 68 percent of offenders who were interviewed soon after their arrest in a major U.S. city indicated that they could obtain a firearm in less than a month; 21 percent thought they could get one in a day or less. Only seven percent of offenders said they could not get a firearm (Decker *et al.*, 1996: 38). Offenders who admitting to being involved in dealing drugs or in gangs reported even greater ease of access to firearms (*Ibidem*).

In theory, there are three major illegal sources of firearms: theft, smuggling and illegal manufacturing. Unfortunately, there is very little information in Canada on any of

these activities. In its 1997 Annual Report on Organized Crime in Canada, the Criminal Intelligence Service Canada reported that “organized crime groups and individual criminals have access to a wide variety of firearms with an increasing predilection for automatic weapons” (1997: 15). According to the same source, these firearms are usually smuggled into Canada or acquired through criminal activities such as break-and-enters and thefts (*Ibidem*). There appear to be few reports of illegal manufacturing of firearms in Canada.

Recently, researchers have tried to uncover more information about the nature of the firearms used in crime or in other incidents reported to the police (Axon and Moyer, 1994; Daniel Antonowicz Consulting, 1997; Don, 1995; Department of Justice Canada, 1995b). The information is limited to incidents in which firearms were recovered by the police, and these represent only a small proportion of all firearm-related incidents.

An exploratory study conducted in Toronto examined police investigative files on homicide and robberies with firearms, as well as reports of seized firearms (Axon and Moyer, 1994). The study found that handguns used in violent crimes, most of which were illegally owned, were a problem in that city. Offenders used a handgun in more than 70 percent of homicides between 1991 and 1993. Most police records did not contain information on whether the firearm was smuggled, purchased illegally, stolen, or borrowed. The study also found that, in cases where a firearm was recovered by the police, at least one-half of murderers and robbers possessed the firearms illegally. Nearly two-thirds of the murderers and robbers had criminal records; half had been involved in incidents of seized firearms. The authors of the study estimated that illegal firearms were used in the following types of crime in Toronto: 52 percent of homicides where a firearm was recovered; and 68 percent of incidents in which a real gun was seized (*Idem*: 43).

9.3 Stolen Firearms

According to the 1996 Firearms Report to the Solicitor General by the Commissioner of the RCMP, a total of 4,409 firearms were reported stolen during that year, of which 44 percent were restricted weapons (1996: 20). According to the same source, 65,046 firearms have been reported stolen since 1974 and were still unaccounted for at the end of 1996. Close to 60 percent of these firearms were reported stolen in Quebec and Ontario. A little over 45 percent of the stolen firearms (29,545) were restricted weapons. In addition to these figures, close to 22,000 other firearms have been officially reported lost or missing since 1974 and remained so at the end of 1996; 96 percent of these were restricted weapons (*Ibidem*).

A review of firearm occurrences investigated by the Edmonton Police (Don, 1995: 9) revealed that in the last six months of 1993, there were 119 cases of stolen firearms. A little over half of these incidents involved prohibited (n=5) or restricted (n=56) weapons, a finding which indicates that owners may tend to report a stolen firearm more often when that firearm is registered. Of the 119 cases, 70 percent of the firearms were stolen from homes and eight percent were taken from businesses (*Idem*).

Beyond this limited information, very little is known about stolen firearms in Canada, what happens to them after they are stolen, how often they are recovered, and how often they are used in crime. Wade and Tennuci note that, at present, police cannot readily determine if unrestricted weapons found in the course of law enforcement activities have been stolen (1994: 41).

In the United States, several authors have noted how stolen firearms are an important source for criminals and, in particular, for youths, even where firearms and handguns are easily accessible (Cook *et al.*, 1995:86; Decker *et al.*, 1996; Sheley and Wright, 1993;1995). During interviews, offenders who had been arrested (Decker *et al.*, 1996: 42) revealed that stealing firearms is an important way to get them. In this survey, 13 percent of respondents admitted to having stolen a firearm at least once; the percentage was considerably higher among drug dealers, at 30 percent, and gang members, at 29 percent.

Stolen firearms seem to be plentiful on the black market. In the United States, researchers estimate that approximately half a million firearms are stolen annually (Cook *et al.*, 1995). Based on the national survey on private ownership and use of firearms conducted in 1994, Cook and Ludwig estimated that criminals stole one or more firearms from 0.9 percent of all households containing firearms in the United States in that year. They estimated that 593,000 firearms were stolen; 211,000 of which were handguns (Cook and Ludwig, 1997:7).

Based on the limited information available in Canada, the United States and the United Kingdom, it would seem that thefts of firearms most often occur in private residences (e.g., Cook and Ludwig, 1997; Corkery, 1994). When a burglary occurs and firearms are available in a household, they are likely to be stolen. However, there is no evidence that households containing firearms are necessarily targeted for burglaries. A study of crime reports submitted by 16 police forces in England and Wales revealed the unlikelihood of firearm owners being specifically targeted by offenders (Corkery, 1994). When available, imitation firearms and replicas were also stolen (*Idem*). It appears that the relationship between the market for stolen firearms and patterns of firearm theft are linked in much the same way as they are for other goods. Those general linkages, however, are still poorly understood (Sutton, 1995).

9.4 Firearm Smuggling

The large number of unregistered, restricted firearms recovered by police indicates that firearms are being smuggled and illegally imported into Canada (e.g., Axon and Moyer, 1994: xiii; Department of Justice Canada, 1995: 12). The 1997 Annual Report on Organized Crime by the Criminal Intelligence Service Canada suggests that the United States is the source of most legal and illegal firearms in Canada. According to that report, “it is relatively easy for Canadians to acquire firearms in the United States either through an American accomplice or ‘straw’ purchaser, or directly by themselves...Firearms are

smuggled into Canada through normal ports of entry and the numerous unmanned border crossings” (CSIS, 1997: 15). However, the true extent of the problem is unknown and cannot presently be estimated.

According to the same CSIS report, firearm couriers are not necessarily habitual criminals. The smuggling of firearms into the country appears to involve individuals or small groups moving shipments containing between three and twelve firearms (*Ibidem*). The consultations conducted by the Firearm Smuggling Work Group (Department of Justice Canada, 1995) revealed how little systematic information actually exists on smuggling activities.

In Canada, offenders may obtain illegal firearms from the millions of firearms that can be legally purchased or owned in the United States, but are either prohibited or restricted in this country. Another large source of firearms is from the Central American subregion which, as one of the major areas of confrontation during the Cold War, was supplied with firearms that are still in circulation and available to criminal groups (Chloros *et al.*, 1997; United Nations, 1997c:19).

Illegally imported firearms may well have been legally manufactured and exported; legally imported firearms may have been illegally exported; illegally acquired firearms in one location may be legally sold in another, and so on and so forth. It may be very difficult to control the trafficking in firearms at the national level without addressing the question of the international firearms trade. And, as Goldring (1997: 1) argued, it will prove equally difficult to control the illicit international market in firearms without monitoring and controlling domestic access to these weapons.

Several authors have noted that a lack of international cooperation may weaken national efforts to control illegal access to firearms (Goldring, 1997). Some national firearm regulations may even create international problems. For instance, when certain firearms are prohibited in a country without a means to destroy them, this may create a surplus of these firearms on the licit or illicit international firearm market. The point has been made by the United Nations that to successfully regulate the availability of firearms, there must be a strong link between national and international efforts (1997a; 1998).

Researchers who studied aspects of illicit light weapons trafficking at the international level have often observed how an artificial distinction between licit and illicit markets for firearms serves as a smokescreen to hide the lawlessness of the international firearms market (Dyer and O’Callaghan, 1998).

The distinction between a legal firearm transaction and an illegal one is most useful within a national context, at least to the extent that there is, as in Canada, a national scheme to regulate how firearms are manufactured, imported, transferred and acquired. In such cases, the illegal market refers to those transactions that occur outside of or against existing regulations. However, when the same distinction is used at the international level, or in countries where regulations may vary within their borders, it often serves to obscure

the fact that these two markets are not so dissimilar. The distinction between licit and illicit markets may be moot (Lock, 1995).

The United Nations Expert Group on Firearm Regulation found evidence of increasing transnational illicit transfers of firearms, many of which are of military design. Many countries are reporting serious concerns over the increasing number of firearms that are illegally imported, smuggled, stolen or trafficked (United Nations, 1998). Most countries reported that similar levels of prohibition or restriction are adopted in relation to both the export and import of firearms, although several states that restrict all imports of firearms do not place the same degree of restriction on their export (United Nations, 1998: 11). Countries generally reported that they had no evidence of illegal export of firearms, an interesting observation considering that most of these countries also reported difficulties with illegal importation (United Nations, 1998:78). Since one has to assume that illegally imported firearms have to be exported from somewhere, such reports do not answer the question of how many of them are perhaps exported legally with at least some form of complicity on the part in the country of origin.

It has been argued that the proliferation of firearms may vary somewhat from region to region, but there is no region in the world that is unaffected (Goldring, 1997; Klare, 1995; Lock, 1995; Mathiak, 1996; Williams, 1995; United Nations, 1997c). The structure of the firearms market, Lock noted (1995: 1), is not amenable to easy control. The end of the Cold War has opened the floodgates of surplus stocks. Huge overcapacities in manufacturing result in the most aggressive marketing with no borderline towards criminal activity (Lock, 1995: 1). Given the state of relative lawlessness which currently prevails with respect to international firearm trade, it has been argued that efforts to control the black market must include international agreements or regimes to help promote transparency, accountability, restraint and control in light weapons manufacturing, transfers and holdings (Goldring, 1997).

9.5 Links Between Drugs and Firearms Trafficking

Researchers have been able to link individuals and groups who deal drugs to owning illegal firearms. In the United States, some research suggests that drug dealers are major participants in illegal transactions involving firearms (Koper and Reuter, 1996: 136). Given the level of violence involved in the illegal drug industry and the risks associated with drug-related criminal activities, it is hardly surprising that offenders involved in such activities tend to be frequently and heavily armed.

In Canada, there is also some evidence to suggest that trafficking and smuggling networks, once established for other purposes, are usually not averse to making additional profits by smuggling or dealing in illegal firearms (Criminal Intelligence Service Canada, 1997: 6). Firearms are also known to be used as currency in illicit drug exchanges, and vice-versa (*Ibidem*). However, beyond the observation of these and other obvious links between the two types of illegal activities, little is actually known about the relationship between them.

Mariño (1996), using newspaper reports, compiled information on several dozen reported cases of clear links between local wars, arms trafficking and drug trafficking in over 35 countries around the world. He attributed this “recurring and important nexus between arms and drugs” to the combined effect of a dangerous mix of repressive drug prohibition and liberal arms trade policies.

A United Nations Panel of Experts noted that “in some regions, drug control efforts have increased the demand for small arms and light weapons by both law enforcement authorities and drug traffickers, thereby raising the level of violence” (United Nations, 1997c: 21). The experts concluded that there was a link between weapons being available, trafficking in drugs and arms, and the level of violence (*Idem*: 20). Goldring (1997: 7) quoted from a report from the Mexican Federal Attorney General’s Office providing evidence that guns and drugs frequently followed the same transportation routes, with guns entering Mexico from the United States while drugs went north from Mexico. Narcotic traffickers are apparently also heavily involved in illegal arms trafficking. “The inter-relationship,” Goldring adds, “is evident in the fact that in certain places guns are priced in terms of kilos of cocaine” (1997: 8).

9.6 Summary

- Measures to control and regulate the legal firearms market should be accompanied by equally vigorous measures to control the illicit firearms market.
- There is a growing number of U.S. studies examining the relative ease with which criminals can acquire firearms, the ways these firearms are obtained, and how they are used by offenders. The findings of these studies cannot be applied directly to Canada; equivalent Canadian studies do not exist.
- In 1996, there were 87,043 firearms reported lost, missing and stolen; this includes firearms recorded as missing and not recovered since 1974.
- Limited information is known about stolen firearms in Canada, what happens to them after they are stolen, how often they are recovered, or how often they are used in crime.
- The large number of unregistered, restricted firearms recovered by police indicate that firearms are being smuggled and illegally imported into Canada. However, the true extent of the problem is unknown and cannot, at present, be estimated.
- There is some evidence, at the international level, of increasing transnational illicit transfers of firearms. However, there is not systematic information on the nature and frequency of firearms trafficking and smuggling activities.

- Illegal drug trafficking is linked to illegal firearms markets. To date, there has been little research on the nature of these links, and on how the two sets of activities are interconnected.

10.0 CONCLUSION

As the reader will note, there has been a considerable amount of research conducted over the period covered by this review. The research has made progress in clarifying issues in certain areas and in examining previously unexplored areas; despite this, there remain several gaps in our existing knowledge about the relationship between firearms and accidental deaths, suicide and violent crime. With regard to our understanding of these phenomena in the Canadian context, it has been argued that, since much of the available research has been conducted in the United States, its findings cannot be assumed to directly apply to the Canadian situation. Nonetheless, some general conclusions are possible; these have been briefly summarized below. In addition, we have attempted to outline those areas where future exploration is warranted and where it might further contribute to the body of firearm research.

10.1 Firearm Ownership in Canada

In Canada, there are currently at least seven million firearms, including as many as 1.2 million handguns, for an overall rate of about 241 per 100,000 population. Overall estimates, based on a number of studies, assess the national ownership rate to be approximately 26 percent of Canadian households. Survey research, both domestic and international, has been the best way to estimate the prevalence of firearms and characteristics surrounding their use. Given that survey research aims to provide estimates, and that official statistics do not collect all information, the precise number of firearms in Canada is difficult to determine. Firearm ownership patterns are often assumed to be quite stable and to have remained unchanged for the last decade, although regular data collection could further inform whether the pattern has fluctuated. Over time, the universal firearm registration regime may provide a better basis for measuring the stock of legally owned firearms.

Recent international studies have contributed to our knowledge of comparative firearm ownership. The percentage of households owning firearms varied considerably between countries. A comparison of western countries found that 48 percent of U.S. households owned at least one firearm. Canada's rate was in the mid-range at 22 percent.

In Canada, hunting continues to be the main reason for owning a firearm and self-protection continues to be cited very rarely as the main reason. We know that patterns of firearm ownership vary across the country, and that legal firearm owners tend to be male and to reside in smaller communities. Research could further inform patterns of actual firearm use by owners. As well, further research could inform current knowledge regarding the sources of the legally owned firearms and the number, types and origins of firearms available in illegal markets.

10.2 Overview of Firearm Deaths and Injuries

In 1995, there were 1,125 cases of fatal firearm injuries, representing a rate of 3.8 per 100,000 population. Eighty percent of these were classified as suicides, 12.4 percent as homicides, and 4.3 percent as accidents. The rate of fatal firearm injuries has been decreasing steadily since 1978 and, in 1995, was at its lowest in at least 25 years.

Recent research on total firearm deaths in 29 countries allows for some preliminary international comparisons. The United States had among the highest rates of firearm misuse, while Canada was among a large group of countries in the mid-range. Japan reported considerably lower rates of firearm deaths.

There is currently no reliable national data on how many non-fatal injuries involving firearms occur. As a result, this may have implications on our ability to draw conclusions based on information about fatal injuries alone. Although the majority of injuries caused by firearms are non-fatal, whether an injury becomes fatal or not depends on a number of factors other than the incident itself. Future research and data collection might aim to further our understanding the role firearms play in injuries.

The research literature devotes a considerable amount of attention to fatal firearm injuries, the presumed link between their frequency and lethality, and the overall prevalence of firearms in society. The question is complex, since the link might only be understood by examining different types of incidents separately. However, available data continue to be limited and only permit tentative conclusions.

Both the present and the previous literature review have identified questions concerning firearm injuries; these remain unsatisfactorily addressed by the existing research. In most cases, the success of research efforts has been hampered by the lack of available data and by the absence of adequate incident-monitoring schemes.

There are several ways to address this basic lack of data, even if most of them are potentially onerous and may require a significant and concerted effort on the part of the health and criminal justice fields. Based on the research conducted to date and on the experience of other jurisdictions, it would seem that developing a national, comprehensive firearm-incident-monitoring system is necessary to be able to formulate authoritative and credible answers to most questions about preventing firearm injuries.

10.3 Firearm Suicide

At 80 percent, firearm suicides account for the majority of firearm deaths in Canada. The percentage of suicides involving firearms appears to have been decreasing during the last two decades. In 1995, less than a quarter of the nearly 4,000 suicides committed in Canada involved a firearm. When a firearm is used in a suicide, it generally tends to be a long gun rather than a handgun. Suicides are more frequent in urban areas, but the percentage of suicides involving a firearm tends to be lower in urban than in rural

areas. Males are more likely to commit suicide than females and are much more likely to do so with a firearm. The percentage of suicides involving a firearm, for both males and females, varies considerably between regions and is associated with, among other things, the availability of firearms. The relative availability of culturally acceptable suicide methods is only one of the many factors that structure the choices made by individuals considering suicide, including, very possibly, the decision to proceed with an attempt or not.

Existing regulation and restriction concerning firearms in Canada may have contributed to preventing some firearm suicides. However, the extent to which they did so remains unclear. As it stands today, the Canadian experience apparently provides some proof that firearm regulation may significantly affect the level of firearm suicides without reducing the level of firearm ownership.

Patterns of firearm suicide differ from overall patterns of suicide and require more detailed attention on the part of researchers. For instance, some evidence suggests that the role played by alcohol and drugs is different in cases of firearm suicides than in suicides involving other methods. The kind of mental health problems involved may also affect the choice of a suicide method.

Firearms constitute a particularly lethal and effective method of attempting suicide; research evidence confirms that the fatality rate of firearms as a suicide method is the highest of all methods. Since it is impossible to restrict access to several of the methods used to attempt suicide, some authors emphasize the importance of the integration of various preventive measures. Evidence strongly suggests that some firearm suicides are preventable, but additional research is required to determine what kind of incidents can effectively be prevented and exactly how this can be accomplished.

Taken together, the research evidence indicates that several factors intervene in an individual's choice of suicide method. The accessibility of firearms and their actual use as a suicide method are related in a complex way. Furthermore, one must look at both successful and unsuccessful suicide attempts to properly understand the role of situational determinants of suicide in relation to other factors. Unfortunately, few studies have so far managed to do this. Some research findings indicate that successful suicide attempts often are preceded by unsuccessful attempts, particularly among adolescents. Given this, research efforts might also focus on incidents of repeated suicide attempts and on the role of situational determinants in such instances.

The individual and situational factors that may influence individual choices of a suicide method, are still not well understood. Controlling the availability of some means of committing suicide may affect existing behaviour patterns and perhaps even prevent some suicides. However, there clearly is a need for further research to specify how, in what circumstances, and for what kind of suicide attempts this might be the case. To date, studies have addressed the issue of method substitution only obliquely by looking almost exclusively at cases of successful suicide attempts; therefore, it reveals a limited picture. Nevertheless, the issue of suicide method selection or substitution, in the context of efforts

to reduce the availability of certain instruments such as firearms, is obviously a question requiring more careful attention. It will likely necessitate a closer examination of the relationships between the availability of various methods and the choice of a method in both successful and unsuccessful attempts, including the evolution of that choice in repeated attempts.

10.4 Firearms and Violent Crime

Successfully preventing violent crime may depend on realizing that it includes a variety of situations which call for different strategies. We have identified the availability of firearms as one of the factors associated with violence. The role of various factors, including that of situational determinants such as access to firearms, is not necessarily the same from one kind of violent incident to the next. For example, even the category of homicide includes a variety of incidents in which the availability of firearms acquires a different significance. We can develop preventive strategies to target these factors.

Although it is evident that firearms play a role in many forms of violent crime, research has only recently made progress in documenting and explaining the nature of the links between firearm availability and violent crime.

Since 1975, there has been a fairly consistent decline in both the homicide and firearm homicide rates in Canada. However there is no simple explanation for the observed decrease. Whether firearms are used or not in different kinds of homicide incidents apparently depends on a number of factors not limited to whether or not firearms were accessible. In fact, one can assume that the availability of firearms plays a greater role in some types of homicide risk situations than in others. Different subtypes of homicide involve relatively distinct causal processes and it is important to ask whether firearm use varies across socially and situationally defined subtypes of homicides and, if so, how. To understand the nature of these intricate causal processes and to better isolate the role of situational determinants such as firearms, more in-depth studies of the various subtypes of homicides and attempted homicides are required.

Different strategies are required to prevent homicides in the home as opposed to homicides in the streets. Approximately one-third of all homicides involve a firearm. In recent years, increased attention has been given to research on family homicide and, in particular, spousal homicides. Domestic disputes are the type of interpersonal confrontations whose outcome is believed to be most likely influenced by the presence of firearms. The growing literature on the subject makes it clear that spousal homicide is rarely a spontaneous single event and is more generally the end of a cycle of violence that takes place in the home. A better understanding of how violence is seen to escalate may lead to more effective prevention strategies. So far, prohibition orders and, to a lesser extent, measures to ensure the safe storage of firearms kept at home, are often advocated as effective preventive measures. However, the effectiveness of such measures in preventing family homicide has yet to be evaluated.

Robbery is another type of violent crime frequently involving firearms. In 1996, of the 31,242 robberies reported in Canada, 21.3 percent involved a firearm. The term robbery also refers to a variety of incidents where force or the threat of force is used. Obviously, little can be achieved by attempting to explain the role of firearms in such incidents without distinguishing between the types of robbery involved. In Canada, in the last 20 years, the frequency of robberies has generally increased, but the percentage of robberies involving the use of a firearm has decreased. There are considerable regional variations in robbery rates across the country, as well as in the percentage of robberies involving a firearm. Robberies are also overwhelmingly committed in large urban areas, even if firearm ownership is concentrated outside of these areas.

Some of the most promising research to date has focused on attempting to understand the many factors that structure an individual offender's choice to perpetrate a robbery and whether to use a firearm. Whether a firearm is accessible to the offender is only one of the factors structuring such decisions. Systematic studies of offenders' decision-making processes, in relation to various kinds of robbery and assault incidents, are still at a very early stage in Canada.

Research clearly suggests that Canada's experience with youth violence in general and in particular, youth firearm violence, has been significantly different from and less dramatic than that of the United States. On the surface, differential access to firearms and, in particular, to handguns by youths in the two countries appears to be the main factor explaining the observed difference in the countries' respective level of youth violence. More comprehensive comparative research on that issue may yield some important findings.

10.5 Firearm Accidents

In 1995, 49 people died of unintentional firearm injuries, which represents about four percent of the 1,125 firearm deaths reported that year. Over the last few decades, the rate of fatal accidental firearm injuries in Canada and most other industrialized countries has been declining steadily. National data sources, coroners' offices and provincial ministries contribute to our knowledge of firearm accidents. However, relatively little is known about the characteristics and circumstances of such incidents. This is an area in which further research efforts could be focused.

Easy access to a loaded firearm most likely accounts for many accidental deaths and injuries. The empirical evidence currently available seems to confirm that the relationship between the prevalence of firearms and fatal firearm accidents is mitigated by a number of other factors. These factors include the quality of emergency medical care available to the population, the types of firearms and the safety features of the firearms in circulation, the reasons for their ownership, their accessibility to children and people suffering from mental illness, and the level of safety training required of firearms owners.

According to some estimates, the frequency of non-fatal accidents may be between ten and 13 times the number of fatal accidents. There are apparently considerable variations in the frequency of accidental deaths across provinces and territories. It would be useful to explore further the extent to which these are due to reporting practices, to the relative availability of emergency medical care, or to some other factors.

Based on available Canadian data, it is known that long guns are more frequently involved than handguns in accidental injuries, and that victims tend to be children and adolescents. In cases involving children, it would seem that the majority of incidents occur while children are at play. Further research might highlight the circumstances surrounding fatal firearm accidents involving children and adolescents, and how they obtained access to a firearm.

It is often assumed that accidental injuries are the most readily preventable. Several prevention strategies have evolved over the last few decades and many of them have been integrated into the Canadian regulatory scheme. They include public education, the promotion of the safe storage of firearms, the training of owners and users in the safe use of firearms, improvements to the safety of firearms, and specific hunting regulations. Research on the merits and efficacy of these methods is generally lacking.

10.6 Preventive Effects of Firearm Ownership and Use

Most of the existing research on the preventive effects of firearm ownership and use has been conducted in the United States. Since there are several fundamental differences between Canada and the United States in relation to armed self-defence by citizens, most existing research findings cannot simply be assumed to hold true for Canada. Research findings are fairly consistent in linking firearm ownership for self-protection, in jurisdictions where it is allowed or tolerated, to real or perceived vulnerability to victimization. Research findings on the potential deterrent effect of firearm ownership on crime are controversial and inconclusive. Yet, research to date has consistently indicated that victims who resist with a gun or other weapon are less likely than other victims to lose their property in robberies or burglaries. Victims resisting with guns or other weapons are also less likely to be injured than victims who do not resist or resist without a weapon.

There has been very little research on the extent to which Canadians use firearms for self-protection. Survey findings consistently indicate that the proportion of Canadians who state self-defence or self-protection as their main reason for owning a firearm is very low. This stands in stark contrast to the situation in the United States, where self-protection is one of the leading reasons for owning a firearm, particularly a handgun. Internationally, most countries permit possession of a firearm for self-protection but under restrictive conditions.

To the extent that many researchers have tended to blur the boundaries between the descriptive and normative aspects of the issue, the “net-benefit” argument becomes

nearly impossible to answer. Furthermore, research regarding concealed-carry laws are rare, and are complex to evaluate. The conclusion reached in the previous literature review remains valid: existing research fails to support any firm conclusions about the extent to which successful defensive uses of firearms and the deterrent effects of firearm ownership for self-protection offset the adverse effects of ownership for this purpose.

10.7 The Impact of Firearm Regulation

In the last 20 years, there have been three rounds of legislative amendments: in 1977, 1991 and 1995, which have shaped the Canadian firearm regulation scheme. So far, evaluative research has focused almost exclusively on the impact of the 1977 amendments. This is despite the fact that it was conceptually and empirically very difficult to isolate the impact of these amendments from those of the previous regime and subsequent legislative changes.

The evaluations of the 1977 firearm legislation have contributed to the research literature. However, their findings remain somewhat inconclusive and controversial. These studies have focused on attempting to isolate the overall impact of the legislation on the various forms of fatal firearm injuries and robberies. This focus may be, in part, explained by the complexity of the firearm control program, which presents theoretical and methodological challenges for evaluation research, and issues of data quality and availability.

These challenges should not preclude the pursuit of future evaluations that build on this experience. It is critical for evaluation research to examine more closely the impact of specific components of the 1977 legislation, and its successors—1991 and 1995—on different types of firearm incidents.

Furthermore, the implementation of the legislation and its components needs to be fully assessed to determine if and how the consistent administration and enforcement of the law has an impact on different fatal and non-fatal incidents across the country. Each component's relative merit should also be compared to other forms of suicide and violent crime prevention programs in Canada.

10.8 Illegal Firearm Transactions

Measures to control and regulate the legal firearm market must be accompanied by equally vigorous measures to control or disrupt the illicit market. In Canada, research is lacking regarding the types of firearms used in crime, their origins, and the methods and means through which they are acquired. Systematic information on the nature and extent of illegal firearm transactions, including smuggling, trafficking, and illegal manufacturing, is practically nonexistent. According to some police intelligence sources, there are some indications that firearm smuggling into Canada may be increasing. Firearm smuggling can be very lucrative and new evidence seems to suggest an increasing transnational illicit

transfer of firearms. Better information regarding the nature and extent of this problem is required to effectively direct efforts to curtail it. There are some obvious links between forms of trafficking, whether it be firearms, illegal immigrants or drugs. Beyond this, however, there has been little research on the exact nature of these links and how these sets of activities are interconnected.

It would seem imperative to obtain more systematic information about how criminals get firearms and use them, particularly among young people. An adequate research methodology was developed in several U.S. studies, allowing researchers to collect information on the relative ease with which criminals and young offenders can acquire firearms, the ways in which these firearms are obtained, and how they are eventually used by offenders. Such studies could be replicated in Canada. In addition, new studies could be conducted on the prevalence of firearm thefts, the circumstances under which they occur, the types of firearms involved, how they reach the illicit market, and on the role of stolen weapons in criminal activities.

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