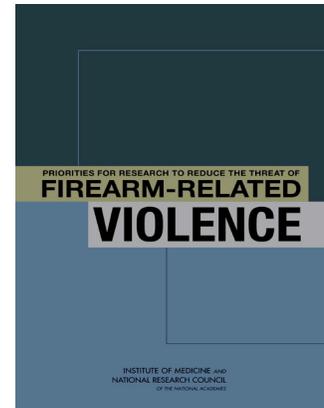


For more information visit [www.iom.edu/firearmresearch](http://www.iom.edu/firearmresearch)

# Priorities for Research to Reduce the Threat of Firearm-Related Violence



**In 2010, more than 105,000 people were injured or killed** in the United States as the result of a firearm-related incident. Recent, highly publicized, tragic mass shootings in Newtown, CT; Aurora, CO; Oak Creek, WI; and Tucson, AZ, have sharpened the American public's interest in protecting our children and communities from the harmful effects of firearm violence. While many Americans legally use firearms for a variety of activities, fatal and nonfatal firearm violence poses a serious threat to public safety and welfare.

In January 2013, President Barack Obama issued 23 executive orders directing federal agencies to improve knowledge of the causes of firearm violence, what might help prevent it, and how to minimize its burden on public health. One of these orders directed the Centers for Disease Control and Prevention (CDC) to, along with other federal agencies, immediately begin identifying the most pressing problems in firearm violence research.

To help identify important research topics, the CDC and the CDC Foundation asked the Institute of Medicine, in collaboration with the National Research Council, to convene a committee tasked with developing a potential research agenda that focuses on the causes of, possible interventions to, and strategies to minimize the burden of firearm-related violence. The committee's proposed research agenda—designed to produce results in 3 to 5 years—focuses on the characteristics of firearm violence, risk and protective factors, interventions and strategies, the impact of gun safety technology, and the influence of video games and other media.

**The complexity and frequency of firearm violence, combined with its impact on the health and safety of Americans, suggest that a public health approach should be incorporated into the strategies used to prevent future harm and injuries.**

## **Firearm-Related Violence as a Public Health Issue**

The complexity and frequency of firearm violence, combined with its impact on the health and safety of Americans, suggest that a public health approach should be incorporated into the strategies used to prevent future harm and injuries. The public health approach involves three elements: a focus on prevention, a focus on scientific methodology to identify risk and patterns, and multidisciplinary collaboration to address the problem. This approach has seen success in reducing tobacco use, unintentional poisonings, and motor vehicle fatalities.

## **Characteristics of Firearm Violence**

To develop a research agenda and prevention strategies, it is first important to understand what is and what is not known about the general characteristics of both fatal and nonfatal firearm violence. The exact number and location of guns and gun types in the U.S. are unknown. Because gun type and intended use vary, so do the manifestations of firearm violence. Important disparities exist across socioeconomic and ethnic groups in overall mortality rates from firearm violence, and within each form of violence—suicide, homicide, unintentional injuries and fatalities—there exist substantial variation. Focusing resources on three specific populations—the general population, the general youth population, and the offender population—should yield actionable information that can be used in intervention development.

To better assess the unknowns about the characteristics of firearm violence across populations, the committee suggests characterizing both the scope and motivation for obtaining, owning, and using a firearm, as well as the differences in violent gun use across the United States.

## **Risk and Protective Factors**

The risk posed by firearms is affected by a number of factors ranging from relatively simple, such as

how securely a firearm is stored, to more complex society-, community-, situational-, and individual-level predictors. A number of individual behaviors and susceptibilities also are associated with the various types of firearm violence and injury.

Across populations, little is known about the types of weapons obtained, the means of acquisition, the frequency of carrying firearms in public, community-level risk and protective factors, and level of knowledge and skill in firearm operation and safety. To enhance knowledge about risk and protective factors, the committee suggests that research identify factors associated with young people's access to, possession of, and carrying of guns; evaluate the effect of gun storage techniques on rates of suicide and unintentional injury; and improve the understanding of risk factors that influence the likelihood of firearm violence in specific high-risk locations.

## **Firearm Violence Prevention and Other Interventions**

A successful intervention to reduce firearm-related injuries must involve health and public safety organizations, educators, and community groups.

Interventions may target the firearm or its possessor; the victim(s) of the violence; and the social, physical, or virtual environments that may shape firearm policies, norms, and behaviors. Findings have been mixed on the effectiveness of interventions that aim to prevent firearm violence. For example, while regulations that limit hours for alcohol sales in pubs, bars, and nightclubs have been associated with reduced violence, evaluations of widespread public school firearm safety education programs prove less effective.

The committee's proposed research agenda includes a focus on improving understanding of the effectiveness of several specific forms of firearm violence prevention across the three intervention targets.

**The evidence generated by implementing a public health research agenda will enable the development of sound policies that support both the rights and the responsibilities central to gun ownership in the United States.**

## **Impact of Gun Safety Technology**

Like a car's airbag or a pill bottle's childproof cap, firearm technologies can be used to reduce the public health burden of gun violence. The objectives of firearm technologies range from preventing unintentional shootings by young children to reducing suicide. Some technologies require a specific action by the user—such as engaging a manual safety mechanism—while others do not.

The development and application of these technologies to firearms has been an intermittent and fragmented process complicated by the diversity in firearms themselves. In order to achieve a reduction in firearm-related death and injury, research should examine how product safety measures are accepted and used. Specifically, the committee proposes an agenda that would identify the effects of different technologies designed to reduce firearm injury and death; examine past consumer acceptance of safety technologies; and explore state and international policy approaches to firearm safety technology for applicability to the United States as a whole.

## **Video Games and Other Media**

While the vast majority of research on the effects of violence in media has focused on violence portrayed in television and movies, more recent research has expanded to include music, video games, social media, and the Internet—outlets that consume more and more of young people's days. However, in more than 50 years of research, no study has focused on firearm violence as a spe-

cific outcome of violence in media. As a result, a direct relationship between violence in media and real-life firearm violence has not been established and will require additional research.

## **Research Design and Data**

High-quality data that are usable, credible, and accessible are fundamental to both the advancement of research and the development of sound policies. Basic data about gun possession, distribution, ownership, acquisition, and storage are lacking. Additionally, no single database captures the number, locations, and types of firearms and firearm owners in the United States. Data that do exist are weak, making it virtually impossible to answer fundamental questions about occurrence and risk factors, or to effectively evaluate programs intended to reduce violence and harm.

The CDC, in collaboration with its federal and state partners, has the ability to improve the reliability and accuracy of data and research about firearm-related violence. New technologies that can enhance linkages among available datasets from federal, state, and local sources could enable better predictive analytics and real-time information sharing, as well as reduce data noise. To further strengthen research, interdisciplinary partnerships and consultations with academics, practitioners, and community members should be effectively utilized.



## Committee on Priorities for Research to Reduce the Threat of Firearm-Related Violence

**Alan I. Leshner** (Chair)  
American Association for the Advancement of Science, Washington, DC

**Louis Arcangeli**  
Georgia State University, Atlanta

**Alfred Blumstein**  
Carnegie Mellon University, Pittsburgh, PA

**C. Hendricks Brown**  
University of Miami Miller School of Medicine, FL

**Donald Carlucci**  
Picatinny Arsenal, Rockaway Township, NJ

**BG (Ret.) Rhonda Cornum**  
Techworks, North Middletown, KY

**Paul K. Halverson**  
Indiana University Richard M. Fairbanks School of Public Health, Indianapolis

**Stephen W. Hargarten**  
Medical College of Wisconsin, Milwaukee

**Ronald C. Kessler**  
Harvard Medical School, Boston, MA

**Gary Kleck**  
Florida State University, Tallahassee

**John A. Rich**  
Drexel University School of Public Health, Philadelphia, PA

**Jeffrey W. Runge**  
Biologue, Inc., Chapel Hill, NC

**Susan B. Sorenson**  
University of Pennsylvania, Philadelphia

**David Vlahov**  
University of California, San Francisco

### Study Staff

**Bruce M. Altevogt**  
Senior Program Officer, Board on Health Sciences Policy

**Margaret A. McCoy**  
Program Officer, Board on Health Sciences Policy

**Julia K. Hoglund**  
Research Associate, Food and Nutrition Board

**Katherine Blakeslee**  
Global Program Advisor, Board on Global Health

**Morgan Heller**  
Assistant to the IOM President for Special Projects

**Bradley Eckert**  
Research Assistant, IOM Executive Office

**Patrick W. Kelley**  
Senior Board Director, Boards on Global Health and African Science Academy Development

**Arlene F. Lee**  
Board Director, Committee on Law and Justice

### Study Sponsors

The Centers for Disease Control and Prevention

The CDC Foundation\*

## Conclusion

The public health aspects of firearm violence presented in the committee's proposed research agenda—in conjunction with research conducted from criminal justice and other perspectives—aim to provide a robust knowledge base to help bolster our nation's approach to minimizing the consequences associated with firearm violence.

The evidence generated by implementing a public health research agenda will enable the development of sound policies that support both the rights and the responsibilities central to gun ownership in the United States. In the absence of this research, policy makers will be left to debate controversial policies without scientifically sound evidence about their potential effects. 

INSTITUTE OF MEDICINE  
OF THE NATIONAL ACADEMIES

NATIONAL RESEARCH COUNCIL  
OF THE NATIONAL ACADEMIES

500 Fifth Street, NW  
Washington, DC 20001  
TEL 202.334.2352  
FAX 202.334.1412

[www.iom.edu](http://www.iom.edu)

\*The CDC Foundation's support originated from the Annie E. Casey Foundation, The California Endowment, The Joyce Foundation, Kaiser Permanente, one anonymous donor, and two additional donors whose agreements were not finalized with the CDC Foundation at the time this document went to press.