

Influence of Weapon Types on the Patterns and Outcomes of Violent Encounters

The relationship between firearms and violent crime is a strongly debated topic. Rival theoretical claims have emerged that view guns as a cause of violent crime (Cook, 1981, 1983; Duggan, 2001; MacDonald & Lerer, 1994), an instrument to reduce violent crime (Kates & Mauser, 2007; Kleck, 1997; Lott, 2000; Mauser, 2007), or completely unrelated to violent crime (Moody & Marvell, 2005; Southwick, 1997). Several studies have been conducted over the years suggesting a relationship between rates of violent crime and gun availability (Clarke & Mayhew, 1988; Cummings, et al., 1997; Kellermann et al., 1993; McDowall, 1991; Newton & Zimring, 1969; Sloan et al., 1988), but no clear consensus has emerged as to which precedes the other.

On one hand, gun control advocates (Cook & Ludwig, 2006; Duggan, 2001; Hoskin, 2001) argue that the acquisition of firearms increases the rate of violent crimes because guns amplify the probability that a wrongdoer will success his/her crime. On the other hand, supporters from the opposite party (Kleck & Gertz, 1995; Kleck & Patterson, 1993) defend that, in fact, firearms are acquired in response to a significantly high level of violent crime because potential victims feel the need to be armed for self-protection.

As the debate persists, most research on the topic usually looked at the relationship between gun availability and violent crimes (Clarke & Mayhew, 1988; Cook, 1981, 1982, 1983, 1991; Cook et al., 2009; Cook & Ludwig, 2006; Henemway & Miller, 2000; Killias, 1993; Kleck & McElrath, 1991; Zimring, 1968, 1972) or gun ownership as a risk factor for homicide in the home (Cummings et al., 1997; Dahlberg et al., 2004; Kellermann et al., 1992, 1993; Miller, Azrael & Hemenway, 2002c; Wiebe, 2003a, 2003b). Very few studies, to date, have focused on advantages conferred by firearms. Among other scholars, Philip J. Cook provided a framework that tackles the effect of gun availability on three important dimensions of the violent crime problem. The first point examines the distribution of various types of crime across different types of victims. The second element looks at the seriousness of crimes. The last dimension considers the overall incidences of each of these crimes.

In collaboration with the *Service de police de la Ville de Montréal* (SPVM), the current study used data from the *Module d'information policière* (MIP) for the 2011-2012 period to improve our knowledge about the structuring effect of firearms on criminal violence. This study first identifies factors associated with firearms use in violent crimes and second, estimates the risk of fatal and non-fatal injuries associated with gun use. Specifically, an overview of various types of violent crime namely homicide, attempted murder, assault and robbery committed in Montreal from 2011 to 2012 will be provided in the first place. Once factors associated with gun use are identified, they are used to compute a propensity score, upon which gun-involving cases are matched to non-gun-involving cases to estimate the effect of firearms on the risk of death and risk of injury.

This study also differs from previous attempts to shed light on the association between firearm availability and violent crimes because an innovative statistical strategy is incorporated in the analysis in order to be able to draw robust conclusions. In this study, propensity score matching (PSM) allows researchers to come close to causal conclusions regarding the relationship between the use of a firearm and the risk of death and risk of injury, all the while isolating possible confounding effects of a gun.

Preliminary findings revealed interesting patterns associated with gun-related violent crimes committed in Montreal from 2011 to 2012, suggesting that crimes committed with a gun do not share the same characteristics than those committed without a firearm. In other words, both groups are unbalanced, which gives good reason for the use of a more complex methodological technique required to control for their influence on the effect of gun use on a victims' risk of death and/or risk of injury.

In general, violent crimes involving guns are more likely to implicate, among other things: 1) two or more assailants (OR=2.80); 2) male assailants (OR=9.01); two or more victims (OR=2.37); victims aged 20-44 (OR=1.23); and individuals associated with criminal groups (OR=1.85). When cases are balanced the aforementioned factors, results show that gun use increases the risk of fatal injury (ATE=0.012) and reduces the risk of non-fatal injuries in robberies (ATE=-0.206). Results suggest that guns are used by strong offenders against invulnerable targets and act as the great enhancer.