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## Guns in the Home: Risky Business

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# Guns in the Home: Risky Business

## **Abstract**

One in three U.S. households contains at least one firearm. Gun owners cite two main reasons for having a gun: hunting and self-protection. A majority of handgun owners believe that they are protecting their homes and families against violent assaults. But in a country where the majority of homicides and suicides involve a gun, it is reasonable to question whether access to a gun increases or decreases the risk of violent death. This Issue Brief describes case-control studies that investigate links between gun availability and gun death, and supports earlier findings that people with guns in their homes appear to increase their risk of being shot fatally (intentionally or unintentionally) or taking their own life with a gun.

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# LDI *Issue Brief*

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Leonard Davis Institute of Health Economics

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## *Guns in the Home: Risky Business*

Editor's note: One in three U.S. households contains at least one firearm. Gun owners cite two main reasons for having a gun: hunting and self-protection. A majority of handgun owners believe that they are protecting their homes and families against violent assaults. But in a country where the majority of homicides and suicides involve a gun, it is reasonable to question whether access to a gun increases or decreases the risk of violent death. This Issue Brief describes case-control studies that investigate links between gun availability and gun death, and supports earlier findings that people with guns in their homes appear to increase their risk of being shot fatally (intentionally or unintentionally) or taking their own life with a gun.

## *Debate continues over whether access to a gun is perilous or protective*

At last count, there were roughly 200 million firearms in private hands in the U.S.—almost one for every American adult. At the same time, nearly 30,000 people die in the U.S. from gunshot wounds each year, and more than 160 people require emergency department treatment for non-fatal gunshot wounds every day. In this context, does a gun in the home increase the likelihood of being shot and killed, or does it confer protection against violent criminals? The net risk or benefit of gun ownership remains debatable.

- A small group of studies has identified a gun in the home as a risk factor for violent death (either by homicide, suicide, or unintentional gunshot); however, these studies have been criticized because of limitations that could have produced inaccurate results. An even smaller number of studies suggest that gun owners use guns frequently to prevent being attacked and killed; these studies have also been criticized for statistical methods that may have overestimated the benefits of owning a gun.
- Definitive conclusions about guns as a risk or protective factor cannot be made because there has been too little research. To learn more, these studies used case-control methods, national samples of adult victims of homicide, suicide and unintentional death by gunshot, and a sampling of Americans for comparison, to test the hypothesis that having a gun in the home is a risk factor for sustaining a fatal gunshot wound.

## *National case-control study looks at risks of gun in the home*

Dr. Wiebe used national data sources to obtain information on guns in the homes of persons killed by gunshot wounds, as well as on a sample of the population still living. The National Mortality Followback Survey (NMFS) interviews next-of-kin and gathers detailed information about deceased persons, including cause of death. The most recent (1993) NMFS asked about guns in the victim's home. Nearly identical questions were asked the following year in the National Health Interview Survey (NHIS), which yielded information on guns in homes of living persons.

- Homicide, suicide, and unintentional shooting victims in the NMFS represented the “cases” in the study. Each case was matched with multiple NHIS respondents of the same sex, race, and age group, who represented the “controls” in the study.

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- The analysis quantified the relation between gun availability and death from a gun or from a non-gun weapon, after adjusting for potential risk factors such as living arrangement (alone or not alone), marital status, veteran status, education, geographic region and population (greater or less than 250,000 people in area).
  - Although questions in the NMFS refer to a gun in the home, they do not establish whether the same gun inflicted the fatal injury. This issue was informed by examining whether the victim had a gun in his or her home that matched the type of gun used fatally.

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***Most homicide victims are shot and know their attacker***

The homicide analysis included 1,720 deceased homicide “cases” and 8,084 living “controls.” The data on homicide victims described the circumstances surrounding these deaths.

- Nearly three-quarters of all homicide victims were shot, and most gunshots were from a handgun. Most of the victims (57%) knew their killer. One-fifth of the homicides happened during a robbery, 16% during a family argument, and 6% during a drug deal.
- Nearly 55% of women and 29% of men were reportedly injured while in or around “a home.” Additional data indicate that the respondent was likely referring to the victim’s own home in the majority of homicides. The proportion of homicides that occurred at a home increased with age.
- The proportion of matches between the gun in the home and the gun used in the homicide varied by the location where the shooting occurred. For example, 34% of the handgun victims shot in a home had a handgun in their home, compared to 19% of handgun victims shot in another location. About 58% of shotgun victims who were shot in a home had a shotgun in their home, compared to 7% who were shot in another location.

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***Guns in the home are common, and increase the risk of being shot and killed during an assault, especially for women***

Overall, firearms were slightly more common in the homes of control subjects (34%) than homicide case subjects (31%). Long guns (rifles and shotguns) in particular were more common in control subjects’ homes; the proportion with handguns did not differ.

- After adjusting for other variables, persons living in a home where a gun was present were 1.4 times more likely to be a homicide victim than persons with no gun in the home. The association between a gun in the home and homicide was present among younger and older subjects, male and female subjects, and white and nonwhite subjects, but differed by sex and race. Specifically, men with a gun at home were 1.2 times more likely to be a victim of homicide than men without a gun at home, but women with a gun at home were 2.7 times more likely to be a victim of a homicide than women without a gun at home. Similarly, the risk was increased 1.3 times for whites, but 1.7 times for non-whites.
- The nearly three-fold increased risk for women likely reflects the danger faced by women in abusive relationships.
- The observed link between a gun in the home and being killed was due entirely to an increased risk of homicide by gunshot. Gun availability did not affect the risk of homicide by other means.

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***Guns in the home are a strong risk factor for suicide, by use of a gun specifically***

The suicide analysis included 1,959 deceased cases and 13,535 living controls. Firearms — both handguns and long guns—were substantially more prevalent in homes of suicide case subjects (66%) than control subjects (37%).

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- Guns were the most common method of suicide, accounting for the deaths of 68% of male victims and 42% of female victims. The most commonly used type of firearm was a handgun. Most victims were at home when they committed suicide, and most used a gun that matched a type of gun in their home.
  - After adjusting for other variables, persons living in a home where a gun was present were 3.4 times more likely to commit suicide than persons with no gun in the home. This effect was seen across all age groups, but was particularly great among the youngest (ages 18-24) and oldest (65 and older) subjects.
  - Examining the data by suicide method revealed a striking contrast. Having a gun in the home was a strong risk factor for gun-related suicide—increasing the risk nearly 17 times—but was inversely related to suicide by other means—decreasing the risk by about one-third.

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***Effects are not likely explained completely by neighborhood or other factors***

Why do guns in a home pose these risks? A gun, when available, might be chosen over a less lethal method to commit suicide, or may make an impulsive suicide attempt more likely. The increased risk for homicide might emerge because a gun can make an assault easier to attempt (because it requires no physical contact) and because the fatality rate for gunshot wounds is much higher than for injuries from other weapons. However, alternative explanations should be considered as well.

- The association between having a gun at home and committing suicide could emerge because suicidal persons acquire a gun to take their own life. However, evidence from a previous study suggests that this “reverse-causation” does not fully explain the effects estimated here, and that an increased risk of suicide could persist for five years after a gun purchase.
- The study could not account for differences in neighborhood crime, drug dealing, or carrying a gun. Keeping a gun at home might only appear to pose a risk for being shot, whereas the danger might actually stem from living in a more dangerous neighborhood or from risks encountered while dealing drugs. Under these circumstances, however, it might be expected that a gun in the home would be associated (as a proxy) with homicides by all means. In this study, as well as earlier studies, it was not.

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***Guns in the home increase the risk of an unintentional shooting death***

The analysis of unintentional shooting deaths included 84 deceased cases and 1,451 living controls. Firearms were considerably more common in the homes of cases (66%) than control subjects (38%). Specifically, cases were more likely to have a handgun.

- Persons living in a home where a gun was present were 3.7 times more likely to die from an unintentional gunshot wound than persons with no gun in the home. This effect did not differ significantly by sex, race, age group, or region.
- The number of guns in a home increased the risk. Compared to subjects living in homes where no gun was present, subjects with one gun in the home were at 3.4 times the risk, and subjects with multiple guns were at 3.9 times the risk of unintentional shooting death.
- The relative risk of gun death by unintentional shooting was elevated among subjects with guns in their home regardless of gun type. The presence of handguns only, or both handguns and long guns, was associated with particularly high risks.

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***POLICY IMPLICATIONS***

These findings suggest that a gun in the home is a risk factor for gun-related homicide and suicide, as well as for unintentional shooting death. While a cause-and-effect relationship cannot be drawn conclusively from these studies, the results bolster the evidence provided by earlier studies.

*Continued on back.*

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## **POLICY IMPLICATIONS**

*Continued*

- One of the main contributions of these findings is their consistency with past results. Previous case-control studies suggested that having a firearm in the home was associated with even higher risks for gun-related homicide and suicide. This is not surprising, given that the earlier studies examined only deaths at home, whereas this study analyzed homicides and suicides in all locations.
- Women face a particularly high risk of homicide from having a gun in the home. In addition, a gun in the home has no protective effect against homicides by means other than a gun. These findings argue against keeping a gun in the home to protect family and household members.
- The findings of this study suggest that 29% of all homicides and 71% of all suicides are attributable to guns kept in U.S. homes. If the effect of gun availability on violent death is truly as large as found here, these estimates provide a sense of just how many deaths could be prevented by reducing exposure to firearms.
- Although unintentional injuries account for just 3% of all gun deaths, on average two people die each day in the U.S. from unintentional gunshot wounds. This study suggests that many of these deaths could be prevented by restricting access to firearms and reducing firearm lethality through improved safety features.
- Given the potential to improve public health, physicians should discuss gun ownership with all patients. When patients appear suicidal or to have suffered domestic violence, it is critical to ask about guns in the home and to discuss options to make living environments safer.

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*This Issue Brief is based on the following articles: D. J. Wiebe. Homicide and suicide risks associated with firearms in the home: a national case-control study. Annals of Emergency Medicine, June 2003, vol. 41, pp. 771-782; D. J. Wiebe. Firearms in US homes as a risk factor for unintentional gunshot fatality. Accident Analysis and Prevention (in press) 2003; vol. 883: available at <http://www.sciencedirect.com/science/journal/00014575>.*

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