

# REDUCING THE HEALTH HARMS OF FIREARM INJURY

A Report of the Aspen Health Strategy Group



Foreword by Kathleen Sebelius and William Frist

Edited by Alan R. Weil

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The mission of the **Aspen Health Strategy Group (AHSG)**, part of the Health, Medicine & Society Program at the Aspen Institute, is to promote improvements in policy and practice by providing leadership on complex health issues. AHSG brings together senior leaders representing a mix of influential sectors, including health, business, philanthropy, and technology, to tackle a single health issue annually through year-long, in-depth study. Co-chairs are Kathleen Sebelius, 21st U.S. Secretary of Health and Human Services and former Governor of the State of Kansas, and William Frist, former U.S. Senator from Tennessee and former Senate Majority Leader.

The topic of AHSG's ninth annual report is reducing the health harms of firearm injury. This compilation opens with a consensus report based on the group's in-depth learning process, followed by a set of background papers. Taken together, this collection explores not only the causes and consequences of gun violence, but also the opportunities – using the tools of public health – to lessen the terrible toll of injury and death associated with firearms.

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December 2023

I am honored to present the eighth annual report of the Aspen Health Strategy Group.

AHSG brings together a diverse set of leaders—affiliated with health systems, the business sector, nonprofit organizations, philanthropies, and universities—to confront some of America’s most complex health challenges. Established in 2015, this group takes a deep dive into a single topic every year, using presentations and dialogue to propose bold and actionable solutions. Previous AHSG reports have explored health data privacy, end-of-life care, the opioid epidemic, chronic disease, antimicrobial resistance, maternal mortality, and the health harms of incarceration.

This year’s report, *Reducing the Health Harms of Firearm Violence*, tackles one of the most anguishing issues we face. The topic is difficult, both because so much basic data are missing and because so many ideological lines have been drawn in the sand. Applying a public health lens to firearm violence allows us to find common ground and pursue solutions. No one favors suicides, homicides, accidents, or mass violence. We have the capacity and determination to reach consensus on how best to lessen the terrible toll of injury and death associated with firearms.

The Aspen Health Strategy Group, housed within the Aspen Institute’s Health, Medicine & Society Program, is uniquely qualified to nurture consensus. With their rich personal and professional networks, its members are also well-positioned to draw attention to their ideas and recommendations for curbing firearm violence and to inspire other leaders to take action.

Kathleen Sebelius and William Frist, both long-time partners of the Aspen Institute, serve as AHSG co-chairs. Kathleen Sebelius, a former U.S. Secretary of Health and Human Services and former Governor of the State of Kansas, has helped to lead AHSG since its inception. Bill Frist, former U.S. Senator from Tennessee and former Senate Majority Leader, became co-chair in 2020. I am grateful for the gift of their time and

their contributions to the Aspen Institute's mission of using dialogue, leadership, and action to create a free, just, and equitable society.

My thanks, as well, to all members of the Aspen Health Strategy Group, and to you, our readers, whose interest and support gives our work meaning.

A handwritten signature in black ink that reads "Dan Porterfield". The signature is written in a cursive style with a long horizontal line extending to the right from the end of the name.

Dan Porterfield  
President and CEO  
Aspen Institute

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# Foreword

In June 2023, the Aspen Health Strategy Group (AHSG) convened for its eighth annual meeting to explore the knotty issue of firearm injury and the imperative of health sector leadership to lessen the harms. Invigorated by the urgency of our topic, the expertise of our diverse panel, and the Aspen, Colorado mountain air, AHSG members offered their rich ideas, insights, and creativity. *Reducing the Health Harms of Firearm Violence* is the product of their work.

The nonpartisan nature of the Aspen Health Strategy Group, and the many disciplinary lenses its members apply, make it well-suited to take a deep dive into the health harms of firearm violence, and identify opportunities to curb it. We are proud to be a place where reasoned, open-minded exchanges can take place.

As always, we began our convening with the voices of those who have been directly affected by the issues we are exploring. This year's guests told stories that were at once heartbreaking and inspirational, and brought many of us to tears. A 10-year-old survivor of the Uvalde, Texas school shooting, which left 19 children and two teachers dead, joined us with her mother to recount that horrendous experience. *Washington Post* reporter John Woodrow Cox, author of *Children Under Fire: An American Crisis*, guided the conversation. We also heard from Gregory Jackson, a community activist who was hospitalized after being shot—and then treated by law enforcement officials as if he were a criminal and not a victim. Jackson is now deputy director of the White House Office of Gun Violence Prevention.



Following their moving stories, Mollyann Brodie, who heads the Public Opinion and Survey Research program at KFF, presented survey data describing public opinion about gun violence prevention. Our discussions were also informed by subject matter experts whose commissioned background papers examined the causes and consequences of gun violence, the American culture of guns, and the use of harm reduction and community intervention techniques to curb violence. Those papers by Megan Ranney, the new dean at the Yale University School of Public Health, and Marian Betz, professor of emergency medicine at the University of Colorado School of Medicine; Garen Wintemute, distinguished professor of emergency medicine at the University of California, Davis; Cassandra Crifasi, codirector of the Johns Hopkins Center for Gun Violence Solutions; and Kyle Fischer, clinical assistant professor at the University of Maryland School of Medicine, and Mr. Jackson, are included in this report.

Alan Weil, editor-in-chief of *Health Affairs*, ably moderated three days of deep discussions, as he has done at all of our annual sessions. He led the effort to synthesize key themes from the discussion and captured the group's five big ideas for reducing the harms of firearm violence that are presented here.

Through its leadership on complex health issues, AHSG remains committed to promoting improvements in policy and practice. Our work would not be possible without the generosity of our funders. The Robert Wood Johnson Foundation and the Laurie M. Tisch Illumination Fund have been steadfast supporters since AHSG was launched. We are deeply grateful to them, and to Arnold Ventures, which has also been a committed funder. Importantly, we note that the framework and language of this report reflect the perspectives of the authors, but not necessarily the views of these funders.

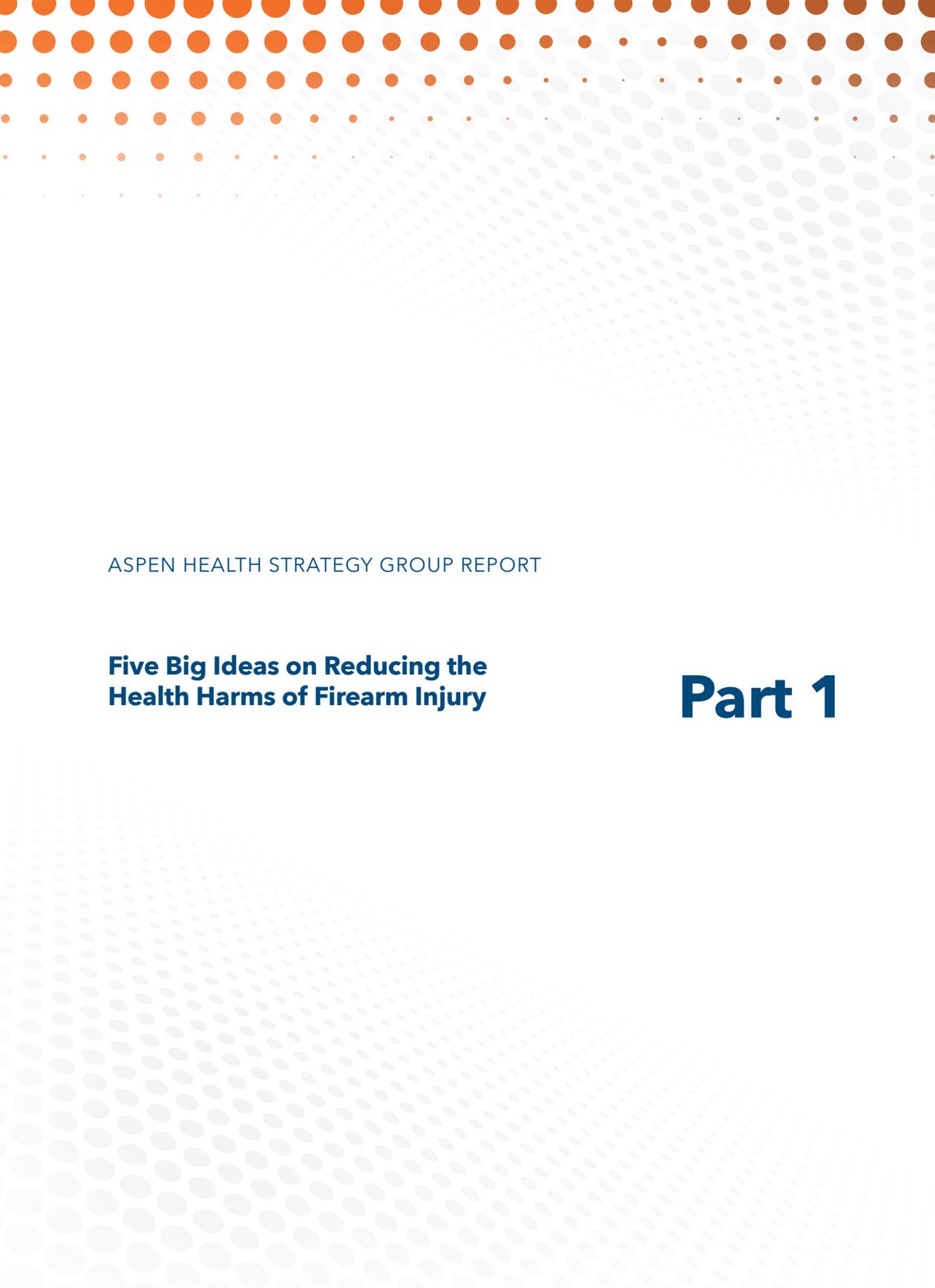
On behalf of the Aspen Health Strategy Group, our thanks to everyone who made the 2023 program possible. We believe our work makes a genuine difference in shaping the public and private sector response to profoundly challenging health issues and recognize all of the logistical, conceptual, and scholarly efforts that must be invested to get it right.



**Kathleen Sebelius**  
AHSG Co-Chair



**William Frist**  
AHSG Co-Chair



ASPEN HEALTH STRATEGY GROUP REPORT

**Five Big Ideas on Reducing the  
Health Harms of Firearm Injury**

**Part 1**

*“In the face of overwhelming health harms, it is imperative for the health sector to act and to lead. The burden of firearm injury cannot be eliminated by the health sector, but health care professionals, health systems, and all who work in health care have a role to play in responding to this large and growing problem.”*

**– THE ASPEN HEALTH STRATEGY GROUP**

# Five Big Ideas on Reducing the Health Harms of Firearm Injury

## Introduction

More than 48,000 Americans lost their lives to firearms in 2021.<sup>1</sup> As horrifying as this statistic is, it represents only a portion of the health harms associated with firearm injury. For every person killed by a firearm, about two others are physically injured. Beyond physical injury, millions of people experience trauma from being the victim of firearm violence,



witnessing firearm violence, or losing a loved one or colleague to firearm violence. In some communities, firearm violence is so frequent that everyone who lives there is subject to repeated trauma. And there is an additional incalculable toll as people's sense of "normal" is shattered by experiences of violence in a school, a workplace, a place of worship, a store, or other place they have taken for granted as safe.

The United States is a global outlier when it comes to firearm injury. According to the Institute for Health Metrics and Evaluation (IHME, 2022), age-adjusted firearm homicide rates in the United States are twenty-two times greater than in the European Union as a whole. Canada, with the third highest age-adjusted firearm homicide rate among large, high-income countries, has a rate less than one-eighth that of the United States (IHME, 2022). There is nothing inevitable about the tremendous burden of firearm injury in the United States.

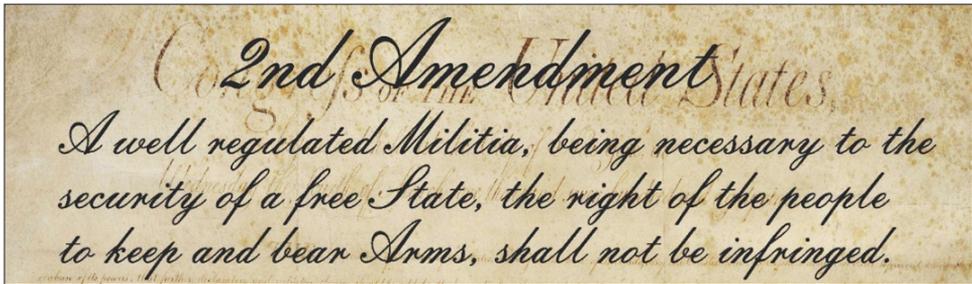
In the face of overwhelming health harms, it is imperative for the health sector to act and to lead. The burden of firearm injury cannot be eliminated by the health sector, but health care professionals, health systems, and all who work in health care have a role to play in responding to this large and growing problem. Roles for

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<sup>1</sup> Unless noted otherwise, the data in this report come from the background papers prepared by subject matter experts and published in conjunction with the report.

the health sector include helping prevent firearm injury, treating it, interrupting its escalation, and providing a voice for evidence-based approaches that can reduce the health burdens of firearm injury.

The Aspen Health Strategy Group selected firearm injury as its topic for 2023, its eighth year. The multisectoral group of leaders met and discussed the topic with the assistance of subject matter experts who prepared background papers to inform the discussion. The group emerged with five big ideas to reduce the health harms associated with firearm injury. These ideas call for leadership by the health care sector, a focus on the responsibilities that arise from Second Amendment rights, reducing access to firearms for those who pose a risk to themselves or others, implementing community violence interventions, and expanding our understanding of interventions that can reduce the burden of firearm injury.



The Aspen Health Strategy Group's goal is to promote improvements in health policy and practice by providing leadership, ideas, and direction on important and complex health issues. Co-chaired by Kathleen Sebelius, former U.S. secretary of health and human services and former governor of Kansas and William Frist, a physician and former U.S. Senate majority leader, the group comprises 19 senior leaders across sectors including health, business, media, and technology. More information about the Aspen Health Strategy Group can be found on the Aspen Institute website (<http://www.aspeninstitute.org/aspen-health-strategy-group>).

This report captures the conversations of the group, but no specific section or statement in the report should be considered to represent the opinion of any individual group member.

## Background

Our work builds upon four papers written by subject matter experts in advance of our meeting, which are published in conjunction with this report. Data and conclusions in our report that appear without citation are drawn from these papers.

“Just as medicine has standardized algorithms to diagnose and treat common medical complaints, the field of public health has a systematic approach for responding to epidemics,” write Megan Ranney and Marian Betz in “Firearm Injury as an American Epidemic.” Based on evidence showing that firearm injury in the United States has reached epidemic proportions, the authors note that “by conceiving of firearm injury as an epidemic we can apply this well-defined and historically successful process and hopefully break the logjam that frequently removes hope and agency around this topic.”

Understanding who is at greatest risk is central to responding to the epidemic of firearm injury. Ranney and Betz note the extremely disproportionate burden borne by Black men due to homicide, and the higher rates of firearm suicide among older White and middle-aged American Indian/Alaskan Native men. Yet, data gaps, in part due to federal restrictions on research dating back to the mid-1990s (since lifted), leave us with a less comprehensive picture of the epidemiology of firearm injury than would be desirable. For example, our understanding of protective factors, the prevalence and efficacy of defensive gun use, and data on injury, as opposed to death, are all incomplete.

Ranney and Betz reference the “4 Es” of injury prevention: Engineering, Economics, Enactment/Enforcement, and Education. No single “E” can solve the problem; a combined approach that takes all factors into account is necessary. Importantly, the goal of eliminating injury is unrealistic, but that should not deter action that can dramatically reduce it.



Returning to the core concepts of public health, Ranney and Betz conclude: “By gathering data, developing predictive models, testing behavior change interventions, and agreeing to deploy what works, we could collectively have a tremendous impact on not just risk of firearm injury, but also society’s understandable fear and firearm purchasing behaviors in response to our unique epidemic.”

In “Firearm Violence: What We Can Do,” Garen Wintemute embraces the public health approach of harm reduction and describes a broad array of evidence-based interventions that can reduce the health burdens of firearm injury. Drawing heavily upon the best evidence review available—the RAND Corporation’s Gun Policy in America project—Wintemute presents myriad policy options for consideration

in five domains: purchase and possession restrictions, recovery from prohibited persons, avoiding high-risk situations, actions to be taken by health professionals and health systems, and restrictions on specific weapons.

Wintemute notes that the available evidence likely understates the effectiveness of many of these interventions. This is due to a variety of factors: the lag between policy adoption and having sufficient published and peer-reviewed analysis to understand the effects of those policies; likely positive interaction effects that make combinations of policies more effective than individual policies; and the statistical reality that it is difficult to demonstrate population-level effects when measuring infrequent events. These limitations also occur in the context of a “paucity of evidence regarding gun violence [that] is partly due to a deliberate, sustained, and largely successful effort to prevent the necessary research from being conducted.”

While covering a broad range of policies, Wintemute concludes by pointing to a subset that “stand out for the evidence of their effectiveness, the size of their effects, and the likelihood of their adoption, at least by states.” These are “comprehensive background checks combined with a permit to purchase requirement, age restrictions for sales by private parties equal to those for sales by licensed retailers, a prohibition



for persons convicted of violent misdemeanors, recovery from persons subject to [domestic violence restraining orders], extreme risk protection orders, and the full array of actions to be taken by health professionals.”

Cassandra Crifasi describes gun ownership patterns and focuses on public attitudes toward various policies in “Understanding the Perspectives of Gun Owners.” As Crifasi points out: “A large and increasing proportion of US adults own guns. We cannot address the epidemic of gun violence without understanding the perspectives of gun owners.”

After 40 years of declining rates of firearm ownership in households, largely due to a decline in hunting, this trend has rapidly reversed. With concerns for personal safety now the driving force behind gun ownership, there were 7.5 million new gun owners in 2019-20, half of whom were female and one-fifth each of whom were Black Americans and Hispanic Americans. Accompanying this trend is a dramatic shift to guns that are more likely to cause serious injury or death and are easier to conceal. Crifasi notes that firearm regulation going back to before the formation of

the United States focused on regulating who could own guns and where they could be carried, while, since the 1970s, the focus has been on expanding access to guns and liberalizing rules for carrying them.

Crifasi explains the shift in understanding public attitudes toward guns from binary questions about support or opposition to “gun control” to more nuanced questions regarding firearm policy. Once we move past simplistic labels, a surprising amount of consensus emerges. Recent surveys asking about 37 separate policies that restrict access to guns for certain people and/or in certain circumstances reveal majority support for all but one, with support exceeding 75 percent for some, such as universal background checks, tightening enforcement of gun dealer regulations, and allowing health professionals to ask courts to remove guns from people at risk of harming themselves or others. While support for restrictions is generally lower among gun owners, Crifasi points out that among gun owners: “Of the 37 restrictive policies, there was majority support for 28.”

Ultimately, Crifasi says, “Like other public health topics, the message [regarding policies that could reduce firearm injury] must come from credible messengers: those who are part of the ‘in-group’ who may better resonate with those who can act on the message. Engaging with those who have credible experience with guns and support evidence-based policies can be a more effective way to change perceptions and increase the acceptability of solutions to gun violence.”

Gregory Jackson and Kyle Fischer discuss evidence-based approaches to reduce firearm injuries in “Community Violence Intervention as a Strategy for Reducing Gun Violence.” The vast majority of homicides in the United States arise from community violence, which the US Centers for Disease Control and Prevention (CDC) defines as violence “between unrelated individuals, who may or may not know each other, generally outside the home.” Seventy-nine percent of all homicides in the United States are due to firearm injury, with Black or Brown people more than 10 times more likely to die than White people.



Consistent with other authors, Jackson and Fischer take a public health approach, which “begins by understanding the experiences of people living in affected

neighborhoods—an experience vastly different from that of people who do not. Studies of survivors of community violence demonstrate that a gunshot wound is not a ‘one-off’ occurrence, but rather a connected event in what is often referred to as a ‘cycle of violence’.”

Community violence interventions (CVIs) seek to break that cycle. Jackson and Fischer describe four different models in use in various locations around the country: environmental approaches, hospital-based interventions, trauma-informed care models, and outreach programs. While the specifics of the approaches vary, there are some shared elements. All target the relatively small number of people in a community who commit the vast majority of violence and who are most at risk of becoming victims of violence. These individuals are often completely disconnected from mainstream institutions and can only be reached through persistent efforts by multiple people and organizations. All consider the importance of credible messengers, typically recruited from the communities burdened by violence. All provide multi-dimensional support to modify behavior.

Jackson and Fischer explain that the “exact components of a CVI ecosystem are tailored to the needs and resources of an individual community. Properly designed, adequately funded community violence intervention programs have proved to reduce gun violence.” The field has existed across the US for at least 25 years, with the Department of Justice recognizing it as early as 1996 as an aid to violence prevention. CVI programming has gained more funding and support in recent years, with provisions of the American Rescue Plan Act in 2021 the largest investment to date. Increased funding would improve not only research but also would “continue to develop violence-prevention oriented career advancement opportunities for frontline workers. At present, the employment pipeline consists predominantly of frontline workers, program managers, and more recently, the addition of national organizations that provide training and technical assistance.”



## **Framing the Issue**

Five themes emerged in the group’s discussion that helped guide the development of this year’s big ideas. The themes are as follows:

- **Firearm injury is a health crisis**

Firearm death rates, already far higher in the United States than in any other high-income country, have increased during this century, with dramatic growth in homicides between 2019 and 2021. Most firearm deaths are due to suicide, with firearm suicide rates rising in the past few years even as overall suicide rates have declined. In 2020, firearm injury became the leading cause of death for children ages 1 to 19 years of age.

The burden of firearm injury is borne heavily by certain communities. Southern and rural Western states have the highest overall rates of firearm death. Older White men and middle-age American Indian/Alaskan Native men have the highest rates of firearm death by suicide. Black men are 20 times more likely than White non-Hispanic men to die from firearm homicide.

The health crisis associated with firearm injury extends far beyond the individuals who are killed. Physical and emotional injuries, with lifetime effects, touch millions more. Residents of high violence communities face repeated trauma as firearm violence continues unabated.

Firearm violence creates tremendous mental health harms which receive far less attention than the deaths that result from firearms. Mental health harms extend to millions of people, last a



lifetime, and are often invisible to outside observers. Layered on top of a mental health system with significant gaps and highly inequitable access, the mental health burden associated with firearm violence warrants particular attention.

There is little to suggest these trends will improve on their own, and there are many reasons to believe, if untreated, they will get worse. While preliminary data suggest that homicide rates fell slightly in 2022 as the worst effects of the COVID-19 pandemic abated, gun ownership has skyrocketed in recent years. Evidence shows a direct correlation between overall rates of gun ownership and firearm deaths, making it likely any recent downturns in death rates will be temporary.

- **The majority of Americans support approaches that can significantly reduce firearm injury and death**

Contrary to the image of polarization that is often presented in media accounts, there is strong support among gun owners and non-gun owners alike for various approaches that the evidence shows are effective in reducing firearm injury. This includes requirements to obtain a license from a local law enforcement agency prior to buying a gun, prohibiting people from possessing a gun when they are subject to a temporary domestic violence restraining order, allowing family members to petition the court to remove guns from a relative at risk of harming



him or herself or others, and requiring that guns be secured at home when they are not in use. For many harm-reducing policies, there is little difference in levels of support between gun owners and non-owners.

Similarly, permissive policies such as allowing people to carry a concealed firearm without a permit, and “stand your ground” laws that allow people to shoot or kill another person even though they could safely retreat, have less than 50 percent support among both gun owners and non-owners. These permissive policies are demonstrated to increase rates of firearm injury.

The fraught politics surrounding firearms have made legislative action difficult to achieve, even in areas where there is strong majority support for a given policy. But majorities have been able to carry the day in some jurisdictions on some issues, providing a solid evidence base for the positive effects of various policy changes. Most recently, Congress enacted, and President Biden signed into law, the Bipartisan Safer Communities Act in the wake of the mass shooting at Robb Elementary School in Uvalde, Texas in 2022.

- **Reducing the harms of firearm injury requires a multifaceted response**

There are multiple etiologies of firearm violence, each of which must be examined, understood, and addressed in order to make progress. Most firearm deaths are due to suicide, although rates of firearm homicide are high and have increased in recent years. Mass violence and school shootings generate substantial media attention, but account for a small portion of firearm deaths.

Most firearms used in violence that occurs in the community are obtained through illegal channels and a small number of repeat perpetrators contribute disproportionately to that violence.

A combination of approaches will be required to address different types of firearm injury. Reducing firearm-related suicide deaths largely depends upon making firearms less readily available when people are at risk of making a suicide attempt. This approach requires consistent safe storage of firearms, identifying people at risk of self harm, and having mechanisms in place to remove firearms when risks are high.

The roots of community violence are particularly complex. Community violence emerges from the multiple burdens of historical and current neglect of entire communities, rooted in a legacy of racism. These burdens include limited economic opportunity, decaying infrastructure, the funneling of illicit activity such as drug deals into certain neighborhoods, tolerance of firearm trafficking into these neighborhoods, and failure to invest in interventions that reduce the cycles of trauma and violence that result. A particular source of community violence is a small number of people who are completely disengaged from mainstream institutions and whose behavior must change if levels of community violence are to decline.

Some interventions will have positive effects on multiple dimensions of the firearm injury crisis. For example, safe storage not only reduces the risk of suicide by owners' family members, but also reduces the likelihood a gun will be stolen and used in community violence. Similarly, temporary removal of firearms from people at risk of committing violence can protect the person from becoming a victim of suicide and others from becoming the victim of domestic violence or a mass shooting.

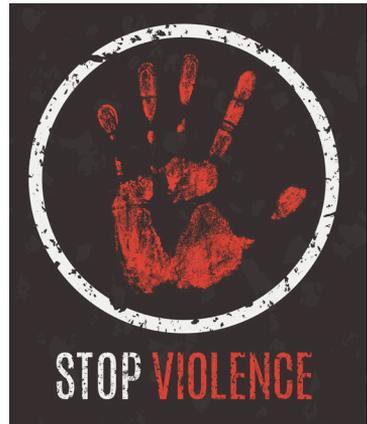


There is no single (or simple) solution to firearm injury. Instead, a variety of multiple, reinforcing approaches are needed to address this complex phenomenon. And there are some data to suggest that the whole truly is greater than the sum of the parts; the combined effects of a collection of policies are greater than what the evidence shows each policy can achieve on its own.

There are myriad opportunities for the health sector to support efforts to reduce firearm injury. Hospitals are often the first point of contact for victims of firearm injury, and they can take steps not only to treat the victim but also to interrupt cycles of violence that can arise after a shooting. Hospital-based programs that move upstream to reduce harm fit within broader approaches hospitals are making to improve community health and can be very motivating for clinicians as they address the root causes of injury. Clinicians can serve as trusted sources of information and points of intervention to encourage firearm safety.

- **We know enough to act, even as we need to learn more**

The decades-long cessation of federal funding for firearm violence research has left a thinner base of evidence regarding how to respond than would be ideal. Stark and Shah (2017) calculated that funding for research on firearm violence was only 1.6 percent of what it would be if it were funded in proportion to the number of deaths it causes. There have been significant increases in funding in recent years, but the amounts remain low relative to the harm. Despite these limitations, research has much to say about what needs to be done to reduce rates of firearm injury. It will take some time to obtain results from the recent burst of research in this area, but that should not deter us from taking steps now based upon what we know.



For example, people at high risk of being victims of firearm violence are likely to have had prior interactions with the health care system. Thus, identifying opportunities for intervention within health care is an area ripe for action. Many people reveal their intentions prior to acting on their plans to attempt suicide or harm others. Reducing access to firearms at these times of high risk saves lives. Violence in the community often follows patterns of an epidemic, with one violent act leading to another and yet another. Direct intervention in the early stages of this cycle can reduce the likelihood of subsequent harm.

These and other examples show what can be accomplished. Even as we seek to learn more, there is no reason to delay action based on what is already known.

- **Incremental progress is valuable**

The political discourse around gun violence is filled with shorthand phrases often tied to dramatic oversimplification of the problem and of what it will take to address it. As with other large, complex phenomena, it is natural to seek the single solution and be disappointed when only incremental steps are taken. But this should not be the response to firearm injury.

The daily toll of death and injury from firearms is staggering. The ripple effects from a single act of violence spread far and wide. Every single injury prevented is of incalculable value.

Incremental steps are also the source of data to determine what works and what does not work.

Given the correlation between rates of firearm ownership and rates of firearm injury, recent increases in firearm ownership do not bode well. Progress now in addressing the sources of injury that exist today can serve as a platform on which to build to minimize harm as firearm ownership grows.



## **Five Big Ideas to Reduce the Health Harms of Firearm Injury**

Our nation must take concrete steps to reduce the health harms associated with firearms. The Aspen Health Strategy Group offers five big ideas to do so. We developed these ideas drawing upon the commissioned papers prepared for AHSG

and discussions with their authors. We gained additional insight from a discussion led by John Woodrow Cox, a staff writer at the Washington Post, with Gregory Jackson, a victim of gun violence, and Caitlyne Gonzalez, a student at Robb Elementary School in Uvalde, Texas, and her mother, Gladys Gonzalez. We also benefited from a presentation on public opinion regarding gun violence prevention by Mollyann Brodie of KFF. The ideas we offer address the role of the health sector, firearm safety, reducing the risk of self-harm, reducing levels of community violence, and the need for more information.

### **1. The health sector should lead in efforts to reduce the harms of firearm injury**

The massive toll of firearm injury requires a response from all parts of the health care system. As leaders in health care, we call upon all who work in the field to understand the scale of the problem, lead in defining and implementing solutions, and identify partners in communities and other sectors with whom they can collaborate to reduce the harms of firearm injury. Specific actions include:

- Clinicians and the health systems where they work should adopt and expand initiatives designed to identify and respond to the risk of firearm injury.
- Clinicians should routinely screen for risk factors including the presence of a gun in a home and unsafe storage of firearms.
- Clinicians should speak with their patients about firearm safety, and if they are uncomfortable doing so, they should bring others in to have these conversations.
- Hospitals should develop and expand hospital violence intervention programs, which provide an array of services designed to reduce the likelihood of repeat violence among people admitted with violence-related injuries.
- Mental health providers should be aware of the mental health consequences of firearm violence and participate in efforts that direct resources toward those most in need of mental health services subsequent to firearm events.
- Public health agencies should expand data collection and reporting on firearm injuries.

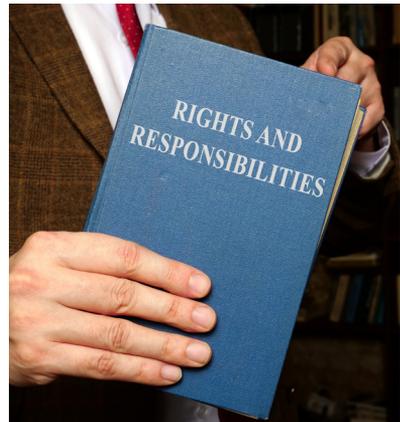


- Health systems, payers, and other holders of clinical data should track, analyze, and report on the incidence of firearm death and injury.
- Public and private payers should examine violence prevention services for efficacy and provide payment for those with a strong evidence base of effectiveness.
- Health sector leaders should educate themselves on the issues related to firearms and become vocal advocates for approaches that will reduce the burden of firearm injury.

## **2. The right to keep and bear arms should be understood to encompass responsibilities that promote firearm safety**

All rights come with responsibilities, and the Second Amendment right to keep and bear arms is no exception. These responsibilities extend to all parties involved in firearm production, distribution, ownership, and disposal. Some of the responsibilities should be codified in federal and/or state law, but the responsible party should take these actions even if the law does not require it. Responsibilities include:

- Gun manufacturers should continue to develop technologies that reduce the risk of firearm misuse, including so-called “smart guns” that use biometrics to allow them to be fired only by the owner.
- Gun sellers should eliminate default proceeds, meaning releasing a gun to a prospective purchaser after three days if the federal background check has not been completed.
- All gun sellers, without exception, should conduct background checks on all gun purchasers.
- States should expand mandatory purchaser licensing programs and require in-person interactions with law enforcement to obtain a license.
- States should expand the prohibition criteria that bar gun purchases by people such as those who have been convicted of violent misdemeanors and/or certain alcohol use related offenses (such as drunk driving) and those who have been diagnosed with certain serious mental illnesses. States should also tighten age restrictions on the purchase of firearms.



- Gun owners should avail themselves of gun safety education opportunities.
- Gun owners should be required to store their firearms safely, take steps to minimize the likelihood of their being stolen, and dispose of them properly.
- Federal and state agencies that regulate firearms and enforce those regulations should tighten rules regarding so-called ghost guns and crack down on straw purchases, where a person purchases a gun on behalf of someone else.
- The public should notify the appropriate authorities when they are aware of someone at risk of self-harm or harm to others to enable removal of firearms until the risk passes.
- States and localities should adopt additional safety measures for the harms they prevent and to help build the evidence base of what does and does not work to reduce firearm injury.

### **3. Firearms should be less readily available to people at risk of self-harm or harming others**

People who harm themselves or others often have demonstrated behaviors that, if observed by others, create an opportunity for intervention. Removing firearms from potentially volatile situations reduces the risk of harm. Steps that can reduce the risk of harm, the vast majority of which are supported by most people whether they own a gun or not, include:

- States should increase mandated waiting periods before a gun can be purchased.
- States should expand prohibitions against purchasing guns to include people with emergency or temporary domestic violence restraining orders.



- States should adopt extreme risk protective orders (ERPOs), which are short term emergency orders to remove firearms from those showing specific behaviors that indicate a risk of violence.
- States should require that gun purchases include a point of contact with law enforcement.
- States should have their own systems of background checks that go beyond federal background checks.
- States and the federal government should improve the timeliness and quality of data used to determine if someone is prohibited from purchasing a firearm.
- States and the federal government should actively recover firearms from people who have been deemed prohibited from owning one.
- States should adopt strong child access prevention laws.
- States should repeal permitless concealed carry and stand your ground laws.

#### **4. Models that reduce levels of community violence should be supported and expanded**

A multidimensional approach is required to reduce the burden of firearm injury in communities where rates of violence are particularly high. Developing the community violence intervention ecosystem described by Jackson and Fischer requires the following actions:

- Health system leaders should build and expand hospital-based violence intervention programs that step in when community members experience firearm injury.
- Behavioral health professionals should build targeted trauma informed care programs that provide therapy and case management to people caught in cycles of violence.
- Health plans and payers should provide payment for interventions that are demonstrated to reduce the health burdens of community violence.
- Public health agencies should develop the local data infrastructure needed to assist in identifying those who would benefit from community violence interruption programs.
- Federal, state, regional, and local assets should be directed to community leaders who can guide the development of community violence intervention programs appropriate to local needs and select from available evidence-based models.

While the details of these models vary, all require that communities identify assets, build relationships across organizations, identify credible messengers who can intervene when violence occurs, identify people at risk of committing violence, and deploy a broad range of assets to support behavior change.

- Local leaders should reverse decades of disinvestment and tolerance of high rates of violence in certain communities. This includes everything from investing in the physical environment of neighborhoods, which has been shown to reduce rates of crime, to broader initiatives designed to grapple with the legacy of racism that created the many conditions that combine to yield high rates of violence in certain neighborhoods.
- Local leaders should create supports for the basic infrastructure necessary for community organizations to develop successful programs. While those needs will differ by community, priority should be given to developing the fiscal and organizational capacity to appropriately collect and spend grant funds, and to developing career pathways for the trusted messengers hired into these programs.



## **5. The nation should close the information gaps that impede our ability to reduce firearm injury**

The multiple factors that lead to high rates of firearm injury in the United States require a multiplicity of responses. Even as we know enough to act, the nation's efforts would benefit from an investment in addressing firearm injury commensurate with the scale of the problem. Some of the actions that would help close these gaps are:

- A broad range of organizations that have data relevant to firearm injury, such as public health agencies, health care providers, health care payers, police departments, and community organizations, should work together to develop usable data sets to prompt better analysis of firearm violence.
- The federal government should consider establishing centers of excellence or research hubs to accelerate the growth of knowledge regarding firearm injury.

- Borrowing from the concepts of maternal mortality review committees and the national highway traffic safety administration, states or localities should establish multidisciplinary committees to examine the root causes of firearm deaths and report out the results of their analysis.
- Federal funding of research regarding firearm injury should continue to expand to a level appropriate to the scale of the health burden firearms impose on the country.
- The appropriate roles policing can play in reducing firearm injury should be examined in more detail.
- Federal funds should be made available to conduct well-crafted pilot programs and experiments that can add to the evidence base for what works, and what does not work, to reduce firearm injury.



## Moving Forward

Firearm injury has reached epidemic proportions in the United States. Now is the time to move forward with specific strategies that evidence shows will reduce the harms associated with firearms. It is also time to adopt a comprehensive approach designed to expand our understanding of firearm injury and develop new ways to tackle this problem.

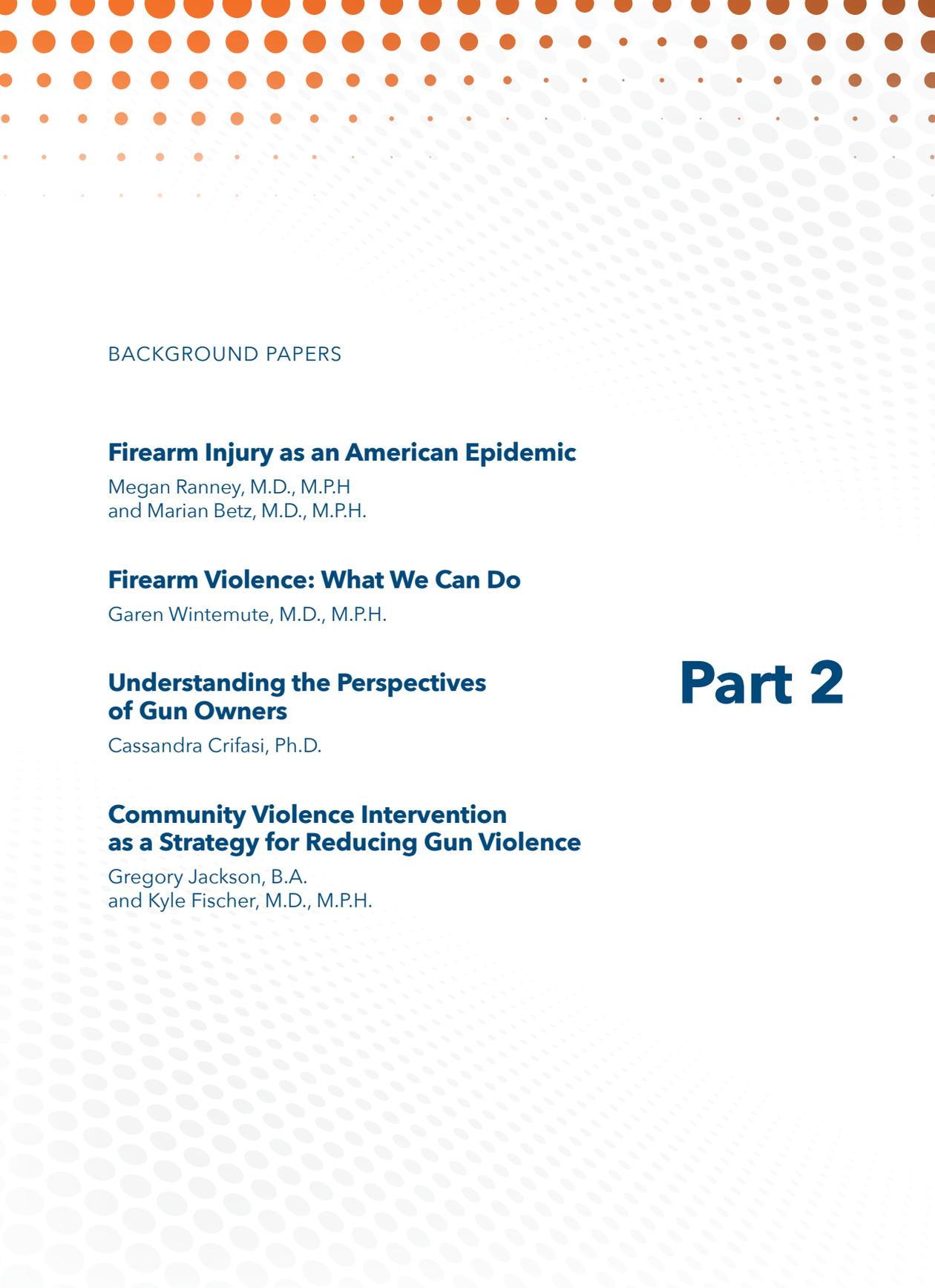
The Aspen Health Strategy Group, with its multisector membership, has developed these ideas to motivate improvements in policy and practice. With this report, we call on the health sector to lead, and the Biden administration, Congress, states, and localities to recognize the tremendous health burdens of firearm injury and take specific steps to reduce those burdens.

## References

Institute for Health Metrics & Evaluation (May 31, 2022, accessed October 14, 2023). On gun violence, the United States is an outlier, <https://www.healthdata.org/news-events/insights-blog/acting-data/gun-violence-united-states-outlier>.

Stark DE, Shah NH. Funding and Publication of Research on Gun Violence and Other Leading Causes of Death. *JAMA*. 2017;317(1):84–85. doi:10.1001/jama.2016.16215





BACKGROUND PAPERS

**Firearm Injury as an American Epidemic**

Megan Ranney, M.D., M.P.H.  
and Marian Betz, M.D., M.P.H.

**Firearm Violence: What We Can Do**

Garen Wintemute, M.D., M.P.H.

**Understanding the Perspectives  
of Gun Owners**

Cassandra Crifasi, Ph.D.

**Community Violence Intervention  
as a Strategy for Reducing Gun Violence**

Gregory Jackson, B.A.  
and Kyle Fischer, M.D., M.P.H.

**Part 2**



# SUICIDE



**THE MAJORITY (54%) OF FIREARM DEATHS  
ARE DUE TO SUICIDE (CDC, 2021)**

*"Just as medicine has standardized algorithms to diagnose and treat common medical complaints, the field of public health has a systematic approach for responding to epidemics. By conceiving of firearm injury as an epidemic we can apply this well-defined and historically successful process and hopefully break the logjam that frequently removes hope and agency around this topic."*

**– MEGAN RANNEY, M.D., M.P.H. AND MARIAN BETZ, M.D., M.P.H.**

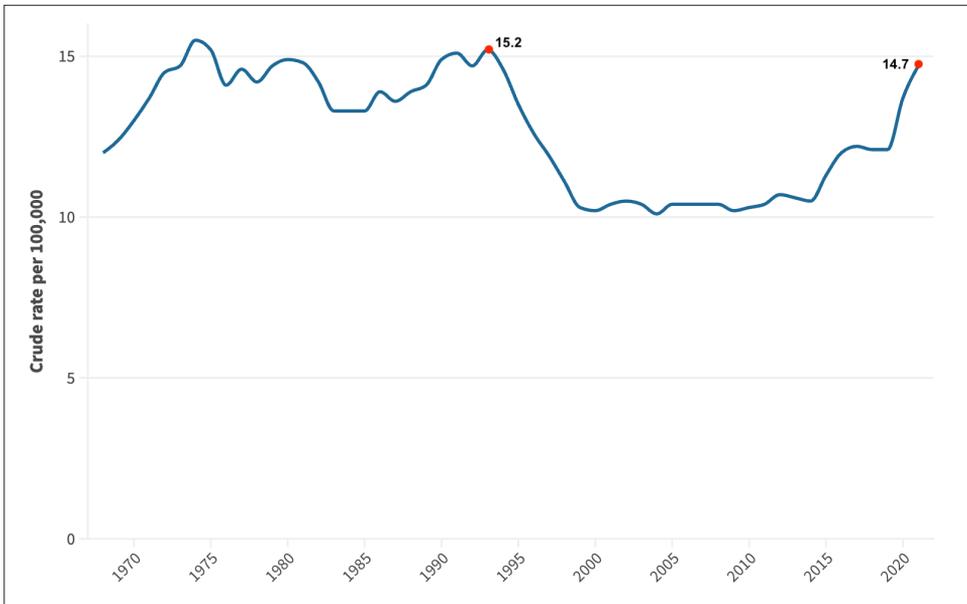
# Firearm Injury as an American Epidemic

Megan Ranney, M.D., M.P.H. and Marian Betz, M.D., M.P.H.

## Introduction

Firearm injury in the United States meets the definition of an epidemic from the US Centers for Disease Control and Prevention (CDC): “the occurrence of more cases of disease, injury, or other health condition than expected in a given area or among a specific group of persons during a particular period” (CDC, 2014). The rate of firearm deaths in the US increased from 10.4 to 14.6 per 100,000 people between 2001 and 2021, the highest rate observed since the mid-1990s (figure 1) (CDC, 2023). The firearm death rate in the US is an outlier among large high-income countries (Global Burden of Disease 2016 Injury Collaborators, 2018).

**Figure 1: Firearm Deaths in the United States, 1968-2021**



Source: CDC, 2022a.

Notes: ICD-8 codes E922, E955, E965, E970, and E985 were selected for years 1968-1978 because the injury mechanism category had not yet been created. These correspond, respectively, to: accident caused by firearm missiles; suicide and self-inflicted injury by firearms and explosives; assault by firearms and explosives; injury due to legal intervention by firearms; and injury by firearms and explosives undetermined whether accidentally or purposely inflicted.

Firearm injury and death are disproportionately concentrated among specific populations and geographic areas. For example, Black men are at 20 times the risk of death due to homicide than White non-Hispanic men. Firearm injury is the leading cause of death for American children and youth, largely due to homicide. Older



White, and middle-aged American Indian and Alaskan Native, men are at disproportionate risk of firearm suicide. Alabama, Alaska, Louisiana, Mississippi, Montana, New Mexico, and Wyoming have been among the states with the highest death rates for more than 20 years, with firearm death rates in excess of 25 per 100,000 people, (CDC, 2022a). Firearm deaths are also concentrated spatially in

counties and neighborhoods with higher rates of poverty, a history of segregation, and a prevalence of federally licensed firearm dealers (Degli Esposti et al., 2022; Mehranbod et al., 2022).

Just as medicine has standardized algorithms to diagnose and treat common medical complaints, the field of public health has a systematic approach for responding to epidemics. By conceiving of firearm injury as an epidemic, we can apply this well-defined and historically successful process and hopefully break the logjam that frequently removes hope and agency around this topic.

This public health framework uses a repeating cycle of four interrelated steps:

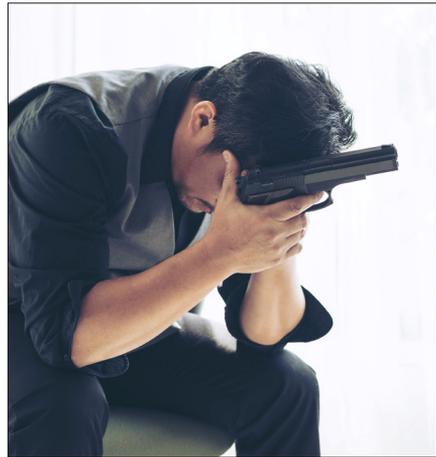
1. *Identification and measurement*: using data to define the scope of the problem, including analyzing epidemiologic patterns regarding injury type, trends over time, and populations most at risk
2. *Definition of risk and protective factors*: identifying which factors increase or decrease the likelihood of injury or death, disaggregated by specific populations
3. *Intervention development*: designing and testing interventions to reduce risk or increase protective factors in specific populations
4. *Dissemination*: scaling up effective interventions by implementing them in different and larger settings

The public health approach is increasingly well known due to the COVID-19 pandemic. While the approach can be highly effective, in the absence of data on incidence, risk or protective factors, or effective interventions—and in the absence of accurate information about how to communicate and scale up what works—the process can break down or focus on policies that are unlikely to succeed.

## The Epidemiology of Firearm Injury in the United States

### *Firearm Deaths*

According to the CDC, there were 48,962 firearm deaths in the United States in 2021, or 134 deaths each day (CDC, 2022a). Contrary to the impression one might get from media coverage, most firearm deaths in the United States are not due to mass shootings. In 2021, the majority of firearm deaths were due to suicides (approximately 54 percent), with about 43 percent due to homicides and about 1 percent due to unintentional shootings (“accidents”). Among homicides, about 2 percent were committed by an intimate partner, and 1.5 percent were due to legal intervention (police and judicial). The best estimates are that 1–2 percent of total firearm deaths were the result of mass shootings (CDC, 2022a, 2022b, 2023), defined as more than four deaths occurring in a single incident.



On average, over the last decade, two-thirds of annual firearm deaths have been suicides. Overall US suicide rates increased by 30 percent from 2000 to 2018 (from 10.4 to 14.2 per 100,000). Although overall suicide rates have recently decreased, firearm suicide rates continue to increase. Indeed, firearms are the leading means of suicide in the United States for both women and men and for all races (Garnett et al., 2022), in part because suicide attempts with a firearm are fatal in approximately 90 percent of cases (as compared to only about 10 percent fatality rates from other methods) (Conner et al., 2019).

The rate of firearm homicide increased steadily from 2014 to reach 4.4 deaths per 100,000 in 2019 (Smart et al., 2022), with further increases after 2019 as described below. Just as with suicide, the most common method of homicide in the US is a firearm (Agoubi et al., 2023). Whereas most decedents from firearm suicide are

White, middle-aged men, the majority of firearm homicide decedents are young men who are Black or Hispanic. A recent study reports that young men living in the most violent neighborhoods of Philadelphia and Chicago experience 70 percent greater rates of firearm homicide than combat veterans of the Iraq and Afghanistan wars (del Pozo et al., 2022).

Dramatic changes in firearm injury patterns were observed during the COVID-19 pandemic. A 45 percent increase in firearm homicide was observed between 2019 and 2021, attributed to increases in stress, socioeconomic stability, and political discord as well as increased firearm access during the pandemic (Houry et al., 2022). These increased firearm homicide rates disproportionately affected non-Hispanic Black and American Indian and Alaska Native men as well as people living in the poorest US counties. Although firearm suicide rates were overall unchanged, small increases were observed among younger American Indian and Alaska Native men



during the pandemic (CDC, 2022a). The decrease in the share of firearm deaths due to suicide in recent years is not the result of a decline in suicides but to a dramatic increase in homicides. Preliminary data suggest that, nationally, firearm homicide rates dropped slightly in 2022.

Among women, intimate partner violence is the most common cause of homicide deaths. Firearms are the most common method of intimate partner violence homicide, with Black women at highest risk (Petrosky et al., 2017). Intimate partner violence also has a well-established correlation with mass shootings: in more than two-thirds of mass shootings, the perpetrator either killed family or intimate partners or had a history of intimate partner violence (Geller et al., 2021).

Accurate estimates of law enforcement officer-involved homicide are difficult to obtain. In 2021, 537 firearm deaths were cited as resulting from legal intervention (1.1 percent of the 48,830 total firearm deaths that year) (CDC, 2023), but recent analyses suggest that rates have been systemically undercounted, perhaps by as much as 50 percent (Global Burden of Disease, 2019 Police Violence US Subnational Collaborators, 2021). Black people are at approximately three times greater risk of law enforcement-involved homicide than White non-Hispanic people (GBD 2019 Police Violence US Subnational Collaborators, 2021).

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The increasing rate of firearm death among US children is particularly notable. In 2020, firearm injury overtook car crashes as the leading cause of death among American youth aged 1 to 19 years (Goldstick et al., 2022). The majority of these youth firearm deaths are homicides, although an increasing rate of youth firearm suicide has been observed over the last decade (particularly among youth who are not White) (CDC, 2022a). Rates of unintentional firearm death are highest among rural and White youth.

### **Firearm Injuries**

Firearm injury rates are difficult to assess due to long-standing challenges with data acquisition. Indeed, the CDC recently removed estimates of nonfatal firearm injury rates from its online injury surveillance tool due to concerns about accuracy (Barber et al., 2022). Analyses using alternative datasets suggest that during the 10 years ending in 2017, there were a mean of about 86,000 nonfatal firearm injuries per year (Kaufman & Delgado, 2022). Unintentional injury is the most common kind of nonfatal firearm injury, with assault the second most common. Just as with homicide, differences in nonfatal firearm injury rates and types are observed according to age, race, and geography.

Longitudinal data on firearm injury survivors are limited, but the available data show that rates of depression, post-traumatic stress, firearm carriage, and recurrent firearm injury are all higher among survivors than in comparison groups (Nehra et al., 2021).

Gunshot wounds also create ripple effects for the victim's family, friends, neighborhood, and the larger society. For example, children are more likely to present to the emergency department for acute psychiatric issues after a firearm injury in their neighborhood (Vasan et al., 2021). Emergency mental health hotlines see an increased rate of crisis calls after a mass shooting (Weitzel et al., 2023). Increased rates of firearm purchasing are observed after a mass shooting (Callcut et al., 2019). Recent survey data from KFF reveal that more than 80 percent of Americans have changed aspects of their lives due to fear of firearm injury (with a disproportionate effect on Black and Hispanic respondents) (Schumacher et al., 2023).

### **Economic Costs**

The direct economic costs of firearm injury are well established. The US Government Accountability Office has estimated that initial hospital costs for gunshot wounds are more than \$1 billion annually, largely paid for by government



insurance programs, primarily Medicaid. About 16 percent of firearm injury survivors are readmitted at least once for their injuries (US Government Accountability Office, 2021). Other work concludes that health costs among commercially insured patients increase between 3- and 20-fold (depending on whether they were admitted to the hospital or discharged directly from the

emergency department after initial treatment) in the six months after a firearm injury (Ranney et al., 2020). The economic costs of the long-term psychological and physical effects of firearm injury are not well understood, nor are the economic costs associated with family and community-level harms.

### **Firearm Ownership**

An estimated 400 million firearms are in private hands in the US. Approximately 40 percent of households in the United States have a firearm, and the average gun owner has five firearms (NORC, 2022; Parker et al., 2017; Small Arms Survey, n.d.). Local prevalence of firearm ownership strongly correlates with the number of firearm deaths (Kaufman et al., 2018), and the presence of a firearm in a household is associated with a higher likelihood of a firearm-related death of someone in that household. Most firearm-owning households have at least one firearm that is not stored securely (i.e., unloaded and locked) (Anestis et al., 2022). Secure storage rates are similarly low for households without children, with children, and with children with mental illness (Haasz et al., 2023; Pallin et al., 2021).

Although further characteristics of firearm ownership are discussed in accompanying papers, we urge attention to the factors that drive firearm ownership in the first place. The primary driver of firearm ownership in the US, regardless of race, gender, or geography, is a desire for self-protection (Gallup, 2023; Ye et al., 2022). The US has a strong history of firearm ownership for hunting and sportsmanship as well as for heritage. Increasingly,



though, Americans report purchasing firearms because of fear of societal unrest and a belief that they need a firearm to keep themselves and their family safe. Concomitantly, demographic groups that historically have had lower firearm ownership rates—younger, minority, and female—are increasingly identifying as firearm owners (NORC, 2022).

### ***Risk and Protective Factors for Firearm Injury***

Various individual and social characteristics correlate with higher or lower rates of firearm injury. The dominant factors of sex and race have already been described.

At an individual level, youth with a history of emergency department visits for a fight have 1.4 times the risk of future firearm injury (Carter et al., 2015), and those with prior juvenile justice system involvement have 23 times the risk for firearm mortality, compared to the general population (Zheng et al., 2023). Current and former military service members are at 1.5 times the risk of firearm suicide compared to the general population, and a disproportionate majority of military suicides (66–78 percent, depending on the branch) are completed by firearm (Suicide Prevention and Response Independent Review Committee, 2022; Theis et al., 2021).

On a community or societal level, structural factors such as poverty, living in an area with low social mobility, or being in a historically marginalized group affected by structural racism also substantially increase risk of a firearm injury or death, all other things being equal (Bailey et al., 2017; Hoffmann et al., 2020; Kim, 2019). These structural factors moderate the effect of firearm laws, such that communities with high structural vulnerability have higher firearm death rates even after accounting for firearm legislation (Kwon et al., 2023). In other words, legislation is necessary, but not sufficient, to solve our country's firearm injury epidemic.

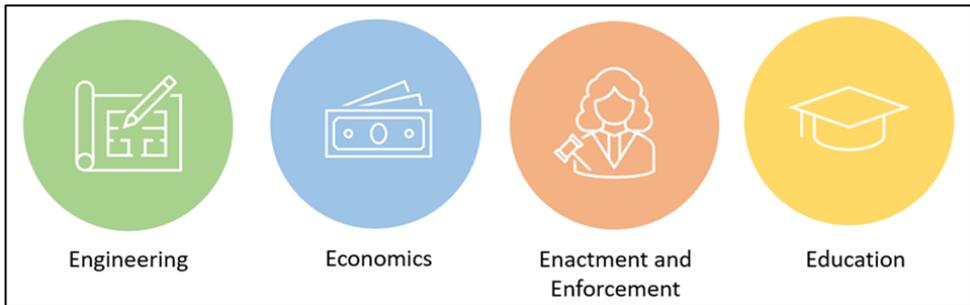
### **Designing Public Health Interventions**

The field of injury prevention teaches there are “4 Es” that correlate with successful reductions in injury rates: engineering, economics, enactment and enforcement, and education.

A comprehensive approach, mixing different types of interventions across populations, increases the likelihood of success in addressing the injury.

Motor vehicle crashes provide a useful example of this approach. Between the late 1960s and the onset of the COVID-19 pandemic, the death rate from motor vehicle crashes declined about 70 percent in the United States. The decline resulted from an

array of interventions drawing on the 4 Es. There were improvements in engineering cars (e.g., seat belts, air bags) and roads (e.g., rumble strips). Economic forces were brought to bear with, for example, financial incentives for safe driver training. Substantial improvements are associated with enactment and enforcement of legal limits for alcohol intoxication while driving. All these efforts were reinforced through education campaigns related to impaired or distracted driving, seat belt use, and the like (CDC, 1999).



Notably, the four Es work together, and no single element is expected to solve the problem. Indeed, implicit in the field of injury prevention is the principle of harm reduction, meaning a goal of reducing negative outcomes without expecting them or the behavior that underlies them to be eliminated. For example, the reduction in deaths from motor vehicle crashes occurred without banning cars; in fact, more cars and drivers are on the road now than ever before (National Highway Traffic Safety Administration, 2023; Policy and Governmental Affairs Office of Highway Policy Information, 2023; Yellman & Sauber-Schatz, 2022). And while deaths have declined, they have not been eliminated.

### **Public Health Interventions to Reduce Firearm Injury**

Dozens of promising public health–centered interventions could shift the trajectory of firearm injury and death in our country. These interventions range across many dimensions of the social-ecological model, from using media influencers to change beliefs about firearm ownership; to the development of firearm injury–focused bystander interventions (previously used successfully to reduce sexual assault and drunk driving); to the use of technology to deliver in-the-moment conflict resolution interventions to at-risk youth, suicidal patients, and parents. Many of these concepts are currently being tested with federal and foundation funding.

Many organizations have developed public health–focused research agendas meant to enhance the evidence base behind this work. These organizations include the

National Academy of Medicine, Association of Schools and Programs of Public Health, American College of Emergency Physicians, American Medical Association, American Academy of Pediatrics, American College of Surgeons, and more.

We highlight two attributes that are central to successful public health interventions: understanding the motivations of affected communities and engaging with affected communities.



At times there seems to be a broad cultural divide in this country between gun owners and non-gun owners (Betz et al., 2021). As non-gun owners consider policies or procedures designed to reduce gun violence, they ideally would avoid communicating judgment on those who own guns. They also should set aside erroneous assumptions regarding why people own guns. Failure to adhere to this approach can lead gun owners to adopt a purely defensive posture and refuse to engage in developing solutions.

Similarly, those developing interventions must engage directly with affected communities. Communities may be defined by demographic factors (e.g., age, race, ethnicity), personal characteristics or history (e.g., veteran status, suicide attempt survivor, mass shooting survivor, member of a particular faith), or geography. All steps of the public health framework, from data collection to program implementation, require community input and buy-in for optimal uptake and effect. Importantly, for firearm injury prevention, this means that firearm owners need to be at the table when designing and evaluating firearm injury prevention interventions. Without their input, the programs are too often doomed to fail.

In a separate paper in this collection, Wintemute discusses a broad array of potential interventions. Here we draw attention to a few with particularly promising bodies of evidence that do not require state or federal legislative action to be implemented.

### ***Using Health System Interactions to Promote Safer Firearm Storage***

An early body of work (Betz et al., 2017) addressing firearm injury as a public health problem recognized that at-risk patients are likely to have had previous interactions with the health care system (Alper et al., 2019). This observation led to the suggestion of use of the SBIRT (Screening, Brief Intervention, and Referral to Treatment) model, which has had success modifying other behavioral risk factors. Early research identified markers of risk (e.g., domestic violence, depression, and

dementia). Clinicians were then encouraged, by the authors of this paper and others, to screen for risk of firearm injury and provide brief in-person motivational interventions designed to change patterns of firearm access among at-risk groups (Pallin et al., 2019).

This type of intervention, when accompanied by provision of a safety device, has demonstrated increases in self-reported rates of safe storage of firearms by parents (Rowhani-Rahbar et al., 2016). However, the effectiveness of the SBIRT model in actually changing firearm injury rates remains to be determined. Ongoing research



in diverse health care settings, ranging from emergency departments to pediatric clinics, will provide more clarity and to whom, and how, to disseminate these interventions.

Only 14 percent of parents in 2022 report that their doctor has talked to them about firearm safety (Schumacher et

al., 2023). This statistic is not surprising, given that only a minority of providers are trained in, or feel comfortable with, these interventions, even for the highest-risk patients (Roszko et al., 2016). Recent research also suggests that firearm owners do not trust untrained clinicians. However, these barriers may be overcome with specific learning objectives (Hoops, Fahimi, et al., 2022), structured coursework for health care providers (Hoops, McCourt, et al., 2022), and case simulations (Rickert et al., 2022). The State of California has funded development of training for all medical students (developed and provided through the University of California at Davis), and educational leaders in other states (including Massachusetts, Rhode Island, and Texas) are also developing and testing training programs.

An important step forward will be rigorous evaluation of how to identify risk, how to deliver interventions, and what additional components of intervention are needed. Regardless of the details, health care provider screening and intervention will doubtless be an important part of firearm injury prevention going forward.

### ***Using Trusted Messengers to Change Firearm Storage Patterns***

Ready firearm access at home (e.g., unlocked personal firearms) increases the risk of suicide death due to the high fatality of firearm attempts and the impulsive nature of many suicide attempts. Conversely, reducing firearm access through storage

or removal can be protective. Promising interventions focused on firearm storage behaviors take into consideration individuals' beliefs, behaviors, and preferences (e.g., type of locking device) (Betz, Stanley, Buck-Atkinson, et al., 2023). Since active-duty military and veterans have higher-than-average rates of both firearm access and completed suicide, they are a natural target for access-reducing interventions (Betz, Stanley, Anestis, et al., 2022).

Project Safe Guard, a brief intervention that draws on concepts from motivational interviewing and lethal means counseling (in which people are counseled on how to reduce access to potentially lethal suicide methods), was developed for service members with firearms. In a randomized trial among Mississippi National Guard Members who owned firearms but had no current suicidality, those exposed to the intervention were more likely to subsequently report locking up firearms (Anestis et al., 2021). The intervention is now being tested in an active-



duty population and implemented broadly in the National Guard in multiple states. It is also being modified for subpopulations (e.g., individuals with symptoms of post-traumatic stress disorder) for whom it may be less effective (Stanley et al., 2023).

Similarly, the Veterans Health Administration has developed and implemented lethal means counseling across its system for patients at high risk of firearm suicide. It is also deploying technology and outreach efforts to empower veterans and their families to reduce easy firearm access when someone is in crisis. Rather than focusing exclusively on risk, some of these outreach efforts focus on increasing protective factors. For instance, the Together With Veterans program has identified veterans who can serve as community organizers, providing firearm safety and suicide prevention information while also enhancing a sense of connection among veterans (DeAngelis, 2022; Monteith et al., 2020). Based on preliminary promising data, these efforts are being deployed and evaluated on a national level, and researchers at the University of Colorado are extending this work to active duty military.

Importantly, these efforts have also included testing of who is most effective as a trusted messenger (Anestis et al., 2022). Health and public health systems could assist by further testing what works and deploying systems both to enhance protective factors and improve knowledge and self-efficacy around what works.

### ***Community Greening and Environmental Improvement***

The built environment has a well-established correlation with numerous health outcomes, ranging from obesity to pedestrian injuries. Analysis of a recent body of data, led by researchers at the University of Pennsylvania and Columbia University, supports the conclusion that modifications to the built environment can also affect firearm injury rates. A randomized controlled trial of “greening” of vacant lots (i.e., cleaning the lots and adding plants) showed a 29 percent decrease in gun violence in treated blocks (Branas et al., 2018). A dose-dependent decrease in total crime, assault, and homicide in neighborhoods has been observed after a trial of remediation of abandoned buildings (South et al., 2021). Preliminary evidence suggests that installing streetlights may reduce crime (and, by extension, gun violence) in neighborhoods with streetlights compared to those without (Chalfin et al., 2022). These interventions also predict lower rates of depression, stress, and other correlates of firearm injury.

These findings could be used directly and indirectly by employers, public health advocates, and health systems, whether by volunteering to keep up community gardens or by advocating for local investment in green space.



### ***Data Modeling and Prediction of Hot Spots***

One of the most vexing challenges in firearm injury prevention is identifying those at highest risk and providing interventions accordingly. As will be discussed below, access to and interpretation of data on firearm injury, firearm ownership, and risk and protective factors remain difficult. Nonetheless, a few municipalities and nonprofits have developed promising models of prediction. The University of Chicago’s Crime Lab has worked with the Chicago Police Department and local

community violence prevention programs to develop a violence reduction dashboard (City of Chicago, n.d.) that highlights areas in greatest need of attention, which then predicts on an individual level which people are most in need of immediate social service intervention (Bhatt et al., 2023; Heller et al., 2023; Urban Labs Crime Lab, 2021). Researchers affiliated with The Violence Project have developed ad hoc databases of mass shootings (and recently incorporated a volunteer-driven database of kindergarten through 12th-grade school shootings) to provide the most detailed description to date of characteristics of mass shooters across the full social-ecological model; they recently developed an accompanying prevention and screening model, which to our knowledge has not been validated (Peterson & Densley, 2021). Other promising data initiatives include work by various national groups (e.g., American College of Surgeons Committee on Trauma; Pediatric Emergency Care Applied Research Network) to harmonize data and the creation of the Gun Violence Archive, a nonprofit that collates media reports on firearm injury and death.



These efforts could be replicated and enhanced by public health and health systems. Access to a near-real-time, accurate, longitudinal database of firearm injury and its outcomes would be invaluable both to researchers and practitioners, by helping us better direct resources where they are needed and enabling us to evaluate the success of the interventions being delivered.

## Barriers to Employing a Public Health Approach

We would be remiss to close an overview paper without calling attention to the spaces in which more is needed to successfully address the firearm injury epidemic.

First, we lack comprehensive data on not just the incidence of injuries but also on all of its correlates: firearm ownership rates, patterns of safer storage, firearm trafficking, and longitudinal outcomes of firearm injury survivors and communities (Kaufman & Delgado, 2022). We cannot accurately measure the prevalence and efficacy of defensive gun use. We know that coding of injury intent (assault versus unintentional versus unknown versus self-harm)—the most basic of strategies—is plagued by inaccuracies, including racial and ethnic bias. We lack reliable data on the number of firearm injuries and threats that occur at workplaces in general and at hospitals in particular. This lack of data on key variables makes it difficult to assess the efficacy of upstream intervention programs. For example, the Gun Shop Project is a promising collaboration between public health researchers and gun shops to promulgate knowledge about suicide risk factors. While the approach appears feasible and acceptable, data on its effectiveness are not yet available, although a CDC-funded study (Mattson, 2020–2023) is nearing completion.

Second, we lack the ability to rigorously define and examine risk and protective factors. For example, *mental health* is often identified as a potential risk factor for firearm injury. Although it may be true that people who commit mass shootings

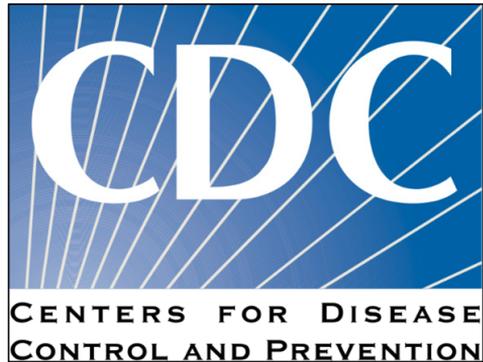


have a higher-than-average rate of mental illness, data demonstrate that people with serious mental illness are at greater-than-average risk of being violently injured themselves, particularly from suicide (Ghiasi et al., 2023; Girgis et al., 2023). *Mental illness* is an umbrella term covering numerous specific psychiatric diagnoses and substance use disorders, each

of which can fluctuate in severity over time and treatment regimens. In addition, certain psychiatric symptoms, such as extreme anger or suspiciousness, may increase the risk of violence but may be related to personality disorders rather than diagnosable mental illness. Thus, identifying the specific immediate or lifetime risk of violence for an individual remains difficult, which complicates efforts for clinicians, law enforcement, or the community to reduce firearm access for those with high or imminent risk (Swanson et al., 2015).

Third, just because an idea is intellectually coherent does not mean it will work. Unfortunately, due to 24 years of limited federal funding for firearm injury prevention research, a paucity of evidence exists to support even the most promising interventions. We also have an abysmal track record of disseminating interventions that are demonstrated to work. Moreover, even those solutions that do work, such as those outlined above, are poorly or inconsistently implemented. This reflects lack of funding, lack of community trust, and misunderstanding of existing laws.

These examples lead to the elephant in the room that blocks progress on the public health approach: the politicization of the issue, dating back to the 1990s, which has blocked data, research, community partnership, and implementation. The Dickey Amendment (1996), passed in 1996, ostensibly was meant to stop the CDC from advocating for gun control but had the effect of defunding the CDC's firearm injury prevention research (Rostron, 2018). The federal appropriations freeze soon thereafter expanded to the National Institutes of Health. In parallel, multiple laws were passed that limit the collection or tracking of data (e.g., the Tiahrt Amendment, the Firearm Owners' Protection Act, and provisions of the Patient Protection and Affordable Care Act, which prohibit maintenance of registries of firearm ownership by health care providers) (Webster & Wintemute, 2015). Despite Congress finally reappropriating federal funds to firearm injury prevention research in 2020, the funding level remains small compared to the scope of the problem, and the harm that has been done. Too often, the American public conflates firearm injury prevention with banning guns—a false equivalence. Moreover, as described above, the public health approach to firearm injury prevention is about much more than passing new legislation.



## Next Steps

The recent history of firearm injury prevention in the US is plagued by a belief that injury prevention requires an all-or-nothing approach. For this epidemic, as for all others, a nuanced and multifaceted prevention approach is required. Legislation certainly matters, deeply, for firearm injury, as is discussed in other papers. However, measures that mandate safe storage, restrict firearm ownership, or otherwise control access to firearms cannot be relied on as a magic wand that will eliminate

firearm injury. In the wake of the US Supreme Court's decision in *New York State Rifle & Pistol Association Inc. v. Bruen* (2022), which limits states' ability to pass and enforce effective legislation, attention to individual and societal factors is not just worthwhile but necessary.

Changing injury and death patterns requires, of course, sustained and increased federal funding for rigorous research and dissemination. It also requires acknowledgement of the underlying structural drivers of our US epidemic, including economic inequity and systemic racism. The public health approach requires addressing all aspects of injury risk—ranging from the individual to the family to the societal. A single-minded focus on just one of these drivers of firearm injury is unlikely to be successful. To achieve change, we desperately need more comprehensive and accurate data, more knowledge about risk and protective factors, and the ability to reduce access to firearms by those at highest risk of hurting themselves or others. The for-profit, nonprofit, and governmental sectors could advance all of these.

We understand the urgency of action. We also urge evaluation of this action. The public health approach encourages us to continue to monitor firearm death rates for increased rates of injury among populations or in regions that are not currently affected—and then to quickly implement effective interventions. By gathering data, developing predictive models, testing behavior change interventions, and agreeing to deploy what works, we could collectively have a tremendous impact on not just risk of firearm injury but also society's understandable fear and firearm purchasing behaviors in response to our unique epidemic.



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## References

- Agoubi, L. L., Duan, N., Rowhani-Rahbar, A., Nehra, D., Sakran, J. V., & Rivara, F. P. (2023). Patterns in location of death from firearm injury in the US. *JAMA Surgery*, 158(6), 669–670. <https://doi.org/10.1001/jamasurg.2022.8380>
- Alper, J., French, M., & Wojtowicz, A. (2019). *Health systems interventions to prevent firearm injuries and death: Proceedings of a workshop*. National Academies of Sciences, Engineering, and Medicine. <https://doi.org/doi:10.17226/25354>
- Anestis, M. D., Bryan, C. J., Capron, D. W., & Bryan, A. O. (2021). Lethal means counseling, distribution of cable locks, and safe firearm storage practices among the Mississippi National Guard: A factorial randomized controlled trial, 2018–2020. *American Journal of Public Health*, 111(2), 309–317. <https://doi.org/10.2105/ajph.2020.306019>
- Anestis, M. D., Bryan, C. J., Capron, D. W., & Bryan, A. O. (2022). Evaluation of safe firearm storage messaging in a sample of firearm-owning US military service members. *JAMA Network Open*, 5(10), Article e2235984. <https://doi.org/10.1001/jamanetworkopen.2022.35984>
- Bailey, Z. D., Krieger, N., Agénor, M., Graves, J., Linos, N., & Bassett, M. T. (2017). Structural racism and health inequities in the USA: Evidence and interventions. *Lancet*, 389(10077), 1453–1463. [https://doi.org/10.1016/s0140-6736\(17\)30569-x](https://doi.org/10.1016/s0140-6736(17)30569-x)

Barber, C., Cook, P. J., & Parker, S. T. (2022). The emerging infrastructure of US firearms injury data. *Preventive Medicine*, 165, 107129. <https://doi.org/10.1016/j.ypmed.2022.107129>

Betz, M. E., Harkavy-Friedman, J., Loren Dreier, F., Pincus, R., Ranney, M. L. (2021). Talking about “firearm injury” and “gun violence”: Words matter. *American Journal of Public Health*, 111(12), 2105–2110. <https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2021.306525>

Betz, M. E., Ranney, M. L., & Wintemute, G. J. (2017). Physicians, patients, and firearms: The courts say “yes.” *Annals of Internal Medicine*, 166(10), 745–746. <https://doi.org/10.7326/M17-0489>

Betz, M. E., Stanley, I. H., Anestis, M. D., Bryan, C. J., Buck-Atkinson, J., Carey, N., Ghahramanlou-Holloway, M., Morrissey, B. H., Holloway, K., Houtsma, C., Kennedy, R., Paine, C. M., Ramchand, R., Simonetti, J., Walsh, A., & Wright-Kelly, E. (2023). Firearm suicide prevention in the U.S. military: Recommendations from a national summit. *Military Medicine*, 188(9–10), 231–235. <https://doi.org/10.1093/milmed/usac371>

Betz, M. E., Stanley, I. H., Buck-Atkinson, J., Johnson, R., Bryan, C. J., Baker, J. C., Bryan, A. O., Hunter, K., & Anestis, M. D. (2023). Firearm owners’ preferences for locking devices: Results of a national survey. *Annals Internal Medicine*, 176(3), 424–427. <https://doi.org/10.7326/m22-3113>

Bhatt, M., Heller, S., Kapustin, M., Bertrand, M., & Blattman, C., (2023). *Predicting and preventing gun violence: An experimental evaluation of READI Chicago* (Working Paper No. 30852). National Bureau of Economic Research. <https://doi.org/10.3386/w30852>

Branas, C. C., South, E., Kondo, M. C., Hohl, B. C., Bourgois, P., Wiebe, D. J., & MacDonald, J. M. (2018). Citywide cluster randomized trial to restore blighted vacant land and its effects on violence, crime, and fear. *Proceedings of the National Academy of Sciences of the United States of America*, 115(12), 2946–2951. <https://doi.org/doi:10.1073/pnas.1718503115>

Callcut, R. A., Robles, A. M., Kornblith, L. Z., Plevin, R. E., & Mell, M. W. (2019). Effect of mass shootings on gun sales—A 20-year perspective. *Journal of Trauma and Acute Care Surgery*, 87(3), 531–540. <https://doi.org/10.1097/ta.0000000000002399>

Carter, P. M., Walton, M. A., Roehler, D. R., Goldstick, J., Zimmerman, M. A., Blow, F. C., & Cunningham, R. M. (2015). Firearm violence among high-risk emergency department youth after an assault injury. *Pediatrics*, 135(5), 805–815. <https://doi.org/10.1542/peds.2014-3572>

Centers for Disease Control and Prevention. (1999). Achievements in public health, 1900–1999 motor-vehicle safety: A 20th century public health achievement. *Morbidity and Mortality Weekly Report*, 48(18), 369–374. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm4818a1.htm>

Centers for Disease Control and Prevention. (2014). *Glossary*. <https://www.cdc.gov/csels/dmi-support/guidance-portal/glossary.html>

Centers for Disease Control and Prevention. (2022a). *CDC Wonder*. <https://wonder.cdc.gov>

Centers for Disease Control and Prevention. (2022b). *National Violent Death Reporting System (NVDRS)*. <https://www.cdc.gov/violenceprevention/datasources/nvdrs/index.html>

Centers for Disease Control and Prevention. (2023). *WISQARS—Web-based Injury Statistics Query and Reporting System*. <https://www.cdc.gov/injury/wisqars/index.html>

Chalfin, A., Hansen, B., Lerner, J., & Parker, L. (2022). Reducing crime through environmental design: Evidence from a randomized experiment of street lighting in New York City. *Journal of Quantitative Criminology*, 38(1), 127–157. <https://doi.org/10.1007/s10940-020-09490-6>

City of Chicago. (n.d.). Violence Reduction Dashboard. <https://www.chicago.gov/city/en/sites/vrd/home.html>

Conner, A., Azrael, D., & Miller, M. (2019). Suicide case-fatality rates in the United States, 2007 to 2014: A nationwide population-based study. *Annals of Internal Medicine*, 171(12), 885–895. <https://doi.org/10.7326/m19-1324>

DeAngelis, T. (2022). Veterans are at higher risk for suicide. Psychologists are helping them tackle their unique struggles. *Monitor on Psychology*, 53(8), 56. <https://www.apa.org/monitor/2022/11/preventing-veteran-suicide>

Degli Esposti, M., Gravel, J., Kaufman, E. J., Delgado, M. K., Richmond, T. S., & Wiebe, D. J. (2022). County-Level variation in changes in firearm mortality rates across the US, 1989 to 1993 vs 2015 to 2019. *JAMA Network Open*, 5(6), Article e2215557. <https://doi.org/10.1001/jamanetworkopen.2022.15557>

del Pozo, B., Knorre, A., Mello, M. J., & Chalfin, A. (2022). Comparing risks of firearm-related death and injury among young adult males in selected US cities with wartime service in Iraq and Afghanistan. *JAMA Network Open*, 5(12), Article e2248132. <https://doi.org/10.1001/jamanetworkopen.2022.48132>

Dickey Amendment. Omnibus Consolidated Appropriations Act, Pub. L. No. 104-208 (1996).

Gallup. (2023). Guns. <https://news.gallup.com/poll/1645/guns.aspx>

Garnett, M. F., Curtin, S. C., & Stone, D. M. (2022). *Suicide mortality in the United States, 2000–2020 (Data Brief No. 433)*. National Center for Health Statistics. <https://www.cdc.gov/nchs/products/databriefs/db433.htm>

GBD 2019 Police Violence US Subnational Collaborators (2021). Fatal police violence by race and state in the USA, 1980–2019: A network meta-regression. *The Lancet*, 398(10307), 1239–1255. [https://doi.org/10.1016/S0140-6736\(21\)01609-3](https://doi.org/10.1016/S0140-6736(21)01609-3)

Geller, L. B., Booty, M., & Crifasi, C. K. (2021). The role of domestic violence in fatal mass shootings in the United States, 2014–2019. *Injury Epidemiology*, 8(1), 38. <https://doi.org/10.1186/s40621-021-00330-0>

Ghiasi, N., Azhar, Y., & Singh, J. (2023). Psychiatric illness and criminality. In *StatPearls*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK537064/>

Girgis, R. R., Rogers, R. T., Hesson, H., Lieberman, J. A., Appelbaum, P. S., & Brucato, G. (2023). Mass murders involving firearms and other methods in school, college, and university settings: Findings from the Columbia Mass Murder Database. *Journal of Forensic Sciences*, 68(1), 207–211. <https://doi.org/10.1111/1556-4029.15161>

Global Burden of Disease 2016 Injury Collaborators. (2018). Global mortality from firearms, 1990–2016. *JAMA*, 320(8), 792–814. <https://doi.org/10.1001/jama.2018.10060>

Goldstick, J. E., Cunningham, R. M., & Carter, P. M. (2022). Current causes of death in children and adolescents in the United States. *New England Journal of Medicine*, 386(20), 1955–1956. <https://doi.org/10.1056/NEJMc2201761>

Haasz, M., Myers, M. G., Rowhani-Rahbar, A., Zimmerman, M. A., Seewald, L., Sokol, R. L., Cunningham, R. M., & Carter, P. M. (2023). Firearms availability among high-school age youth with recent depression or suicidality. *Pediatrics*, 151(6): Article e2022059532. <https://doi.org/10.1542/peds.2022-059532>

Heller, S.B., Jakubowski, B., Jelveh, Z., Kapustin, M. (2023). *Machine learning can predict shooting victimization well enough to help prevent it* (Working Paper No. 30170). National Bureau of Economic Research. <http://doi.org/10.3386/w30170>

Hoffmann, J. A., Farrell, C. A., Monuteaux, M. C., Fleegler, E. W., & Lee, L. K. (2020). Association of pediatric suicide with county-level poverty in the United States, 2007–2016. *JAMA Pediatrics*, 174(3), 287–294. <https://doi.org/10.1001/jamapediatrics.2019.5678>

Hoops, K., Fahimi, J., Khoeur, L., Studenmund, C., Barber, C., Barnhorst, A., Betz, M. E., Crifasi, C. K., Davis, J. A., Dewispelaere, W., Fisher, L., Howard, P. K., Ketterer, A., Marcolini, E., Nestadt, P. S., Rozel, J., Simonetti, J. A., Spitzer, S., Victoroff, M., . . . Ranney, M. L. (2022). Consensus-driven priorities for firearm injury education among medical professionals. *Academic Medicine*, 97(1), 93–104. <https://doi.org/10.1097/acm.0000000000004226>

Hoops, K., McCourt, A., & Crifasi, C. K. (2022). The 5 A's of firearm safety counseling: Validating a clinical counseling methodology for firearms in a simulation-based randomized controlled trial. *Preventive Medicine Reports*, 27, Article 101811. <https://doi.org/10.1016/j.pmedr.2022.101811>

Houry, D. E., Simon, T. R., & Crosby, A. E. (2022). Firearm homicide and suicide during the COVID-19 pandemic: Implications for clinicians and health care systems. *JAMA*, 327(19), 1867–1868. <https://doi.org/10.1001/jama.2022.6924>

Kaufman, E. J., & Delgado, M. K. (2022). The epidemiology of firearm injuries in the US: The need for comprehensive, real-time, actionable data. *JAMA*, 328(12), 1177–1178. <https://doi.org/10.1001/jama.2022.16894>

Kaufman, E. J., Morrison, C. N., Branas, C. C., & Wiebe, D. J. (2018). State firearm laws and interstate firearm deaths from homicide and suicide in the United States: A cross-sectional analysis of data by county. *JAMA Internal Medicine*, 178(5), 692–700. <https://doi.org/10.1001/jamainternmed.2018.0190>

Kim, D. (2019). Social determinants of health in relation to firearm-related homicides in the United States: A nationwide multilevel cross-sectional study. *PLOS Medicine*, 16(12), Article e1002978. <https://doi.org/10.1371/journal.pmed.1002978>

Kwon, E. G., Rice-Townsend, S. E., Agoubi, L. L., Rowhani-Rahbar, A., & Nehra, D. (2023). Association of community vulnerability and state gun laws with firearm deaths in children and adolescents aged 10 to 19 years. *JAMA Network Open*, 6(5), Article e2314863. <https://doi.org/10.1001/jamanetworkopen.2023.14863>

Mattson, S. A. (2020–2023). *An evaluation of the gun shop project: Suicide prevention led by the firearms community* (Project No. 5R01CE003289-02) [Grant]. University of Colorado. <https://reporter.nih.gov/search/0Y2UOQrO2kCTvAdBnqnSHw/project-details/10268948>

Mehranbod, C. A., Gobaud, A. N., Jacoby, S. F., Uzzi, M., Bushover, B. R., & Morrison, C. N. (2022). Historical redlining and the epidemiology of present-day firearm violence in the United States: A multi-city analysis. *Preventive Medicine*, 165, Article 107207. <https://doi.org/10.1016/j.ypmed.2022.107207>

Monteith, L. L., Wendleton, L., Bahraini, N. H., Matarazzo, B. B., Brimmer, G., & Mohatt, N. V. (2020). Together with veterans: VA national strategy alignment and lessons learned from community-based suicide prevention for rural veterans. *Suicide and Life-Threatening Behavior*, 50(3), 588–600. <https://doi.org/10.1111/sltb.12613>

National Highway Traffic Safety Administration. (2023, April 20). *NHTSA estimates for 2022 show roadway fatalities remain flat after two years of dramatic increases*. US Department of Transportation. <https://www.nhtsa.gov/press-releases/traffic-crash-death-estimates-2022>

Nehra, D., Bulger, E. M., Maier, R. V., Moloney, K. E., Russo, J., Wang, J., Anderson, K., & Zatzick, D. F. (2021). A prospective US national trauma center study of firearm injury survivors weapon carriage and posttraumatic stress disorder symptoms. *Annals of Surgery*, 274(4), e364–e369. <https://doi.org/10.1097/sla.0000000000005043>

*New York State Rifle & Pistol Association Inc. v. Bruen*, No. 20-843 (U.S. Jun. 23, 2022).

NORC. (2022, March 24). *One in five American households purchased a gun during the pandemic* [Press release]. <https://norc.org/research/library/one-in-five-american-households-purchased-a-gun-during-the-pande.html>

Pallin, R., Spitzer, S. A., Ranney, M. L., Betz, M. E., & Wintemute, G. J. (2019). Preventing firearm-related death and injury. *Annals of Internal Medicine*, 170(11), ITC81–ITC96. <https://doi.org/10.7326/aitc201906040>

Pallin, R., Wintemute, G. J., & Kravitz-Wirtz, N. (2021). Firearm practices, perceptions of safety, and opinions on injury prevention strategies among California adults with vs without children. *JAMA Network Open*, 4(8), Article e2119146. <https://doi.org/10.1001/jamanetworkopen.2021.19146>

Parker, K., Menasce Horowitz J., Igielnik, R., Baxter Oliphant, J., Brown, A. (2017, June 22). *The demographics of gun ownership*. Pew Research Center. <https://www.pewresearch.org/social-trends/2017/06/22/the-demographics-of-gun-ownership/>

Peterson, J., & Densley, J. (2021). *The Violence Project: How to stop a mass shooting epidemic*. Abrams Press.

Petrosky, E., Blair, J. M., Betz, C. J., Fowler, K. A., Jack, S. P. D., & Lyons, B. H. (2017). Racial and ethnic differences in homicides of adult women and the role of intimate partner violence—United States, 2003–2014. *Morbidity and Mortality Weekly Report (MMWR)*, 66(28), 741–746. <https://doi.org/10.15585/mmwr.mm6628a1>

Policy and Governmental Affairs Office of Highway Policy Information (2023, February). *Highway statistics series: State motor-vehicle registrations—2020*. US Department of Transportation Federal Highway Administration. <https://www.fhwa.dot.gov/policyinformation/statistics/2020/mv1.cfm>

Ranney, M. L., Herges, C., Metcalfe, L., Schuur, J. D., Hain, P., & Rowhani-Rahbar, A. (2020). Increases in actual health care costs and claims after firearm injury. *Annals of Internal Medicine*, 173(12), 949–955. <https://doi.org/10.7326/m20-0323>

Rickert, C. G., Felopulos, G., Shoults, B., Hathi, S., Scott-Vernaglia, S. E., Currier, P., Masiakos, P. T., & Sacks, C. A. (2022). Development and implementation of a novel case-based gun violence prevention training program for first-year residents. *Academic Medicine*, 97(10), 1479–1483. <https://doi.org/10.1097/acm.0000000000004656>

Rostron, A. (2018). The Dickey Amendment on federal funding for research on gun violence: A legal dissection. *American Journal of Public Health*, 108(7), 865–867. <https://doi.org/10.2105/AJPH.2018.304450>

Roszko, P. J. D., Ameli, J., Carter, P. M., Cunningham, R. M., & Ranney, M. L. (2016). Clinician attitudes, screening practices, and interventions to reduce firearm-related injury. *Epidemiologic Reviews*, 38(1), 87–110. <https://doi.org/10.1093/epirev/mxv005>

Rowhani-Rahbar, A., Simonetti, J. A., & Rivara, F. P. (2016). Effectiveness of interventions to promote safe firearm storage. *Epidemiologic Reviews*, 38(1), 111–124. <https://doi.org/10.1093/epirev/mxv006>

Schumacher, S., Kirzinger, A., Presiado, M., Valdes, I., & Brodie, M. (2023, April 11). *Americans' experiences with gun-related violence, injuries, and deaths*. KFF. <https://www.kff.org/other/poll-finding/americans-experiences-with-gun-related-violence-injuries-and-deaths/>

Small Arms Survey. (n.d.). *Global firearms holdings*. <https://www.smallarmssurvey.org/database/global-firearms-holdings>

Smart, R., Schell, T. L., Morral, A. R., & Nicosia, N. (2022). Geographic disparities in rising rates of firearm-related homicide. *New England Journal of Medicine*, 387(2), 189–191. <https://doi.org/10.1056/NEJMc2203322>

South, E. C., MacDonald, J., & Reina, V. (2021). Association between structural housing repairs for low-income homeowners and neighborhood crime. *JAMA Network Open*, 4(7), Article e2117067. <https://doi.org/10.1001/jamanetworkopen.2021.17067>

Stanley, I. H., Bryan, C. J., Bryan, A. O., Capron, D. W., & Anestis, M. D. (2023). Lethal means safety counseling among firearm-owning U.S. National Guard personnel: Hyperarousal symptoms as a moderator of treatment outcomes. *Psychological Services*. Advance online publication. <https://doi.org/10.1037/ser0000763>

Suicide Prevention and Response Independent Review Committee. (2022). *Preventing suicide in the U.S. military: Recommendations from the Suicide Prevention and Response Independent Review Committee*. US Department of Defense. <https://media.defense.gov/2023/Feb/24/2003167430/-1/-1/0/SPRIRC-FINAL-REPORT.PDF>

Swanson, J. W., McGinty, E. E., Fazel, S., & Mays, V. M. (2015). Mental illness and reduction of gun violence and suicide: Bringing epidemiologic research to policy. *Annals of Epidemiology*, 25(5), 366–376. <https://doi.org/10.1016/j.annepidem.2014.03.004>

Theis, J., Hoops, K., Booty, M., Nestadt, P., & Crifasi, C. (2021). Firearm suicide among veterans of the U.S. military: A systematic review. *Military Medicine*, 186(5–6), e525–e536. <https://doi.org/10.1093/milmed/usaa495>

Urban Labs Crime Lab. (2021, March). *Service provision risk assessment: Guiding violence reduction through predictive analytics* [Research brief]. University of Chicago. <https://urbanlabs.uchicago.edu/attachments/c1402f0fdea4f236d485099013bee4697738583c/store/bb6e67b05972b12b74610f0d3bbada4b48bb725af07a41840a0acb117459/SPRA.pdf>

US Government Accountability Office. (2021, June 16). *firearm injuries: health care service needs and costs*. <https://www.gao.gov/products/gao-21-515>

Vasan, A., Mitchell, H. K., Fein, J. A., Buckler, D. G., Wiebe, D. J., & South, E. C. (2021). Association of neighborhood gun violence with mental health–related pediatric emergency department utilization. *JAMA Pediatrics*, 175(12), 1244–1251. <https://doi.org/10.1001/jamapediatrics.2021.3512>

Webster, D. W., & Wintemute, G. J. (2015). Effects of policies designed to keep firearms from high-risk individuals. *Annual Review of Public Health*, 36, 21–37. <https://doi.org/10.1146/annurev-publhealth-031914-122516>

Weitzel, K. J., Chew, R. F., Miller, A. B., Oppenheimer, C. W., Lowe, A., & Yaros, A. (2023). The use of crisis services following the mass school shooting in Uvalde, Texas: Quasi-experimental event study. *JMIR Public Health and Surveillance*, 9, Article e42811. <https://doi.org/10.2196/42811>

Ye, G. F., Thatipamala, P., & Siegel, M. (2022). Assessment of reasons for ownership and attitudes about policies among firearm owners with and without children. *JAMA Network Open*, 5(1): Article e2142995. <https://doi.org/10.1001/jamanetworkopen.2021.42995>

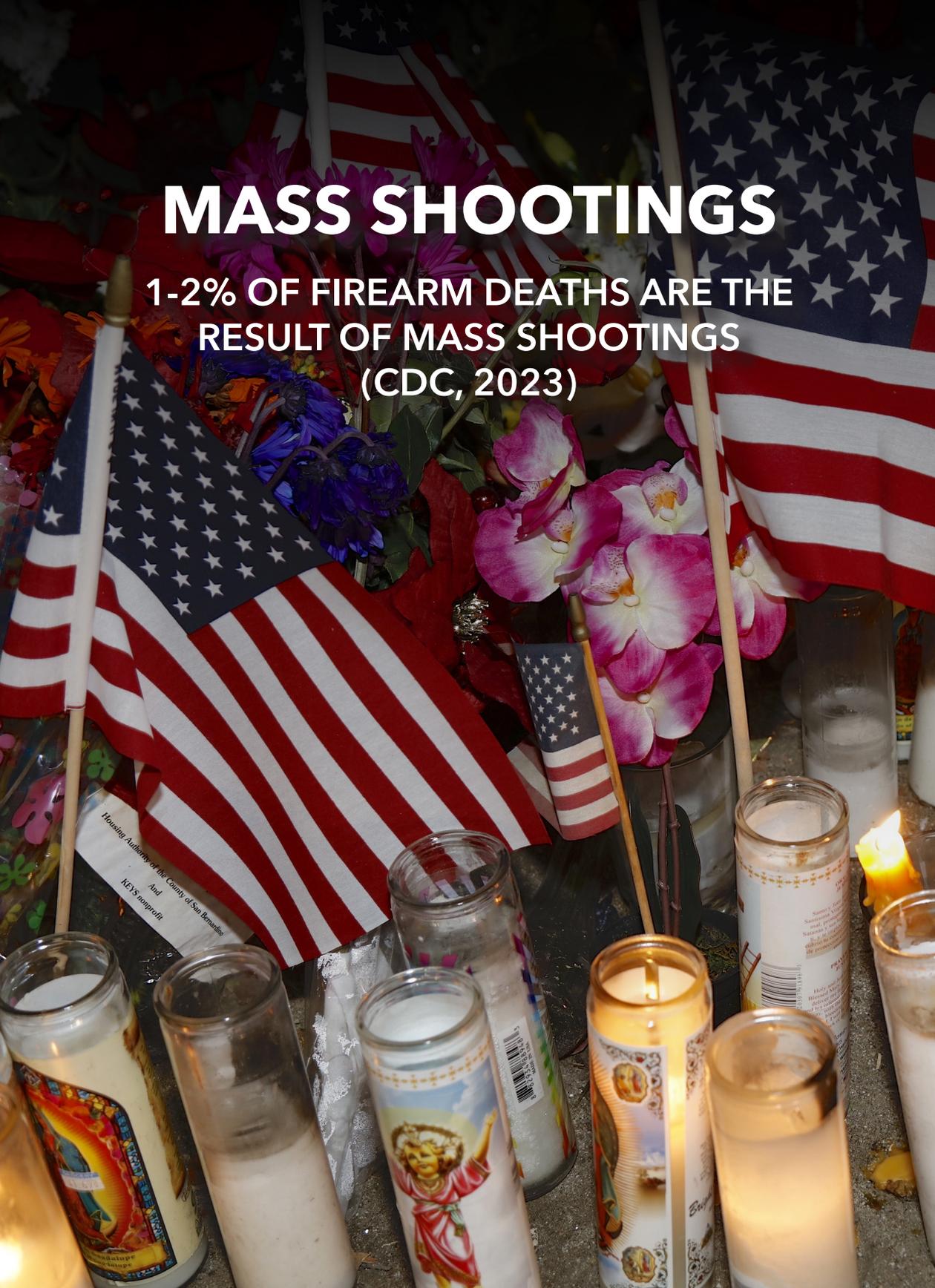
Yellman, M. A., & Sauber-Schatz, E. K. (2022). Motor vehicle crash deaths—United States and 28 other high-income countries, 2015 and 2019. *Morbidity and Mortality Weekly Report (MMWR)*, 71(26), 837–843. <https://doi.org/10.15585/mmwr.mm7126a1>

Zheng, N., Abram, K. M., Welty, L. J., Aaby, D. A., Meyerson, N. S., & Teplin, L. A. (2023). Nonfatal firearm injury and firearm mortality in high-risk youths and young adults 25 years after detention. *JAMA Network Open*, 6(4), Article e238902. <https://doi.org/10.1001/jamanetworkopen.2023.8902>



# MASS SHOOTINGS

1-2% OF FIREARM DEATHS ARE THE  
RESULT OF MASS SHOOTINGS  
(CDC, 2023)



*“...while the scale and complexity of the problem can seem overwhelming, acting to prevent firearm violence is not an exercise in futility. Effective measures exist, and others are very promising based on the evidence available to date. Many of these measures enjoy broad public support, including among firearm owners.”*

**- GAREN WINTEMUTE, M.D., M.P.H.**

# Firearm Violence: What We Can Do

Garen Wintemute, M.D., M.P.H.

## Introduction

This paper builds on the framework presented by Ranney and Betz in this collection that describes the value and implications of approaching firearm violence as a public health problem. It reviews selected options for action to prevent firearm violence, prioritizing a few for special consideration.

The paper presents options for action in five domains: purchase and possession restrictions, recovery from prohibited persons, avoiding high-risk situations, actions by health professionals and health systems, and restrictions on specific weapons. It then reviews some promising ideas for which evidence is not yet sufficient to be confident about effects. It also describes some policies that increase firearm violence, with the recommendation that they be repealed where they have been adopted.



## Context for Considering Options

While reviewing specific policy options, it is important to keep some context in mind. First, although the scale and complexity of the problem can seem overwhelming, acting to prevent firearm violence is not an exercise in futility. Effective measures exist, and others are promising based on the evidence available to date. Many of these measures enjoy broad public support, including among firearm owners (Stone et al., 2022).

Second, existing and forthcoming research suggests that some of the most effective measures act synergistically. By definition, evaluations of individual measures do not account for this synergy; this means they likely underestimate the potential benefits from adopting multiple, mutually reinforcing approaches.

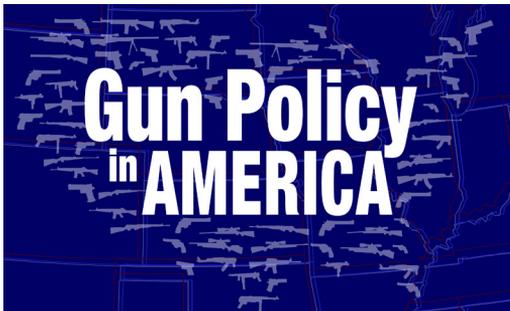
Third, the paucity of evidence regarding gun violence is partly due to a deliberate, sustained, and largely successful effort to prevent the necessary research from being conducted. Keeping the evidence base limited is part of a strategy to avoid policy change by enabling opponents to either criticize the research or redirect attention from effective solutions to ones with superficial appeal but without any support in the evidence. The repeated suggestion that interpersonal firearm violence should be addressed by improvements in mental health care is a leading example of this.

Fourth, the United States is not a uniquely violent society. Our rates of robbery and serious but nonfatal assault are below the mean for Organization for Economic Co-operation and Development countries (Civitas, 2012). Our high homicide rate stems in part from our high level of access to a product that changes the outcome of serious violence from injury to death.

Fifth, while a full examination of the US Supreme Court's evolving jurisprudence regarding the Second Amendment is beyond the scope of this paper, the constitutional limits on the scope of policies regulating access to and use of firearms are largely untested. This paper examines policies without attempting to ascertain if they would pass current constitutional muster. It is important to consider options expansively given the unsettled legal environment.

### **Source of Options**

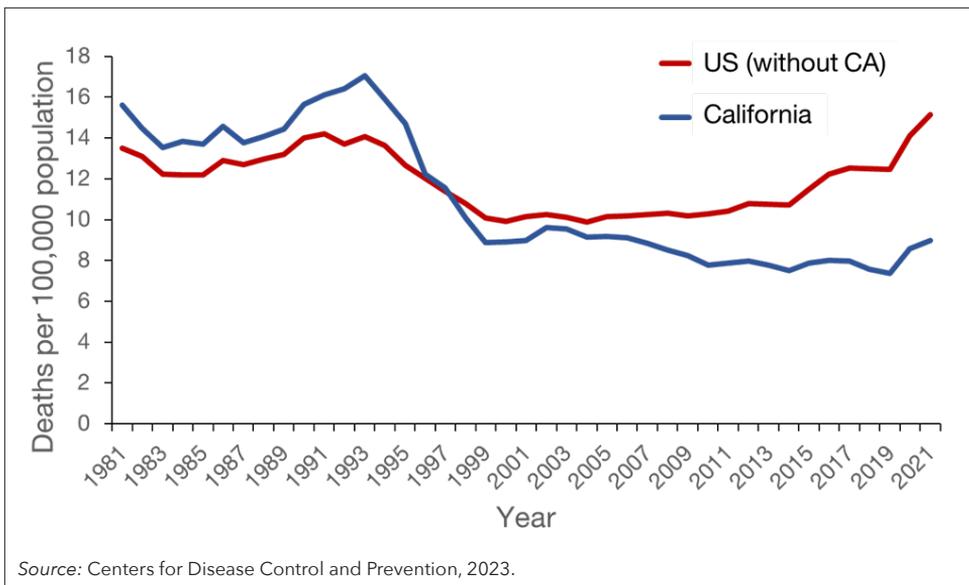
The primary source of options in this paper is the continuing assessment undertaken by the RAND Corporation (2023) in its Gun Policy in America project, last updated in January 2023. RAND has applied prespecified and defensible, methodologically conservative criteria to assess the established and likely effects of firearm violence prevention measures.



This approach has three inherent limitations. First, it sets a high bar to determining that measures are effective. For example, RAND considers there to be “supportive evidence” only when “at least three studies not compromised by serious methodological weaknesses found suggestive or significant effects in the same direction using at least two independent data sets.” A long history of limited research funding means relatively few studies are available to draw on, making it hard to demonstrate evidence of effects.

Second, RAND’s review, like most rigorous evaluation research, assesses policies individually. Yet RAND’s own forthcoming work (Schell et al., 2022) and research in progress by others suggest that evaluations of aggregate effects may be particularly useful. California may provide an example. As shown in figure 1, during 1981–1994, California’s firearm violence mortality rate was significantly higher than, and trended in parallel with, the rate for the other 49 states combined. Beginning in 1989, California adopted far-reaching policies seeking to prevent firearm violence using multiple mechanisms. California’s mortality rate declined sharply beginning in 1994 and by 1998 was significantly lower than the rate for the rest of the country. Thereafter through 2019, California’s rate continued to decline, while the rate elsewhere rose. In 2021, the firearm violence mortality rate for the rest of the country exceeded California’s by 68.5 percent.

**Figure 1: Trends in Mortality from Firearm Violence, California and 49 Other States, 1981–2021**



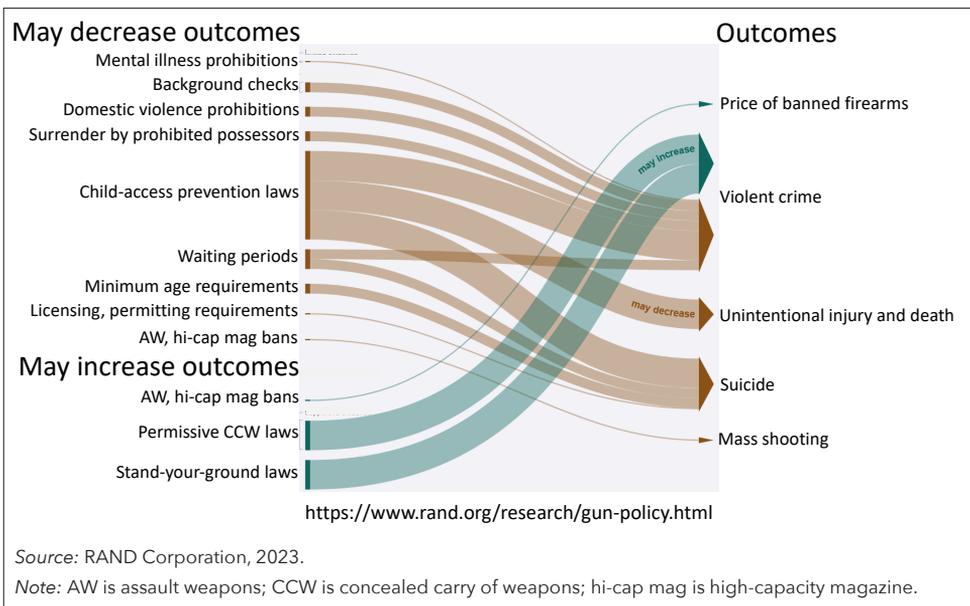
Finally, evidence reviews like RAND’s are always behind the curve. It can take years after research is completed for it to enter the peer-reviewed literature, be assessed by post hoc reviewers, and incorporated into systematic assessments. The body of evidence on firearm violence prevention has grown rapidly in recent years, making the effects of this time lag particularly large.

These limitations notwithstanding, RAND’s work is probably the strongest of its kind. Figure 2 presents a brief summary of its findings. Most of the policies listed there are included in this paper. The paper also includes options for which existing evidence is promising but does not rise to the threshold set by RAND. The paper places a particular focus on options related to health professionals and health care.

When considering the evidence, it is important to note the difference between population-level effects and individual effects. Some studies gauge whether a policy changes the rate of gun violence within a population. This is the desired effect for broad policy changes. Other policies target specific high-risk individuals. Given their tight focus, they are unlikely to affect overall rates of gun violence in a community. They may, however, reduce violent behavior among the small number of people targeted. Both types of outcomes provide evidence of positive effects.

A variety of health-focused organizations have also assessed existing research and policy effectiveness. The American College of Physicians has repeatedly issued evidence-based policy recommendations, most recently in 2018 (Butkus et al., 2018). The National Academies of Sciences, Engineering, and Medicine (2019) examined health systems interventions to prevent firearm injuries and death in 2019, and a decade ago, the Institute of Medicine and National Research Council (2013) developed priorities for research.

**Figure 2. Estimated Effects of Firearm Policies on Selected Outcomes**



## Policies To Address Gun Violence

This section describes evidence-based policies to reduce gun violence in five domains.

### *Purchase and Possession Restrictions*

One group of policies limits who can purchase or possess a firearm.

Comprehensive (Universal) Background Checks. Federal law prohibits persons convicted of felonies or domestic violence misdemeanors, respondents to certain domestic violence restraining orders (DVROs), persons making illegal use of controlled substances, and others from purchasing or possessing firearms. Background checks on firearm purchasers, typically conducted at the time of purchase, seek to prevent purchases by prohibited persons (Wintemute, 2019). Background checks are required under federal law for purchases from licensed retailers but not for those from private parties, with the result that 20 percent of firearm purchases nationwide do not involve background checks (Miller et al., 2017).



In 2023, 16 states and the District of Columbia required checks for essentially all firearm sales. Other states require checks in certain circumstances—for example, only for handgun purchases or with exceptions for purchasers with special permits, such as ones to carry concealed firearms.

Checks are typically conducted by the Federal Bureau of Investigation's National Instant Criminal Background Check System (NICS). Retailers contact NICS directly at the time of sale. More than 90 percent of checks are completed in a few minutes, and purchasers may take possession of firearms immediately (Federal Bureau of Investigation, 2022). Even if the background check is not completed, the purchaser may take possession after three business days.

Laws in some states make a state judicial agency, typically the department of justice or state police, the point of contact for retailers; these states are known as point-of-contact states. Their agencies query the databases used by NICS and additional state archives. Their more thorough background checks take longer, and mandated waiting periods before taking possession are typically longer as well.

Each year, about 1.5 percent of purchases are denied after the purchasers fail checks (Brooks, 2021). States that run their own checks tend to have higher denial rates,

which may reflect their more comprehensive background check process, their longer waiting periods, and their broader criteria for prohibiting firearm ownership (discussed below).

The ability of background checks to correctly identify prohibited people among purchasers depends on the accuracy of the data queried when checks are performed. These data are known to have significant limitations. The US Supreme Court

**PRINTZ, SHERIFF/CORONER, RAVALLI COUNTY,  
MONTANA v. UNITED STATES**

**CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR  
THE NINTH CIRCUIT**

No. 95-1478. Argued December 8, 1996—Decided June 27, 1997\*

Brady Handgun Violence Prevention Act provisions require the Attorney General to establish a national system for instantly checking prospective handgun purchasers' backgrounds, note following 18 U. S. C. § 922, and command the "chief law enforcement officer" (CLEO) of each local jurisdiction to conduct such checks and perform related tasks on an interim basis until the national system becomes operative, § 922(s). Petitioners, the CLEOs for counties in Montana and Arizona, filed separate actions

determined in *Printz v. United States* (1997) that the federal government cannot require state and local law enforcement agencies to report data. Even where reporting is required, such as by federal and military courts and law enforcement agencies, reporting is incomplete. Acquisitions by prohibited

persons who passed background checks have repeatedly led to tragedy, including mass shootings in churches in Charlottesville, South Carolina, and Sutherland Springs, Texas (Wintemute, 2019).

Evidence on the effectiveness of comprehensive background check policies in reducing population-level rates of interpersonal violence or self-harm is inconclusive, with several controlled studies finding no effects from the enactment or repeal of these policies (Castillo-Carniglia et al., 2019; Kagawa et al., 2018, 2023; McCourt et al., 2020). This does not mean that comprehensive background checks are inherently ineffective. The null findings may result from widespread noncompliance, which is known to occur (Miller et al., 2017) or from background checks performed on incomplete data that did not detect prohibited persons. The findings may also arise from the fact that states enacting comprehensive background checks frequently adopt other policies intended to produce reductions in firearm violence, and it can be difficult or impossible to isolate the effects of background checks alone.

Purchaser Licensing. Eight states and the District of Columbia combine comprehensive background checks with a mandatory purchaser licensing process that is usually referred to as *permit to purchase*. Strong evidence of effect exists for this approach. In the most recent of a series of evaluations, Connecticut's adoption of a permitting system was associated with substantial decreases in firearm homicide (28 percent) and suicide (23–41 percent) (McCourt et al., 2020). The same study found that Missouri's repeal of its permitting requirements was associated with large increases in both measures (firearm homicide, 28 percent; firearm suicide, 24 percent). A different

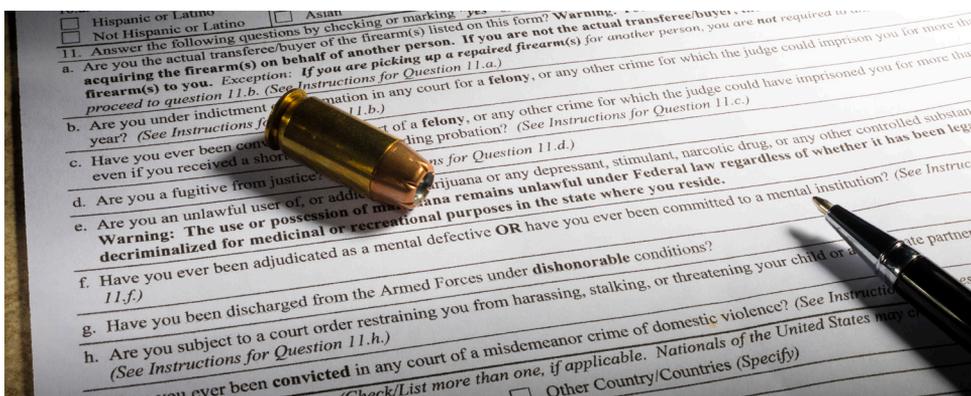
study found that Missouri's repeal was associated with a 22 percent increase in the firearm suicide rate among adolescents and young adults (Bhatt et al., 2020). North Carolina repealed its permit to purchase statute in March 2023, providing another opportunity to evaluate the system's effectiveness in the near future.



Several mechanisms may account for the effectiveness of purchaser licensing beyond that of comprehensive background checks. The requirements for an in-person interaction with a regulatory (frequently, law enforcement) agency and fingerprinting likely deter surrogate buyers, commonly known as *straw purchasers*. Because permit to purchase states are frequently also point-of-contact states, their background checks may be particularly thorough. Their waiting periods tend to be longer, which allows those more thorough checks to be completed and likely has benefits of its own (discussed below).

Expanding Prohibition Criteria. Most states have prohibition criteria broader than those existing under federal law. The most common additional criteria include persons convicted of violent misdemeanors (such as assault and battery), persons suffering from acute mental illness with heightened risk of danger to self or others, and persons younger than 21 years of age.

These expanded prohibitions have been found to have beneficial effects in large-scale observational studies using individual-level data. For example, a prospective, controlled study of California's misdemeanor violence prohibition found it to be associated with a 25 percent reduction in incidence of arrest for firearm-related and



violent crimes (Wintemute et al., 2001). Studies of mental health prohibitions have also shown a beneficial effect (Swanson et al., 2020). Based on the extensive evidence associating excessive alcohol use with violence, including among legal firearm owners (Kagawa et al., 2020), the Consortium for Risk-Based Firearm Policy, an organization of firearm violence researchers and policy experts, recommends that persons with multiple convictions for driving under the influence or other alcohol-related offenses be prohibited from owning firearms (Villarreal et al., 2023).

Under federal law, licensed retailers may not sell a handgun to anyone younger than 21 years of age or a long gun to anyone younger than 18 years of age; private parties may not sell a handgun to anyone younger than 18 years of age but have no age restrictions on sales of long guns. Establishing a minimum age of 21 for firearm purchases has been associated with a decline in suicide among persons ages 18 to 20 (Vittes et al., 2013).

Extended Waiting Periods. Under federal law, purchasers may acquire their firearms after three business days, even if the background check has not been completed. Prohibited persons acquire firearms through such default proceeds, as they are known, approximately 6,000 times each year. Law enforcement must seek to recover those firearms, which is often unsuccessful. Five states have adopted longer waiting periods to allow checks to be completed. Longer waiting periods also permit a cooling-off period so that firearms cannot be purchased in moments of anger or distress. Longer, fixed-duration waiting periods have been found to have substantial benefits (Luca et al., 2017). An alternative approach is to require that firearms not be released to purchasers until background checks are completed. Walmart, the nation's largest firearm retailer, has done this on its own initiative since 2002.



### **Recovery from Prohibited Persons**

By one estimate, 100,000 people in the United States have illegally retained firearms after felony convictions (Pear, McCort, et al., 2021). No estimates exist of the number of formerly legal possessors who are prohibited for other reasons. The potential threat to the population associated with continuing possession by prohibited persons is substantial, as the most common prohibiting events—conviction for a felony or

violent misdemeanor, service with a violence-connected restraining order, and acute mental illness with danger to self or others—are clear markers of increased risk for both interpersonal violence and self-harm in the near term. Compared to efforts to prevent acquisition of firearms by prohibited persons, surprisingly little has been done to recover firearms from people who, having purchased firearms legally, subsequently become prohibited from possessing them.



Comprehensive Recovery Efforts. California is the only state that has undertaken recovery of firearms from all newly prohibited firearm owners. Since it was fully implemented in 2014, the Armed and Prohibited Persons System (APPS) has recovered firearms from thousands of newly prohibited persons each year. Newly prohibited owners are identified daily and visited by teams of specially trained California Department of Justice agents, who recover any firearms and ammunition to which prohibited owners have access (Pear, McCort, et al., 2021). The Armed and Prohibited Persons System is being evaluated in a randomized controlled trial, and results at the individual and population levels are forthcoming. The system is not expected to reduce population level rates of violence, as relatively few people are affected, but it may reduce risk for affected individuals.

Domestic Violence. Domestic violence restraining orders prevent contact between the protected party and the respondent. Since the mid-1990s, respondents to final orders (i.e., orders issued after a hearing) have been prohibited under federal law from having access to firearms or ammunition. Many states have added firearm prohibitions for persons subject to emergency or other temporary orders.

DVRO firearm prohibition has been associated with a decreased risk of intimate partner homicide. However, evaluating the effects of the orders is difficult because

the details of these provisions vary across states, as some extend to temporary orders, some include dating partners, and some require that firearms be relinquished (Zeoli et al., 2018). In March 2023, the Fifth US Circuit Court of Appeals in *United States v. Rahimi* (2023) invoked the US Supreme Court's decision in *New York State Rifle & Pistol Association Inc. v. Bruen* (2022) and found that the DVRO prohibition on possession is unconstitutional.

### **Avoiding High-Risk Situations**

Some policies are designed to remove firearms from the context at specific times or places in which the risk of harm is particularly high.

Extreme Risk Protection Orders. Emergencies involving firearms frequently develop, for which traditional measures such as arrest or psychiatric hospitalization are inappropriate. Threats of violence other than to specific targets and threats of self-harm not involving severe mental illness are good examples. Developed for these circumstances, extreme risk protection orders (ERPOs) were first adopted in California



and made available beginning in 2016. Their similar predecessors, risk warrants, were adopted in Connecticut and Indiana. In all three states, these provisions were adopted in response to mass shootings.

ERPOs are intended to take account of the fact that most mass shooters, and many people who commit suicide and interpersonal violence, declare their intentions in advance. Information about

such declarations reported by members of the public provides the opportunity to intervene before threats are acted on.

ERPOs are modeled on domestic violence restraining orders. They are civil court actions by which a judge, following specified rules of evidence, can order the recovery of firearms and ammunition from a restrained party and prohibit further acquisition. They are intended for use in acute crises, to be issued and served immediately or within a day or two at most. The process begins with a petition to the court, which can be filed emergently (and verbally, from the scene of the crisis) by a law enforcement officer day or night or by other eligible parties during normal court hours. Eligibility varies from state to state and may include family or household members, school officials, work supervisors, and physicians (only in Maryland and Hawaii).

Due process appropriate to the circumstances is observed, but a hearing is generally not involved. Orders remain in effect for a short period—no more than three weeks. Longer-term orders, which typically last for a year or more, require a hearing at which the respondent has the opportunity to challenge the order.

ERPO statutes have been adopted in 21 states and the District of Columbia and receive broad public support, including among firearm owners (Stone et al., 2022). Implementation of these statutes is complex and expensive (Pear, Schleimer, et al., 2021). In 2022, the Bipartisan Safer Communities Act (Bipartisan Safer Communities Act, 2022) included a \$750 million appropriation to support states' implementation of ERPO policies. Studies to date suggest that, in the case of suicide, one life may be saved for every 10 to 20 orders issued (Swanson et al., 2017). In California, data published to date include 58 cases in which ERPOs were used in efforts to prevent mass shootings; none of the threatened shootings occurred (Wintemute et al., 2019; Zeoli et al., 2022). More systemic evaluations are in progress.

Child Access Prevention Laws. In 2021, 40 percent of households with children younger than 18 years of age had firearms at home. Of these, 15 percent had at least one firearm stored loaded and unlocked (Miller et al., 2022). Child access prevention laws, adopted by 23 states and the District of Columbia, seek to prevent interpersonal violence, suicide, and unintentional shootings by deterring such unsafe storage. They create criminal penalties for storing a firearm in a manner that would allow a child to access the weapon. Some states have penalties only if unsafe storage leads to an injury or death. The RAND review found substantial evidence that child access prevention laws are effective. Demonstrated effectiveness is tied to laws that do not require an adverse outcome and all violations to be charged as felonies.

### **Actions by Health Professionals and Health Systems**

As Dr. David Satcher, then-director of the Centers for Disease Control and Prevention, put it succinctly 30 years ago: “If violence isn’t a public health problem, then why are so many people dying from it?”

(Applebome, 1993). This direct and simple assessment provides clear justification for intervention by health professionals and health systems, which have increasingly made public commitments to work to prevent firearm violence.



Firearm Violence Prevention as an Element of Clinical Care. The American College of Physicians has been a leader in efforts by the health sector to address gun violence, hosting a website at which more than 3,600 individual commitments have been made, publishing peer-reviewed how-to articles to support physician efforts (Pallin, Spitzer, et al., 2019), and taking policy positions as an organization (Butkus et al., 2018). The State of California has funded The BulletPoints Project (California Firearm Violence Research Center at UC Davis, 2023), which has developed curricula for health professional students and materials for practicing physicians and other health professionals. These materials have been adapted by many professional schools and health care institutions. Health systems such as Kaiser Permanente and Northwell Health have undertaken research and education programs and worked to incorporate screening for firearm ownership and violence risk into routine clinical care, and the National Academy of Medicine has hosted a symposium to further such efforts (National Academies of Sciences, Engineering, and Medicine, 2019).

Such efforts have been bridge builders. The American Foundation for Suicide Prevention has launched an initiative to reduce suicide in the United States by 20 percent in the next few years. Since most suicides involve firearms, the Foundation’s collaborators include the National Shooting Sports Foundation. Colorado emergency physician and researcher Dr. Marian “Emmy” Betz (another author in this collection) has led the development of a coalition of that state’s medical and public health professionals with shooting ranges, firearm retailers, and firearm owner groups to support suicide prevention efforts (Betz et al., 2022).

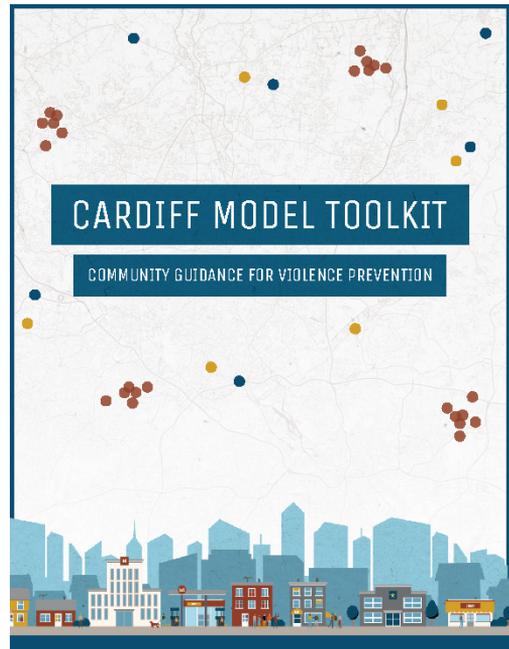
Survey research indicates that physicians are credible messengers for information on firearm violence prevention (Pallin, Charbonneau, et al., 2019). Good evidence exists showing that provider counseling to improve firearm storage behavior can be effective if locking devices are provided as part of the intervention (Rowhani-Rahbar et al., 2016). Hospitals and health systems could assist by covering the cost of those devices.

Hospital-Based Violence Intervention Programs. Hospital-based violence intervention programs have been implemented by many level I trauma centers. The National Health Alliance for Violence Intervention (Health Alliance for Violence Intervention, n.d.) has 51 member programs in 19 states and the District of Columbia. These programs were developed in response to the substantial body of evidence that shows persons admitted for injuries related to violence are at extremely high risk for recurrent injury and



death (Rowhani-Rahbar et al., 2015). They seek to reduce that risk through a broad array of interventions tailored to each individual, which might include continuing education, skills training, substance use intervention, and many forms of trauma-informed care. Existing observational data suggest that those who complete the program are at reduced risk compared to those who do not enter or do not complete it. Findings from most of the generally small-scale randomized trials conducted to date have been favorable, with null results in one trial attributed to the low intensity of the intervention that had been implemented (Lyons et al., 2021). Additional trials are in progress.

Enhanced Surveillance to Support Intervention. The Cardiff Model for violent injury surveillance (named for the city in the United Kingdom where it was developed) combines information from hospital emergency departments and law enforcement sources to generate high-quality local data on patterns of violent events. These data allow prevention experts to identify hot spots where new violence is most likely to occur. The Cardiff approach has been shown to reduce hospitalizations due to violence (Florence et al., 2011) and has recently been replicated in the United States (Mercer Kollar et al., 2020). As of January 2023, 16 US cities have begun coordinated efforts to implement the Cardiff Model (Cardiff University, 2023). Hospitals and health systems in the United States could lead establishment of additional Cardiff Model programs, which would likely improve the effectiveness of local violence prevention efforts.



Actions by the Centers for Medicare & Medicaid Services. The Centers for Medicare & Medicaid Services (CMS) could play an important role in facilitating health care-based interventions to prevent firearm violence and lessen its consequences. Dr. Amy Barnhorst, a colleague in the Violence Prevention Research Program at UC Davis, and I will be presenting grand rounds on this topic to CMS. We are recommending that

it considers whether CMS could provide coverage for prevention services delivered by health professionals, including anticipatory guidance with regard to the risks and benefits of having firearms in the home, recommendations on safer storage practices, identification of patients at increased risk of suffering firearm-related harm, counseling on reduction of access to firearms when necessary, prescriptions for safe storage devices, practitioner training, services provided by hospital-based violence intervention programs and community violence prevention programs (reviewed elsewhere in this collection), and services associated with extreme risk protection orders. CMS could also cover services directed at mitigating the physical and mental health sequelae of injury from or exposure to firearm violence in all affected populations: injured persons, bereaved persons, and persons with other social-network or neighborhood-level experiences of violence (the last group comprising two-thirds of the adult population) (Wintemute et al., 2022). CMS could also create penalties for disparities in care related to firearm violence, such as those due to race and ethnicity.

### **Restrictions on Specific Weapons**

Assault-Type Weapons and High-Capacity Magazines. There is a historical tradition extending back nearly 100 years of regulating the purchase and possession of firearms, such as submachine guns, thought to pose particular hazards to the civilian. In recent decades, attention has focused primarily on regulating assault-type firearms (largely



semiautomatic rifles and handguns having specified design features, including the ability to accept detachable ammunition magazines) and the high-capacity ammunition magazines they use.

Evidence on the effectiveness of bans on these assault-type weapons and high-capacity magazines has been mixed. Bans were put in place

when violence involving such weapons was uncommon, making it difficult to find a statistically significant decrease attributable to the policy (Koper, 2013). Criminal use of such weapons, and other semiautomatic firearms that accept high-capacity magazines, has grown substantially since the federal ban expired in 2004 (Koper et al., 2018). Mass shootings with weapons using high-capacity magazines produce higher casualty counts than do others (Koper, 2020). Several studies (reviewed in Koper, 2020)

indicate that state-level bans on high-capacity magazines, adopted by nine states and the District of Columbia, have beneficial effects. RAND lists this measure among those that may reduce firearm violence—specifically, mass shootings.

Privately Manufactured Firearms. Firearms are generally built around a key component known as a *frame* or *receiver*. Finished frames and receivers have long been classified as firearms and, if they are entered into commerce, must have a manufacturing record and a serial number. Privately manufactured firearms (PMFs) are produced by making minor modifications to nearly finished frames or receivers (or 3-D printing them) and adding the other components needed to create a fully functional but unserialized, untraceable firearm—hence their common name *ghost guns* (Wintemute, 2021). PMFs have become most prominent in California, where some police departments have reported that 30–50 percent of all firearms they recover are PMFs. More than 45,000 PMFs were recovered by law enforcement and reported to the Bureau of Alcohol, Tobacco, Firearms, and Explosives nationwide in 2016–2020; nearly 700 of these were involved in homicides or attempted homicides. California has outlawed the production of unserialized firearms and requires that those already in existence receive serial numbers; other states may wish to do the same. In August 2022, federal regulations took effect that will likely decrease the private production of unserialized firearms. No evaluations of policies affecting PMFs have been conducted.



## **Policies that Increase Violence**

Permissive policies on the carrying of concealed firearms, which either eliminate the requirement for carry permits altogether (in effect in 25 states) or mandate that permits be issued on demand to nonprohibited persons have repeatedly been associated with increases in violence and are identified as such in the RAND analysis. The same is true of stand your ground laws, which have been adopted in 30 states. These laws allow a person to make first use of lethal force if they feel threatened, whether at home or elsewhere, with no requirement that lethal force be a measure of last resort.

## **Promising Ideas**

States and some cities have adopted or are considering measures that are theoretically promising but have not been evaluated. Among them are a liability insurance requirement for firearm owners, background checks for ammunition purchases (adopted in California), voluntary do-not-sell lists, improvements in advance identification of persons at risk, and requirements that new firearms be personalized or smart (incapable of operation by anyone other than authorized persons).

## **Leading Recommendations**

Of the measures reviewed here, several stand out for the evidence of their effectiveness, the size of their effects, and the likelihood of their adoption, at least by states. These include comprehensive background checks combined with a permit to purchase requirement; age restrictions for sales by private parties equal to those for sales by licensed retailers; a prohibition for persons convicted of violent misdemeanors; recovery from persons subject to DVROs; extreme risk protection orders; and the full array of actions to be taken by health professionals.

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## References

- Applebome, P. (1993, September 26). Conversations/David Satcher; C.D.C.'s new chief worries as much about bullets as about bacteria. *New York Times*. <http://www.nytimes.com/1993/09/26/weekinreview/conversations-david-satcher-cdc-s-new-chief-worries-much-about-bullets-about.html>.
- Betz M. E., Rooney L. A., Barnard L. M., Siry-Bove B. J., Brandspigel S., McCarthy M., Simeon K., Meador L., Rivara F. P., Rowhani-Rahbar A., & Knoepke C. E. (2022). Voluntary, temporary, out-of-home firearm storage: A qualitative study of stakeholder views. *Suicide and Life-Threatening Behavior*, 52(4), 655–667. <https://doi.org/10.1111/sltb.12850>
- Bhatt, A., Wang, X., Cheng, A.-L., Morris, K. L., Beyer, L., Chestnut, A., Steigerwalt, K., & Metzner, J. (2020). Association of changes in Missouri firearm laws with adolescent and young adult suicides by firearms. *JAMA Network Open*, 3(11), Article e2024303. <https://doi.org/10.1001/jamanetworkopen.2020.24303>
- Bipartisan Safer Communities Act. 18 U.S.C. § 1. (2022). <https://www.congress.gov/117/plaws/publ159/PLAW-117publ159.pdf>
- Brooks, C. (2021, October). *Background checks for firearm transfers, 2018* (Bulletin No. 301318). Bureau of Justice Statistics. <https://bjs.ojp.gov/library/publications/background-checks-firearm-transfers-2018>
- Butkus, R., Doherty, R., Bornstein, S. S., & the Health and Public Policy Committee of the American College of Physicians. (2018). Reducing firearm injuries and deaths in the United States: A position paper from the American College of Physicians. *Annals of Internal Medicine*, 169(10), 704–707. <https://doi.org/10.7326/M18-1530>
- California Firearm Violence Research Center at UC Davis. (2023). The Bulletpoints Project. <https://www.bulletpointproject.org/>
- Cardiff University. (2023, January 11). *Sixteen US cities in national Cardiff violence prevention network*. <https://www.cardiff.ac.uk/news/view/2693173-sixteen-us-cities-in-national-cardiff-violence-prevention-network>
- Castillo-Carniglia, A., Kagawa, R. M. C., Cerdá, M., Crifasi, C. K., Vernick, J. S., Webster, D. W., & Wintemute, G. J. (2019). California's comprehensive background check and misdemeanor violence prohibition policies and firearm mortality. *Annals of Epidemiology*, 30, 50–56. <https://doi.org/10.1016/j.annepidem.2018.10.001>
- Centers for Disease Control and Prevention. (2023). WISQARS—*Web-based Injury Statistics Query and Reporting System*. <https://www.cdc.gov/injury/wisqars/index.html>
- Civitas. (2012). *Comparisons of crime in OECD countries*. [https://www.civitas.org.uk/content/files/crime\\_stats\\_oecdjan2012.pdf](https://www.civitas.org.uk/content/files/crime_stats_oecdjan2012.pdf)
- Federal Bureau of Investigation. (2022, April). *National Instant Criminal Background Check System operational report 2020–2021*. U.S. Department of Justice. <https://www.fbi.gov/file-repository/nics-2020-2021-operations-report.pdf>

Florence, C., Shepherd, J., Brennan, I., & Simon, T. (2011). Effectiveness of anonymised information sharing and use in health service, police, and local government partnership for preventing violence related injury: Experimental study and time series analysis. *BMJ*, 342(7812), Article d3313. <https://doi.org/10.1136/bmj.d3313>

Health Alliance for Violence Intervention. The HAVI. (n.d.). <https://www.thehavi.org>

Institute of Medicine & National Research Council. (2013). *Priorities for research to reduce the threat of firearm-related violence*. The National Academies Press. <https://doi.org/10.17226/18319>

Kagawa, R., Charbonneau, A., McCort, C., McCourt, A., Vernick, J., Webster, D., & Wintemute, G. (2023). Effects of comprehensive background-check policies on firearm fatalities in 4 states. *American Journal of Epidemiology*, 192(4), 539–548. <https://doi.org/10.1093/aje/kwac222>

Kagawa, R. M. C., Castillo-Carniglia, A., Vernick, J. S., Webster, D., Crifasi, C., Rudolph, K. E., Cerdá, M., Shev, A., & Wintemute, G. J. (2018). Repeal of comprehensive background check policies and firearm homicide and suicide. *Epidemiology*, 29(4), 494–502. <https://doi.org/10.1097/EDE.0000000000000838>

Kagawa, R. M. C., Stewart, S., Wright, M. A., Shev, A. B., Pear, V. A., McCort, C. D., Pallin, R., Asif-Sattar, R., Sohl, S., Kass, P. H., Cerdá, M., Gruenewald, P., Studdert, D. M., & Wintemute, G. J. (2020). Association of prior convictions for driving under the influence with risk of subsequent arrest for violent crimes among handgun purchasers. *JAMA Internal Medicine*, 180(1), 35–43. <https://doi.org/10.1001/jamainternmed.2019.4491>

Koper, C. S. (2013). America's experience with the Federal Assault Weapons Ban, 1994–2004: Key findings and implications. In D. W. Webster & J. S. Vernick (Eds.), *Reducing gun violence in America: Informing policy with evidence and analysis* (pp. 157–171). Johns Hopkins University Press.

Koper, C. S. (2020). Assessing the potential to reduce deaths and injuries from mass shootings through restrictions on assault weapons and other high-capacity semiautomatic firearms. *Criminology & Public Policy*, 19(1), 147–170. <https://doi.org/10.1111/1745-9133.12485>

Koper, C. S., Johnson, W. D., Nichols, J. L., Ayers, A., & Mullins, N. (2018). Criminal use of assault weapons and high-capacity semiautomatic firearms: An updated examination of local and national sources. *Journal of Urban Health*, 95, 313–321. <https://doi.org/10.1007/s11524-017-0205-7>

Luca, M., Malhotra, D., & Poliquin, C. (2017). Handgun waiting periods reduce gun deaths. *Proceedings of the National Academy of Sciences of the United States of America*, 114(46), 12162–12165. <https://doi.org/10.1073/pnas.1619896114>

Lyons, V. H., Floyd, A. S., Griffin, E., Wang, J., Hajat, A., Carone, M., Benkeser, D., Whiteside, L. K., Haggerty, K. P., Rivara, F. P., & Rowhani-Rahbar, A. (2021). Helping individuals with firearm injuries: A cluster randomized trial. *Journal of Trauma and Acute Care Surgery*, 90(4), 722–730. <https://doi.org/10.1097/TA.0000000000003056>

McCourt, A. D., Crifasi, C. K., Stuart, E. A., Vernick, J. S., Kagawa, R. M. C., Wintemute, G. J., & Webster, D. W. (2020). Purchaser licensing, point-of-sale background check laws, and firearm homicide and suicide in 4 US states, 1985–2017. *American Journal of Public Health*, 110(10), 1546–1552. <https://doi.org/10.2105/AJPH.2020.305822>

Mercer Kollar, L. M., Sumner, S. A., Bartholow, B., Wu, D. T., Moore, J. C., Mays, E. W., Atkins, E. V., Fraser, D. A., Flood, C. E., & Shepherd, J. P. (2020). Building capacity for injury prevention: A process evaluation of a replication of the Cardiff Violence Prevention Programme in the Southeastern USA. *Injury Prevention*, 26, 221–228. <http://dx.doi.org/10.1136/injuryprev-2018-043127>

Miller, M., & Azrael, D. (2022). Firearm storage in US households with children: Findings from the 2021 National Firearm Survey. *JAMA Network Open*, 5(2): Article e2148823. <https://doi.org/10.1001/jamanetworkopen.2021.48823>

Miller, M., Hepburn, L., & Azrael, D. (2017). Firearm acquisition without background checks: Results of a national survey. *Annals of Internal Medicine*, 166(4), 233–239. <https://doi.org/10.7326/M16-1590>

National Academies of Sciences, Engineering, and Medicine. (2019). *Health systems interventions to prevent firearm injuries and death: Proceedings of a workshop*. The National Academies Press. <https://doi.org/10.17226/25354>

*New York State Rifle & Pistol Association Inc. v. Bruen*, No. 20-843 (U.S. Jun. 23, 2022).

Pallin, R., Charbonneau, A., Wintemute, G. J., & Kravitz-Wirtz, N. (2019). California public opinion on health professionals talking with patients about firearms. *Health Affairs*, 38(10), 1744–1751. <https://doi.org/10.1377/hlthaff.2019.00602>

Pallin, R., Spitzer, S. A., Ranney, M. L., Betz, M. E., & Wintemute, G. J. (2019). Preventing firearm-related death and injury. *Annals of Internal Medicine*, 170(11), ITC81–ITC96. <https://doi.org/10.7326/AITC201906040>

Pear, V. A., McCort, C. D., Li, Y., Beckett, L., Tancredi, D., Studdert, D. M., Kass, P. H., Pierce, G. L., Braga, A. A., Wright, M. A., Laqueur, H. S., Kravitz-Wirtz, N., & Wintemute, G. J. (2021). Armed and prohibited: Characteristics of unlawful owners of legally purchased firearms. *Injury Prevention*, 27(2), 145–149. <https://doi.org/10.1136/injuryprev-2019-043479>

Pear, V. A., Schleimer, J. P., Tomsich, E., Pallin, R., Charbonneau, A., Wintemute, G. J., & Knoepke, C. E. (2021). Implementation and perceived effectiveness of gun violence restraining orders in California: A qualitative evaluation. *PLOS One*, 16(10), Article e0258547. <https://doi.org/10.1371/journal.pone.0258547>

*Printz v. United States*, 521 U.S. 898, 117 S. Ct. 2365 (1997).

RAND Corporation. (2023). *Gun Policy in America*. <https://www.rand.org/research/gun-policy.html>

Rowhani-Rahbar, A., Simonetti, J. A., & Rivara, F. P. (2016). Effectiveness of interventions to promote safe firearm storage. *Epidemiologic Reviews*, 38(1), 111–124. <https://doi.org/10.1093/epirev/mxv006>

Rowhani-Rahbar, A., Zatzick, D., Wang, J., Mills, B. M., Simonetti, J. A., Fan, M. D., & Rivara, F. P. (2015). Firearm-related hospitalization and risk for subsequent violent injury, death, or crime perpetration: A cohort study. *Annals of Internal Medicine*, 162(7), 492–500. <https://doi.org/10.7326/M14-2362>

Schell, T. L., Smart, R., Cefalu, M., Griffin, B. A., & Morral, A. R. (2022, November 29–December 1). *The effects of state laws regulating firearms on subsequent changes in firearm mortality* [Conference presentation]. 2022 National Research Conference on Firearm Injury Prevention, Washington, DC, United States.

Stone E. M., Crifasi C. K., Ward, J. A., Vernick, J. S., Webster D. W., McGinty, E. E., & Barry C. L. (2022). National support for gun policies among U.S. adults in 2019 and 2021. *Preventive Medicine*, 165, Article e107314. <https://doi.org/10.1016/j.ypmed.2022.107314>

Swanson, J. W., Norko, M. A., Lin, H-J., Alanis-Hirsch, K., Frisman, L. K., Baranoski, M. V., Easter, M. M., Robertson, A. G., Swartz, M. S., & Bonnie, R. J. (2017). Implementation and effectiveness of Connecticut’s risk-based gun removal law: Does it prevent suicides? *Law and Contemporary Problems*, 80(2), 179–208. <http://scholarship.law.duke.edu/lcp/vol80/iss2/8>

Swanson, J. W., Tong, G., Robertson, A. G., & Swartz, M. S. (2020). Gun-related and other violent crime after involuntary commitment and short-term emergency holds. *Journal of the American Academy of Psychiatry and Law*, 48(4), 454–467. <https://jaapl.org/content/48/4/454>

*United States v. Rahimi*, 61 F.4th 443 (5th Cir. 2023).

Villarreal, S., Barnhorst, A., Bonnie, R., Chavis, K., Davis, A., Frattaroli, S., Roskam, K., Swanson, J., & Horwitz, J. (2023). *Alcohol misuse and gun violence: An evidence-based approach for state policy*. Consortium for a Risk-Based Firearm Policy and the Johns Hopkins Center for Gun Violence Solutions. <https://publichealth.jhu.edu/sites/default/files/2023-05/2023-may-cgvs-alcohol-misuse-and-gun-violence.pdf>

Vittes, K. A., Vernick, J. S., & Webster, D. W. (2013). Legal status and source of offenders’ firearms in states with the least stringent criteria for gun ownership. *Injury Prevention*, 19(1), 26–31. <https://doi.org/10.1136/injuryprev-2011-040290>

Wintemute, G. J. (2019). Background checks for firearm purchases: Problem areas and recommendations to improve effectiveness. *Health Affairs*, 38(10), 1702–1710. <https://doi.org/10.1377/hlthaff.2019.00671>

Wintemute, G. J. (2021). Ghost guns: Spookier than you think they are. *Injury Epidemiology*, 8(1), Article e13. <https://doi.org/10.1186/s40621-021-00306-0>

Wintemute, G. J., Aubel, A. J., Pallin, R., Schleimer, J. P., & Kravitz-Wirtz, N. (2022). Experiences of violence in daily life among adults in California: A population-representative survey. *Injury Epidemiology*, 9(1), 1. <https://doi.org/10.1186/s40621-021-00367-1>

Wintemute, G. J., Pear, V. A., Schleimer, J. P., Pallin, R., Sohl, S., Kravitz-Wirtz, N., & Tomsich, E. A. (2019). Extreme risk protection orders intended to prevent mass shootings: a case series. *Annals of Internal Medicine*, 171(9), 655–658. <https://doi.org/10.7326/M19-2162>

Wintemute, G. J., Wright, M. A., Drake, C. M., & Beaumont, J. J. (2001). Subsequent criminal activity among violent misdemeanants who seek to purchase handguns: Risk factors and effectiveness of denying handgun purchase. *JAMA*, 285(8), 1019–1026. <https://doi.org/10.1001/jama.285.8.1019>

Zeoli, A. M., Frattaroli, S., Barnard, L., Bowen, A., Christy, A., Easter, M., Kapoor, R., Knoepke, C., Ma, W., Moloczniak, A., Norko, M., Omaki, E., Paruk, J. K., Pear, V. A., Rowhani-Rahbar, A., Schleimer, J. P., Swanson, J. W., & Wintemute, G. J. (2022). Extreme risk protection orders in response to threats of multiple victim/mass shooting in six U.S. states: A descriptive study. *Preventive Medicine*, 165, Article e107304. <https://doi.org/10.1016/j.ypmed.2022.107304>

Zeoli, A. M., McCourt, A., Buggs, S., Frattaroli, S., Lilley, D., & Webster, D. W. (2018). Analysis of the strength of legal firearms restrictions for perpetrators of domestic violence and their associations with intimate partner homicide. *American Journal of Epidemiology*, 187(11), 2365–2371. <https://doi.org/10.1093/aje/kwy174>



# ACCIDENTS



**ACCIDENTS OR UNINTENTIONAL SHOOTINGS  
MAKE UP 1% OF FIREARM DEATHS  
(CDC, 2021)**

*"A large and increasing proportion of US adults own guns.  
We cannot address the epidemic of gun violence without  
understanding the perspectives of gun owners."*

**– CASSANDRA CRIFASI, Ph.D.**

# Understanding the Perspectives of Gun Owners

Cassandra Crifasi, Ph.D.

## Introduction

This paper seeks to provide context on trends in gun ownership and attitudes around gun policy. Understanding these factors is a necessary foundation for any efforts to reduce gun violence. A large and increasing proportion of US adults owns guns. We cannot address the epidemic of gun violence without understanding the perspectives of gun owners. This paper begins with an overview of trends in gun ownership, including rates of gun ownership over time, changes in the demographic makeup of gun owners, changes in purchasing patterns, and differences in reasons for gun ownership and types of guns owned. Next, it provides a brief overview of the policy landscape for carrying guns in public. The paper then addresses attitudes regarding solutions to gun violence, highlights targets of opportunity for effective policies with broad support, and tackles the disconnect between public opinion and policy enactment. The paper concludes with reflections on the need to engage gun owners in any efforts to address gun violence in the US.



## Gun Ownership

### *Trends in Ownership*

A general downward trend has continued for more than 40 years in the percentage of households in which someone owns a firearm. The General Social Survey documented a decline in household firearm ownership from 47 percent in 1973 to 34.3 percent in 2018, an approximately 30 percent decline. A similar rate of decline



has occurred in the number of people who own guns, from 28.1 percent in 1980 to 21.9 percent in 2018 (Violence Policy Center, 2020).

These declines are likely related to declines in hunting, with the share of households with one member who is a hunter declining from 31.6 percent to 17 percent over the same period (Violence Policy Center, 2020). As men are more likely than women to report owning guns for hunting (Parker et al., 2017), and hunting has declined, it may be unsurprising that the declines in personal gun ownership were driven by declines in firearm ownership among men from 50.3 percent in 1980 to 35.8 percent in 2018, even as female firearm ownership stayed relatively stable at around 10 percent (Violence Policy Center, 2020).

Gun ownership among Black Americans did not change substantively during that 40-year period, holding steady at 16 percent, while modest increases in ownership among Hispanic Americans, with an increase from 5 percent in 2000 to 12 percent in 2018 (Violence Policy Center, 2020).

These long downward trends in ownership reversed rapidly in the last few years. Nearly 3 percent of the US population bought guns for the first time between January 2019 and April 2021 (Miller et al., 2022). This translates to 7.5 million new gun owners during that approximately two-year period. Traditionally, gun owners are predominately men and White. However, of these new gun purchasers, half were women and one-fifth each were Black Americans and Hispanic Americans (Miller et al., 2022). All of these are increases from what was seen in 2018.



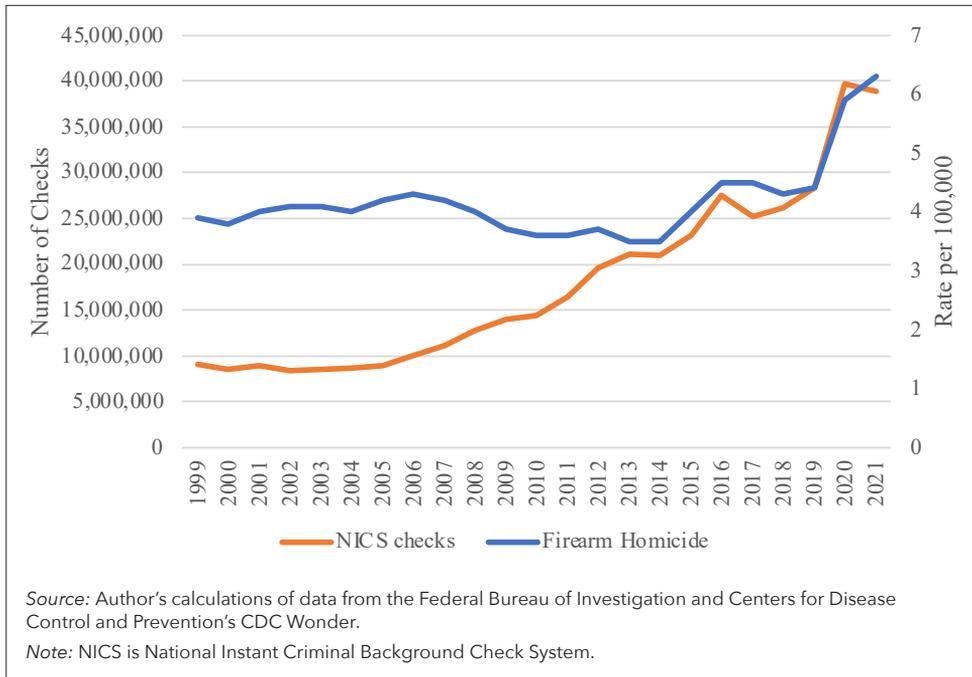
### ***Trends in Gun Purchases***

No systematic collection of information on gun purchasing or gun purchasers exists at the federal level. Some states, such as California, capture information in their own systems that provides more robust data. Additional information can be gleaned from

the National Instant Criminal Background Check System (NICS), which was created as part of the Brady Handgun Violence Prevention Act in 1993 (Brady Handgun Violence Prevention Act, 1993). Federal Firearm Licensees (i.e., licensed gun dealers) are required to use the system to check the background of any prospective purchaser. Because not all purchases run through NICS, and because an individual can purchase multiple firearms after undergoing one background check, estimates of gun ownership based on the number of NICS checks are rough. Still, they demonstrate that between 1999 and 2006, annual NICS checks were relatively stable and then increased substantially, reaching record highs during the COVID-19 pandemic (figure 1).

As both household and personal gun ownership has declined, the US has experienced a concentration in gun ownership. Estimates from 2015 suggest that the median number of guns owned by each gun owner in the US was two. However, around 8 percent of gun owners owned 10 or more guns and accounted for approximately 40 percent of all guns owned in the US (Azrael et al., 2017). This can help contextualize the seemingly conflicting trends of declines in ownership and increases in NICS checks.

**Figure 1. National Instant Criminal Background Check System Checks and Firearm Homicide Rates in the US, 1999-2021**



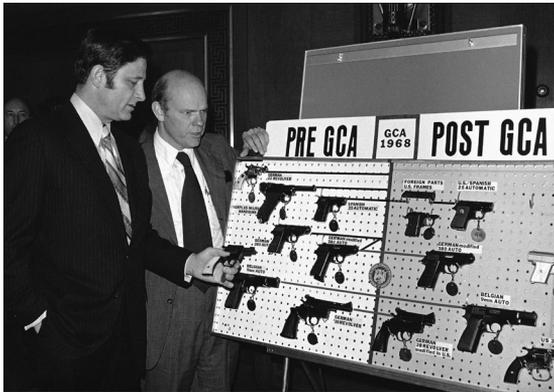
## Types of Guns

Before 2008, pistols (i.e., semiautomatic handguns rather than revolvers) accounted for about 20 percent of firearms manufactured in the US. Approximately twice as many rifles and shotguns were manufactured during that period. By 2020, nearly half of firearms produced were pistols (Bureau of Alcohol, Tobacco, Firearms, and Explosives, 2022). Beginning around 2010, there was also a shift away from small-caliber (e.g., .22) toward higher-caliber pistols, with more than 60 percent of pistols being 9 mm or higher caliber (Bureau of Alcohol, Tobacco, Firearms, and Explosives, 2022). This demonstrates the increased popularity of guns with greater capacity for lethality that are also easy to carry concealed, which is likely a response to a shift in reasons for gun ownership away from being primarily related to hunting to being viewed as a primary means for self-defense (Parker et al., 2017; Wolfson et al., 2020).

The precise cause of the shift is difficult to identify, but its roots can be found in a number of places. As gun ownership for hunting declined, firearms manufacturers needed to develop new marketing strategies. The result was a greater emphasis on the use of guns in self-defense rather than sport shooting or hunting.

## Guns in Public

The US has a rich history of firearm regulations, particularly at the local level, and several important pieces of federal legislation provided the framework and



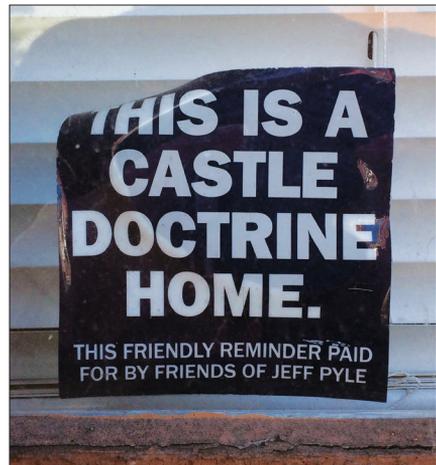
foundation for our current firearm laws. From the time of colonization in North America and what would become the United States, laws have existed regulating who could own guns and where they might be carried. Among the first measures enacted at the convening of the first formal legislative body in the Virginia colony in 1619 was a prohibition on gun access by

Indigenous people (Spitzer, 2017). Early gun regulations at the local and state level were related to possession, storage, and carry, recognizing the need to promote public safety (Frassetto, 2013). At the federal level, the National Firearms Act of 1934 and the Gun Control Act of 1968 laid out the frameworks for categorizing certain types of firearms as regulated and certain people as prohibited from owning firearms (National Firearms Act, 1934; Gun Control Act, 1968).

After the passage of the National Firearms Act and Gun Control Act, legislation related to guns at the federal level was largely focused on making it easier for people to acquire guns. This shift was codified in the 2008 US Supreme Court decision in *District of Columbia v. Heller* (*District of Columbia v. Heller*, 2008). Before *Heller*, the Second Amendment of the US Constitution was viewed as a collective right, not an individual right. *Heller* created an individual right to own a gun in one's home based on the right to self-defense.

In conjunction with the shift toward an individual right to gun ownership and increases in gun purchasing, states have passed policies making it easier for people to carry and use guns in public. Few states allowed civilians to carry loaded, concealed handguns in public in the 1980s. By contrast, currently every state allows civilians to engage in concealed carry and more than half allow people to do so without first having to undergo safety training, submit to a background check, and obtain a permit (i.e., permitless or constitutional carry) (McCourt, 2023). This expansion of civilian concealed carry of handguns likely translates to increases in exposure to guns in the general populace.

Under the common-law “castle doctrine,” an individual can use lethal force to defend him- or herself inside the home without a duty to retreat. Thirty-eight states have extended that right outside the home under what is commonly referred to as stand your ground, either through legislation or court decisions (Giffords Law Center to Prevent Gun Violence, n.d.). This policy allows people to use lethal force in public when they feel threatened without having to first take action to remove themselves from the situation. Under stand your ground, claims of self-defense have been successful even when the firearm owner took actions that clearly indicated he or she was the aggressor.



Permitless carry and stand your ground are both a result of changing culture around gun ownership and a contributor to that cultural shift. The marketing of guns as the best tools for self-defense and expanding opportunities for concealed carry may partly explain the increased popularity of pistols in particular.

As discussed in other papers in this collection, the states that have some of the lowest standards for gun ownership and the most expansive provisions for carrying concealed guns in public and for standing your ground have the highest rates of gun deaths.

## Attitudes around Gun Policy

Through the mid-2010s, much of the public discourse on support for evidence-based gun policies focused on two questions: Do you think gun control laws should be stronger or weaker? And do you think we should have more or less gun control? But policymakers receive limited guidance from the answers to these questions. Even if



100 percent of respondents said gun control should be stronger or we should have more gun control, what does that mean? Which laws should policymakers consider?

When vague questions around support for gun control or more laws are used, it becomes far easier to claim that gun owners

do not support any changes in gun policy. Yet when gun owners are asked more specific questions, two important lessons emerge. First, gun owners are not a monolith. Differences in support for policies exist among different demographic subgroups of gun owners. Second, broad and steady support exists for many gun policies over time.

After the December 2012 shooting at Sandy Hook Elementary School in Newtown, Connecticut, the Center for Gun Violence Solutions at the Johns Hopkins Bloomberg School of Public Health<sup>1</sup> convened a symposium entitled “Reducing Gun Violence: Evidence for Change.” The symposium brought together researchers from across the world to discuss prevention strategies and policies. Through those efforts, colleagues at the Center realized the deficiencies in previous public opinion polls on gun policy. Rather than asking the same vague questions, the Center asked gun policy experts which policies should be examined.

In 2013, the Center launched the first wave of the biannual National Survey of Gun Policy. What began as a survey of public opinion on 30 gun-related policies in 2013 has evolved in 2023 to also assess perspectives on programs and public safety reforms to address violence. For many of the policies examined over time, consistent majority support exists among gun owners and non-gun owners. For example, requiring prospective gun purchasers to first get a license, prohibiting gun possession among those subject to a temporary domestic violence restraining order, allowing family members to petition the court to temporarily remove guns during

<sup>1</sup> The author is co-director of the center.

a time of crisis, and requiring people to lock up their guns at home when not in use have all seen high levels of support from 2015 to 2023 (table 1).

**Table 1. Support for Gun Policies among US Adults by Year, 2015-2023 (percent)**

Do you favor:	%				
	2023	2021	2019	2017	2015
Requiring a person to obtain a license from a local law enforcement agency before buying a gun to verify their identity and ensure that they are not legally prohibited from having a gun	72.4	72.4	77.0	76.8	72.0
Prohibiting a person subject to a temporary domestic violence restraining order from having a gun for the duration of the order	80.9	78.4	81.0	81.0	79.0
Allowing family members to ask the court to temporarily remove guns from a relative who they believe is at risk of harming himself or others	76.4	76.3	80.0	78.9	72.0
Requiring by law that a person lock up the guns in their home when not in use to prevent handling by children or teenagers without adult supervision	72.2	72.7	74.0	73.7	69.0
<i>Source:</i> Author's calculations of data from the National Survey of Gun Policy.					

Building off the work started in 2013, the Center fielded the sixth wave of its biannual survey between January 4 and February 6, 2023. It examined respondents' support for 42 gun-related policies, including those in table 1. Policies were grouped into nine categories: license and background checks, prohibited persons, assault weapons and ammunition, gun dealers, temporary firearm removal, concealed carry, prohibiting a person convicted of various crimes from having a gun for 10 years, funding, and other (table 2). Of these 41 policies, 36 could be characterized as restrictive (e.g., requiring a background check for all gun sales) and 5 as permissive (e.g., allowing someone to carry a loaded, concealed handgun without a permit).

Overall, all but 1 of the 36 restrictive policies had majority support (table 2).<sup>2</sup> Among the policies with greater than 75 percent support overall were requiring background checks for all gun sales; requiring fingerprints as part of the background check process; prohibiting gun possession among those subject to a temporary domestic violence restraining order; allowing the Bureau of Alcohol, Tobacco, Firearms, and

<sup>2</sup> Table 2 appears at the end of the paper.

Explosives to temporarily take away a dealer's license for recordkeeping violations; allowing extreme risk protection orders initiated by family members or licensed health care providers; and requiring first-time gun purchasers to undergo safety training. The common thread among these policies is that they make it harder for high-risk individuals to obtain or retain firearms, and they require good sales practices and safety training. Restrictive policies that generally garner lower levels of support include restricting access to certain types of firearms or accessories (e.g., large-capacity magazines) or redirecting funding away from law enforcement. None of the five permissive policies that generally make it easier for people to carry guns in public received more than 50 percent support.

Among gun owners, there again was broad support for most policies. Of the 36 restrictive policies, 28 had majority support. Despite the common narrative that gun owners do not support evidence-based policies, no statistically significant differences existed between gun owners and non-gun owners for several of the policies with the highest levels of overall support: requiring background checks for all gun sales; prohibiting gun possession among those subject to a temporary domestic violence



restraining order; and allowing the Bureau of Alcohol, Tobacco, Firearms, and Explosives to temporarily take away a dealer's license for recordkeeping violations.

Among gun owners, the only permissive policy with majority support was concealed carry reciprocity (i.e., requiring states to recognize other states' concealed carry licenses even when differences exist in permitting standards). Only around one-third of gun owners supported allowing licensed concealed carry of firearms on school grounds for kindergarten through 12th grade or college campuses, concealed carry without a license or permit, or use of lethal force without a duty to retreat. This suggests that gun owners recognize the need to restrict access to guns in places that might be considered sensitive and that individuals who want to carry guns in public should be required to get a license.

Among Republicans, there was also broad support for most policies examined. Of the 36 restrictive policies, there was majority support for 27 policies. While significant differences exist between Democrats and Republicans on most policies, several policies had high levels of support. For example, requiring background checks for all gun sales, prohibiting gun possession among those subject to a temporary domestic violence restraining order, prohibiting gun possession for 10 years for individuals

convicted of serious crimes as juveniles, and requiring first-time gun purchasers to undergo safety training were supported by more than 75 percent of Republicans. Of the five permissive policies, only concealed carry reciprocity was supported by the majority of Republicans (65 percent).

Taken together, these findings run counter to the common narrative that gun policy is a partisan issue with no hope of finding common ground. Survey respondents continue to broadly support policies that make it harder for risky individuals to obtain guns as well as for safety training for new gun owners.

### Disconnect between Public Opinion and Policy

Despite broad public support for evidence-based policies, states continue to pass legislation in opposition to their constituents' perspectives. Twenty-six states<sup>3</sup> now allow for permitless concealed carry despite these laws being supported by only 23 percent of US adults, including only one-third of gun owners and Republicans. State-specific polls in Texas, Ohio, Iowa, and Tennessee, for example, have shown low support for these policies that state legislatures then pass anyway (Barragán et al., 2021; Gruber-Miller, 2021; Public Policy Polling, 2020; Sher, 2021).



At least two factors likely contribute to the disconnect between public opinion and public policy. First, there is a difference between breadth of support and depth of

<sup>3</sup> In order of adoption, they are Vermont, Alaska, Arizona, Wyoming, Kansas, Maine, Idaho, Missouri, Mississippi, West Virginia, North Dakota, New Hampshire, Oklahoma, Kentucky, South Dakota, Arkansas, Iowa, Montana, Tennessee, Texas, Utah, Alabama, Georgia, Indiana, Ohio, and Florida.

support (Han, 2014). Often, there are more people who support a policy than are willing to take action to put the policy into place. Second, action is less likely when there is a misalignment between an individual's support for a policy and the individual's perception of support for that policy among his or her in-group (Boine et al., 2022). Gun owners in particular may become more activated to support gun policy when presented with evidence that other gun owners support those same policies.

## Conclusion

A common narrative around gun policy is that it is too polarizing a topic for us to be able to come together as a nation and coalesce around evidence-based policies. This can leave people feeling like nothing can be done. Yet we know this to be a false narrative that continues to be perpetuated in part by the gun industry to prevent any legislation



that might impact its bottom line (Busse, 2021; McGreal, 2022).

We have in place, in states across the country, policies that have a strong evidence base for reducing violence. These policies demonstrate that it is possible to develop laws designed to reduce gun

violence that do not interfere with the general principle that individuals have a legal right to own and carry a gun. These laws are designed to create functional systems to properly identify and screen out people who are prohibited from having them. For example, strengthening the existing background check system by having all gun purchasers undergo a background check or requiring prospective purchasers to first get a license is associated with reductions in the diversion of guns for use in crime and firearm-related mortality. Similarly, there may be instances in which a current gun owner is at elevated risk of harming him- or herself or others during a time of crisis. Extreme risk protection orders (sometimes referred to as red flag laws) allow family members, law enforcement, or licensed health care providers to petition a court through a civil process to temporarily remove that person's firearms until the crisis has passed. These are policies that, if used effectively, could meaningfully reduce violence. And they are supported by at least 60 percent of gun owners and Republicans.

But it is not enough to tell policymakers that laws are effective. There must be a demonstration of broad support for these policies. More effective messages may increase actual and perceived support and lead to policy enactment. For example, policies requiring prospective gun purchasers to first get a license are associated with significant reductions in diversions of guns for use in crime and firearm homicides, including mass shootings, firearm suicides, and shootings by police, and these policies are supported by more than 72 percent of US adults, including 64 percent of gun owners and 61 percent of Republicans—telling policymakers these facts is a far more impactful message than either data point on its own.



These messages cannot just come from public health researchers. Like other public health topics, the message must come from credible messengers: those who are part of the in-group who may better resonate with those who can act on the message. Engaging with those who have credible experience with guns and support evidence-based policies can be a more effective way to change perceptions and increase the acceptability of solutions to gun violence. Part of this includes normalizing conversations around gun ownership and safety to align with other injury prevention topics like those often covered in health care settings. For example, conversations around home safety, such as where cleaning supplies or medications are stored, should also include whether guns in the home are stored safely and securely when not in use.

Reducing gun-related injuries and deaths necessitates a harm reduction approach. The reasons people own guns have changed over time, and that means who owns guns has changed as well. Gun owners are often in the best position to promote the kinds of behaviors that will reduce harm. They are also often the most credible messengers for communicating support among gun owners for policies that can save lives and reduce harm.

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**Table 2. Support for 41 Gun Policies Overall and by Gun Ownership and Political Party, 2023**

Do you favor or oppose...	%								
	Overall (N = 3,096)	PERSONALLY OWNS A GUN			POLITICAL PARTY				
		Yes (n = 1,002)	No (n = 2,094)	p <sup>a</sup>	Democrat (n = 1,199)	Independent (n = 1,163)	p <sup>b</sup>	Republican (n = 730)	p <sup>b</sup>
<b>License and background check policies</b>									
Requiring a background check system for all gun sales to make sure a purchaser is not legally prohibited from having a gun	85.2	84.1	85.7		92.1	y	≤ .001	82.5	≤ .001
Requiring a person to obtain a license from a local law enforcement agency before buying a gun to verify their identity and ensure that they are not legally prohibited from having a gun	72.4	64.4	76.2	≤ .001	87.3	68.4	≤ .001	61.2	≤ .001
Requiring that a person be fingerprinted for the background check to verify a person's identity and link it to any relevant criminal records	78.3	71.2	81.7	≤ .001	89.2	75.6	≤ .001	69.6	≤ .001
Extending the time to conduct a background check to up to 10 days	68.8	62.6	71.7	≤ .001	78.4	66.1	≤ .001	61.5	≤ .001
Prohibiting the sale of a gun before a background check is complete	65.7	65.1	66.0		72.2	63.6	≤ .001	61.1	≤ .001
<b>Prohibited persons policies</b>									
Prohibiting a person subject to a temporary domestic violence restraining order from having a gun for the duration of the order	80.9	79.2	81.7		88.8	77.5	≤ .001	76.5	≤ .001
Extending domestic violence-related gun prohibitions to include couples who have dated	61.6	57.1	63.7	≤ .01	74.4	58.1	≤ .001	51.7	≤ .001
Prohibiting a person convicted of a serious crime as a juvenile from having a gun for 10 years	77.4	77.8	77.2		84.1	73.0	≤ .001	75.8	≤ .001
Prohibiting a person under the age of 21 from having a handgun	67.0	57.7	71.4	≤ .001	83.2	63.6	≤ .001	53.0	≤ .001
Prohibiting a person convicted of two or more misdemeanor crimes involving illegal drugs in a five-year period from having a gun for five years	64.3	61.0	65.8	≤ .05	74.2	55.9	≤ .001	64.4	≤ .001
Prohibiting a person convicted of two or more DWI or DUIs in a five-year period from having a gun for five years	59.4	52.7	62.5	≤ .001	70.2	56.8	≤ .001	50.5	≤ .001

<b>Assault weapon and ammunition policies</b>									
Banning the sale of military-style, semi-automatic assault weapons that are capable of shooting more than 10 rounds of ammunition without reloading	59.4	44.2	66.6	≤ .001	82.9	54.7	≤ .001	38.9	≤ .001
Banning the sale of large-capacity ammunition clips or magazines that allow some guns to shoot more than 10 bullets before reloading	58.0	43.4	65.0	≤ .001	79.5	53.3	≤ .001	39.8	≤ .001
<b>Policies affecting gun dealers</b>									
Allowing the Bureau of Alcohol, Tobacco and Firearms to temporarily take away a gun dealer's license if an audit reveals record-keeping violations and the dealer cannot account for 20 or more of his guns	80.2	80.2	80.2		90.1	76.5	≤ .001	74.0	≤ .001
Allowing cities to sue licensed gun dealers when there is strong evidence that the gun dealer's careless sales practices allowed many criminals to obtain guns	71.7	68.6	73.1		85.2	68.0	≤ .001	61.3	≤ .001
Allowing the information about which gun dealers sell the most guns used in crimes to be available to the police and the public so that those gun dealers can be prioritized for greater oversight	64.9	61.1	66.7	≤ .05	81.3	59.4	≤ .001	53.5	≤ .001
<b>Temporary firearm removal policies</b>									
Allowing family members to ask a court to temporarily remove guns from a relative who they believe is at risk of harming himself or others	76.4	72.3	78.4	≤ .01	89.7	71.1	≤ .001	68.5	≤ .001
Authorizing law enforcement officers to temporarily remove guns from individuals who the officer determines pose an immediate threat of harm to self or others	71.3	65.5	74.0	≤ .001	82.9	66.1	≤ .001	65.1	≤ .001
Allowing licensed healthcare providers to ask the court to temporarily remove guns from a patient who they believe is at risk of harming himself or others	76.4	71.6	78.7	≤ .001	89.4	75.0	≤ .001	63.5	≤ .001
<b>Concealed carry policies</b>									
Requiring a person who has applied for a license to carry a concealed gun in public to pass a test demonstrating that they can safely and lawfully handle a gun in common situations they might encounter	72.7	68.3	74.8	≤ .01	81.8	70.2	≤ .001	65.8	≤ .001
Allowing a person who can legally carry a concealed gun to bring that gun onto a college or university campus	27.3	41.8	20.3	≤ .001	12.7	28.1	≤ .001	43.1	≤ .001

Allowing a person who can legally carry a concealed gun to bring that gun onto school grounds for kindergarten through 12th grade	25.2	36.3	20.0	≤ .001	11.0	24.7	≤ .001	42.6	≤ .001
Allowing a person who can legally own a gun to carry a loaded, concealed handgun in public without having to obtain a concealed carry license	22.8	34.5	17.3	≤ .001	12.3	23.2	≤ .001	34.6	≤ .001
Requiring a state to recognize a concealed carry permit from another state, even if that other state's firearm concealed carry permitting standards are lower	47.4	62.7	40.1	≤ .001	36.3	44.1	≤ .01	65.0	≤ .001
<b>Policies prohibiting a person convicted of each of these crimes from having a gun for 10 years</b>									
Public display of a gun in a threatening manner, excluding self-defense	69.6	69.8	69.5		73.5	68.8		66.5	≤ .05
Assault and battery that does not result in serious injury or involve a lethal weapon	53.6	49.8	55.5	≤ .05	60.9	51.8	≤ .001	47.8	≤ .001
Carrying a concealed gun without a permit	52.2	46.4	54.9	≤ .001	63.9	50.2	≤ .001	41.5	≤ .001
Drunk and disorderly conduct	44.9	37.7	48.3	≤ .001	53.8	42.7	≤ .001	37.5	≤ .001
<b>Funding-related policies</b>									
Directing federal government funding to states that want to establish licensing systems for handgun purchasers	55.7	49.8	58.6	≤ .001	74.1	49.2	≤ .001	43.5	≤ .001
Funding community-based gun violence prevention programs that provide outreach, conflict mediation, and social support for individuals at high risk of gun violence	69.0	61.8	72.5	≤ .001	86.7	65.1	≤ .001	54.4	≤ .001
Directing public funding to dispatching a clinician to accompany police officers on calls involving individuals displaying symptoms of mental illness	67.8	62.6	70.2	≤ .01	81.3	65.7	≤ .001	55.3	≤ .001
Directing public funding for community-based mental health programs to respond to calls involving individuals displaying symptoms of mental illness	71.4	65.8	74.1	≤ .001	83.5	70.4	≤ .001	58.9	≤ .001
Redirecting government funding currently spent on the police to social services for people at risk of gun violence	38.6	29.3	43.1	≤ .001	56.8	37.7	≤ .001	19.1	≤ .001
Funding, through public insurance, hospital-based gun violence prevention programs that offer counseling to address psychological trauma	61.9	54.0	65.6	≤ .001	77.0	59.4	≤ .001	47.7	≤ .001

Other policies									
Requiring first-time gun purchasers to take a safety course on safe handling and storage before buying a gun	83.1	78.8	85.2	≤ .001	92.7	79.7	≤ .001	77.1	≤ .001
Requiring by law that a person lock up the guns in their home when not in use to prevent handling by children or teenagers without adult supervision	72.2	58.0	78.9	≤ .001	86.5	70.2	≤ .001	58.5	≤ .001
Requiring an owner of a semi-automatic rifle, that ejects and rechambers a new round after each shot allowing a person to fire the rifle as quickly as the trigger can be pulled, to be at least 21 years of age	72.5	65.9	75.6	≤ .001	82.9	69.4	≤ .001	64.9	≤ .001
Allowing a person with a gun who feels a threat of serious injury from another person to shoot or kill that threatening person, even if the gun owner could safely retreat	27.1	35.9	22.9	≤ .001	18.3	27.3	≤ .001	37.1	≤ .001
Prohibiting the open carrying of a gun at a public demonstration or rally (By open carry, we mean carrying a gun in a manner that makes it visible.)	56.8	48.0	60.9	≤ .001	71.5	55.9	≤ .001	41.2	≤ .001
Prohibiting a person from bringing a gun into a government building	68.1	59.4	72.2	≤ .001	84.2	65.6	≤ .001	53.0	≤ .001
Prohibiting the possession of guns that do not have serial numbers	72.8	66.2	76.0	≤ .001	86.3	68.7	≤ .001	63.3	≤ .001
<p><i>Source:</i> Author's calculations of data from the National Survey of Gun Policy (Johns Hopkins Center for Gun Violence Solutions, 2023).</p> <p><i>Notes:</i> Empty cells indicate P values that were not considered statistically significant. DWI is driving while intoxicated; DUI is driving under the influence.</p> <p><sup>a</sup> Comparing gun owners to non-gun owners, with P ≤ .05 considered statistically significant.</p> <p><sup>b</sup> Comparing Independents or Republicans to Democrats, with P ≤ .05 considered statistically significant.</p>									

## References

- Azrael, D., Hepburn, L., Hemenway, D., & Miller, M. (2017). The stock and flow of U.S. firearms: Results from the 2015 National Firearms Survey. *RSF: The Russell Sage Foundation Journal of the Social Sciences*, 3(5), 38–57. <https://www.rsfjournal.org/content/3/5/38.full>
- Barragán, J., Pollock, C., & Ferman, M. (2021, June 25). Texans oppose permitless carry, but support expanding Medicaid and restricting transgender student athletes, UT/TT poll finds. *Texas Tribune*. <https://www.texastribune.org/2021/06/25/texas-permitless-carry-medicaid-transgender-students-poll/>
- Boine, C., Siegel, M., & Maiga, A. (2022). The effectiveness of value-based messages to engage gun owners on firearm policies: A three-stage nested study. *Injury Epidemiology*, 9(1), 30. <https://doi.org/10.1186/s40621-022-00394-6>
- Brady Handgun Violence Prevention Act. 18 U.S.C § 921 (1993). <https://uscode.house.gov/statutes/pl/103/159.pdf>
- Bureau of Alcohol, Tobacco, Firearms, and Explosives. (2022). *National Firearms Commerce and Trafficking Assessment: Firearms in commerce*. US Department of Justice. <https://www.atf.gov/firearms/docs/report/national-firearms-commerce-and-trafficking-assessment-firearms-commerce-volume/download>
- Busse, R. (2021). *Gunfight: My battle against the industry that radicalized America*. PublicAffairs.
- District of Columbia v. Heller, No. 07-290 (U.S. Jun. 26, 2008). <https://www.law.cornell.edu/supct/html/07-290.ZS.html>
- Frassetto, M. (2013). *Firearms and weapons legislation up to the early 20th century*. Everytown for Gun Safety. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2200991](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2200991)
- Giffords Law Center to Prevent Gun Violence. (n.d.). *Guns in public: Stand your ground*. Giffords. <https://giffords.org/lawcenter/gun-laws/policy-areas/guns-in-public/stand-your-ground-laws/>
- Gruber-Miller, S. (2021, June 30). Iowa poll: Two-thirds oppose permitless handgun carry law; most support pro-gun constitutional amendment action. *Des Moines Register*. <https://www.desmoinesregister.com/story/news/politics/iowa-poll/2021/06/30/iowa-gun-law-poll-permitless-concealed-carry-purchase-majority-iowans-oppose/7737140002/>
- Gun Control Act. 48 U.S.C. § 1681 (1968). <https://uscode.house.gov/statutes/pl/90/618.pdf>
- Han, H. (2014). *How organizations develop activists: Civic associations and leadership in the 21st century*. Oxford University Press.
- Johns Hopkins Center for Gun Violence Solutions. (2023). *National Survey of Gun Policy*. <https://publichealth.jhu.edu/departments/health-policy-and-management/research-and-practice/center-for-gun-violence-solutions/research-to-advocacy/americans-agree-on-effective-gun-policy-more-than-were-led-to-believe>

- McCourt, A. D. (2023). State Laws Governing Concealed Carry of Firearms by Decade, 1980–2021. <https://publichealth.jhu.edu/departments/health-policy-and-management/research-and-practice/center-for-gun-violence-solutions/solutions/public-carry-of-firearms>
- McGreal, C. (2022, May 29). Why appeals to altruism won't budge the US gun lobby. *The Guardian*. <https://www.theguardian.com/us-news/2022/may/28/us-gun-control-nra-lobby-industry>
- Miller, M., Zhang, W., & Azrael, D. (2022). Firearm purchasing during the COVID-19 pandemic: Results from the 2021 National Firearms Survey. *Annals of Internal Medicine*, 175(2), 219–225. <https://doi.org/10.7326/M21-3423>
- National Firearms Act. 43 U.S.C § 863 (1934). [https://ia601608.us.archive.org/14/items/NationalFirearmsActOf1934/National\\_Firearms\\_Act\\_of\\_1934\\_text.pdf](https://ia601608.us.archive.org/14/items/NationalFirearmsActOf1934/National_Firearms_Act_of_1934_text.pdf)
- Parker, K., Horowitz, J. M., Igielnik, R., Oliphant, J. B., & Brown, A. (2017, June 22). *America's complex relationship with guns*. Pew Research Center. <https://www.pewresearch.org/social-trends/2017/06/22/americas-complex-relationship-with-guns/>
- Public Policy Polling. (2020). *Ohio survey results*. Giffords. <https://files.giffords.org/wp-content/uploads/2020/11/OhioResults1-2-2.pdf>
- Sher, A. (2021, June 10). 59% of registered Tennessee voters oppose Gov. Lee's new permitless handgun-carry law, poll shows. *Chattanooga Times Free Press*. <https://www.timesfreepress.com/news/2021/jun/10/poll-permitless-carry/>
- Spitzer, R. J. (2017). Gun law history in the United States and Second Amendment rights. *Law and Contemporary Problems*, 80(2), 55–83. <https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=4825&context=lcp>
- Violence Policy Center. (2020, June). *The long-term decline of gun ownership in America: 1973 to 2018*. <https://gunviolence.issuelab.org/resource/the-long-term-decline-of-gun-ownership-in-america-1973-to-2018-published-june-2020.html>
- Wolfson, J. A., Azrael, D., & Miller, M. (2020). Gun ownership among US women. *Injury Prevention*, 26(1), 49–54. <https://doi.org/10.1136/injuryprev-2018-042991>



# HOMICIDE

**POLICE LINE DO NOT CROSS**

**HOMICIDE IS THE CAUSE OF 43% OF FIREARM DEATHS,  
INCLUDING THOSE INVOLVING DOMESTIC VIOLENCE  
(CDC, 2021)**

*"Although community violence is deeply entrenched and casts a long shadow, current evidence suggests that solutions exist. As we have come to understand that violence is preventable, it is up to all of us—researchers, advocates, and policymakers alike—to act".*

**– GREGORY JACKSON, B.A. and KYLE FISHER, M.D., M.P.H.**

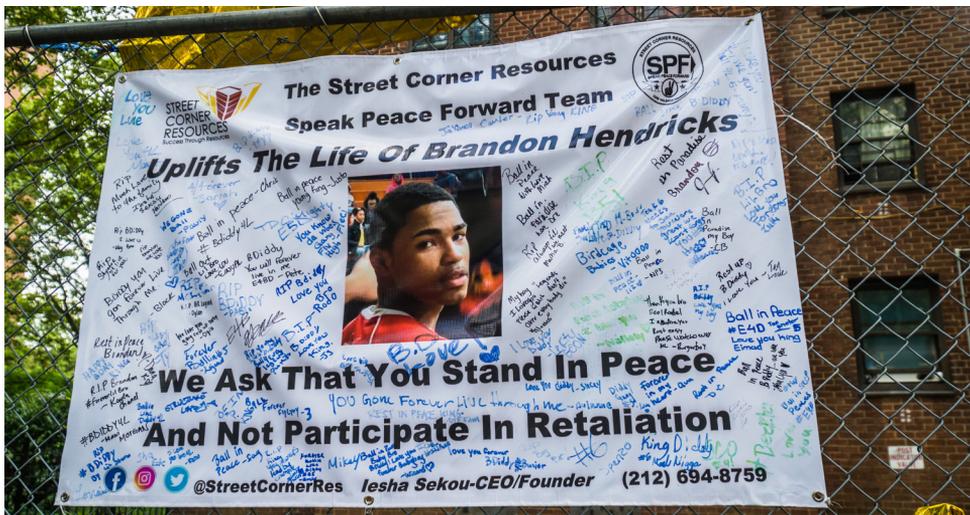
# Community Violence Intervention as a Strategy for Reducing Gun Violence

Gregory Jackson, B.A. and Kyle Fischer, M.D., M.P.H.

## Introduction

Gun violence is one of the largest public health crises of our time. More than 100,000 Americans are shot or killed every year with a firearm (Kaufman et al., 2021). Firearm deaths and injuries arise from many different circumstances. Suicide is the leading cause of gun-related death. Mass casualty shootings have become a common feature on the evening news. However, violence within or against communities of color remains the largest driver of homicides in the United States.

According to the Centers for Disease Control and Prevention (2023), 79 percent of all homicides in America are the result of a firearm injury, with Black or Brown individuals more than 10 times more likely to die than White individuals. Since the start of the COVID-19 pandemic, the crisis has only worsened. Between 2019 and 2020, there was a 35 percent increase in the homicide rate across the country, with the largest share of the increase seen among Black men (Kegler et al., 2022). Firearm injuries are now the leading cause of death among children and adolescents (Goldstick et al., 2022).



The vast majority of homicides arises from interpersonal conflicts between people who know each other. These conflicts may be new or long standing, simple or exceedingly complex. Community violence “happens between unrelated individuals, who may or may not know each other, generally outside the home” (Centers for Disease Control and Prevention, 2022).<sup>1</sup>

Strategies to address community violence differ from those often proposed to reduce overall gun violence. Because most firearms used in community violence are handguns obtained outside of legal gun marketplaces, many frequently discussed policy solutions are likely to have only a marginal effect (Bureau of Alcohol, Tobacco, Firearms, and Explosives, 2023). For example, universal background checks apply to legally purchased firearms and will have only tangential effects on those obtained illegally. Red flag laws are predominately designed to address suicide and intimate partner violence. Assault weapons, much discussed by political leaders, are not the drivers of community violence.

Community violence disproportionately harms Black and Brown Americans, thereby exacerbating racial inequities. For many communities, there is a direct line between community violence, long-standing disinvestment, and consciously made policy decisions such as redlining (Spitzer et al., 2023). Community violence is not primarily related to gang violence or the commission of other felonies, which, according to the Violence Policy Center (2023), accounted for 13 and 22 percent, respectively, of homicides in the Black community in 2020.

Taking a public health approach to community violence begins by understanding the experiences of people living in affected neighborhoods—an experience vastly different from that of people who do not.



Studies of survivors of community violence demonstrate that a gunshot wound is not a one-off occurrence but rather a connected event in what is often referred to as a *cycle of violence* (Sims et al., 1989). Before a gunshot wound, survivors have already experienced on average 3.5 traumatic adverse childhood experiences such as exposure to trauma, violence, or substance abuse (Corbin et al., 2013). A gunshot victim discharged from

<sup>1</sup> Obsolete terms such as *street violence*, *gang violence*, or *urban violence* have fallen out of favor due to their inaccuracy and perpetuation of racist stereotypes. The term community violence generally excludes intimate partner violence or sexual violence.

the hospital generally returns to live in the same community where they were injured. Within a year, approximately 80 percent will show signs of post-traumatic stress (Greenspan & Kellermann, 2002). However, the term post-traumatic stress is a misnomer; for most, the trauma has been a recurrent feature throughout their lives, and thus, there is no discrete moment to delineate a 'pre' nor 'post'.

The result is a pattern of trauma in which normal coping responses paradoxically increase risk factors for subsequent violence. Difficulty sleeping is commonly self-treated with alcohol (Nunn et al., 2016). Anxiety is often addressed with substances such as cannabis (Buckner, 2018). For those who are justice-system involved, particularly on parole, many substitute higher-risk substances, such as synthetic cannabinoids (Smith & Staton, 2019). In an attempt to regain a personal sense of safety, many feel compelled to carry a firearm, or worse, engage in retaliatory behaviors (Rich & Grey, 2005).

These factors generate a vicious cycle that increases the risk of additional injuries or even death. One systematic review of 19 studies found that rates of repeat violent injuries range from 7.5 percent to 65 percent, with a median of 27.3 percent (Greene, 2016). A study of injured teens found that retaliatory violence was common, with one out of five patients assaulting someone else within eight weeks of their own injuries (Wiebe et al., 2011).

Yet the progression of conflict to gun violence resulting in injury or death is preventable. By using a public health approach, it is possible to explore root causes, risk factors, and protective factors to deploy equitable solutions that reduce violence and promote public safety. This paper focuses on models designed to interrupt this progression. It describes community violence interventions and other initiatives designed to create an environment in which violence is less likely to occur. It then describes the history and status of support for these interventions and suggests areas for future action.

## **Community Violence Intervention Ecosystem**

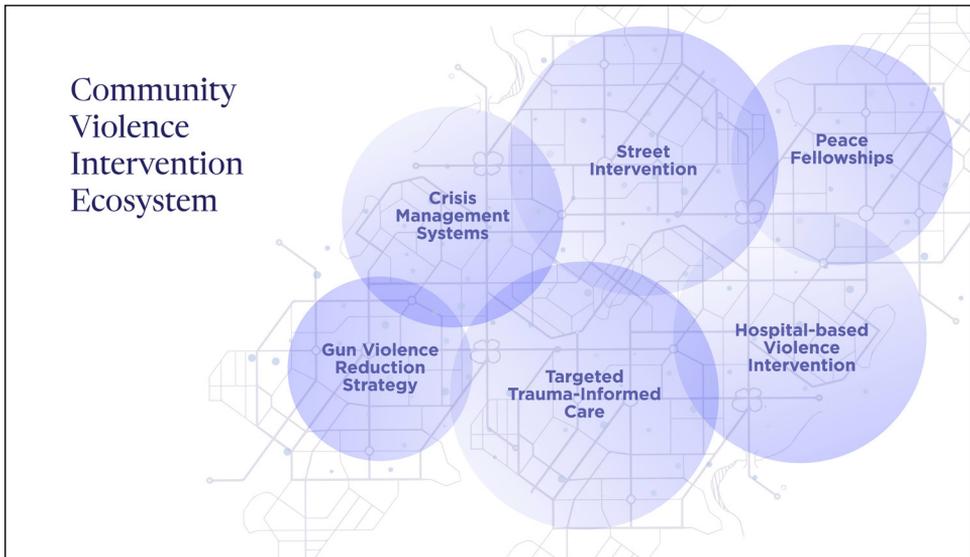
Communities across the United States have deployed antiviolence programs, commonly referred to as *community violence interventions* (CVIs), to combat the cycle of violence:

[CVI is] an approach that uses evidence-informed strategies to reduce violence through tailored community-centered initiatives. These multidisciplinary strategies engage individuals and groups to prevent and disrupt cycles of violence and retaliation, and establish relationships between individuals and community assets to deliver services that save lives, address trauma, provide opportunity, and improve the physical, social, and economic conditions that drive violence. (Bureau of Justice Assistance, 2022)

Central to the success of most CVI models is the use of credible messengers to engage with those at risk. Credible messengers are individuals recruited from the communities they serve and often have a history of surviving violence themselves (Fischer et al., 2020). They bring their personal experience and specialized training on topics such as trauma-informed care and conflict mediation to work directly with clients to keep them healthy and safe. Various terms are used to describe these workers: *violence interrupters*, *violence intervention specialists*, or *violence prevention professionals*.

The presence of these frontline workers is critical to programmatic success (Wical et al., 2020). Many individuals in communities that CVI programs serve hold deep distrust of traditional public institutions. Credible messengers build trust and gain client buy-in to participate in the programs. This trust continues after enrollment and has been found to be important for a number of program elements, including overcoming the stigma of mental health conditions and connecting with therapy to address traumatic stress.

Achieving the goals of CVI often requires deploying several distinct but complementary CVI program models within a community, a strategy referred to as creating a CVI ecosystem (CVI Ecosystem, n.d.). This approach recognizes that multiple simultaneous interventions must be deployed to reach all those in need. It is based on research findings that in any community facing high levels of violence, the violence is highly localized and driven by a small number of people. For example, one study out of Chicago found that 70 percent of violence resulted from the actions of less than 6 percent



of the city's population (Papachristos et al., 2015). This small subset of individuals is typically disconnected from traditional institutions, and they are challenging to find. Thus, a multidimensional approach with ties to different sectors of society, such as the health system, the justice system, and the community, is needed to find and engage with these individuals.

When properly deployed, a CVI ecosystem acts as a complementary strategy to law enforcement. The exact components of a CVI ecosystem are tailored to the needs and resources of an individual community. Properly designed, adequately funded CVI programs have proved to reduce gun violence. This section describes four evidence-based models: street outreach programs, hospital-based violence intervention programs, targeted trauma-informed care, and group violence interventions.

### ***Street Outreach or Violence Interrupter Programs***

Street outreach programs use public health principles to interrupt the spread of violence directly (Butts et al., 2015). This model is based on the theory that violent behaviors are transmitted in a manner similar to infectious diseases. It aims to interrupt the transmission of violence through the deployment of credible messengers who help mediate conflicts to prevent shootings, provide immediate crisis response, and connect people at high risk of violence to case management resources to promote long-term support and behavior change.

Street outreach programs are generally set up geographically, with local sites assigned to specific neighborhoods. Violence



interrupters work at a specific site so that, with their visible presence and deep connections to the community, they are able to monitor for conflicts and mediate them before they escalate to violence. One of their roles is to identify individuals at risk of violence and target them for engagement and long-term support.

The street outreach model has been replicated and tested both in the United States and internationally. Multiple evaluations of the programs show significant reductions in shootings when street outreach is fully implemented. Most recently, Safe Streets

Baltimore was shown to have reduced homicides and nonfatal shootings overall from 2007 to 2022 (Webster et al., 2023). Researchers at Johns Hopkins University found that in the five longest-running sites, homicides were 32 percent lower than would have been expected without the intervention in the first four years of program implementation. Overall, the Baltimore program was associated with a 23 percent reduction in nonfatal shootings across the full implementation period in all 11 sites analyzed.

Street outreach programs often serve as a community connection to other parts of the CVI ecosystem (Marks et al., 2018). For example, many include a hospital responder component. After a shooting occurs, friends and family often congregate at the hospital. While they are there to support the victim, tensions may be high, which can escalate to retaliatory violence. By going directly to the hospital, the interrupters can provide support and assistance to those close to the victim and prevent acts of retaliation. This complements hospital-based violence intervention programs that work with survivors, which are discussed below.

### **Hospital-Based Violence Intervention Programs**

Hospital-based violence intervention programs (HVIPs) are voluntary support programs that reach individuals immediately after they have been injured and continue their care beyond hospital discharge (Health Alliance for Violence Intervention, n.d.-a).



The program's design is based on the premise that after an injury, there is a golden opportunity when survivors are especially receptive to intervention. With services and support, they can begin their path toward physical and psychological healing.

HVIPs deploy violence prevention professionals, a form of credible messenger who receives additional training to work within health systems. This includes topics such as trauma-informed care, medical recordkeeping, hospital bedside visit

procedures, and HIPAA compliance (Health Alliance for Violence Intervention, n.d.-b). They meet with the patient at their bedside after an injury and initiate a long-term care relationship. Subsequently, the violence prevention professional works with the patient to decrease risk factors for violence while bolstering protective factors. This

is typically accomplished through the creation of comprehensive needs assessments that address a wide range of client needs ranging from mental health services to the social determinants of health such as jobs, housing, and education as well as other discrete case management needs. Through this approach, the credible messengers are able to work as a form of peer support while leveraging all the resources typically available in the hospital, such as case management, social work, and physical and psychological health services.

Studies of HVIPs have found success across a wide range of outcomes. One randomized controlled trial found that among HVIP participants, only 5 percent were hospitalized with repeat violent injuries compared with 36 percent in the control group (Cooper et al., 2006). There was also a significant decrease in subsequent involvement with the criminal justice system. Overall, in this trial of 100 patients (56 intervention and 44 control), participants in the control group accounted for \$598,000 more expenditures associated with rehospitalization and \$1.25 million in incarceration, showing substantial cost savings for program participants. Multiple studies across the nation have demonstrated similarly low rates of reinjury (Purtle et al., 2013).

### ***Targeted Trauma-Informed Care Programs***

Targeted trauma-informed care models combine intensive engagement and community-based mental health treatment. The typical modality is cognitive behavioral therapy (CBT), a form of talk therapy that is well established to decrease gun violence (Hofmann et al., 2012). Examples of existing programs include Roca, READI Chicago, and Chicago CRED.

CBT is based on the principle that many psychological problems are rooted in unhelpful ways of thinking and learned patterns of behavior. CBT allows individuals to better cope with these thoughts and respond in ways that decrease their symptoms and improve their lives (American Psychological Association, n.d.). Randomized controlled trials in which CBT was implemented by nonprofit organizations demonstrated a 45–50 percent decrease in violent crime arrests by program participants (Heller et al., 2017).



Targeted trauma-informed care programs combine the effectiveness of CBT with credible messengers to engage some of the most challenging individuals to reach who are at risk of gun violence. Potential clients can be identified by city agencies, including law enforcement in some jurisdictions, for referral. Roca describes this process as “relentless outreach,” wherein credible messengers persistently engage potential clients to secure buy-in. They report the average client requires 10 outreach attempts before enrollment (Roca, n.d.).

Upon securing client buy-in, programs provide clients with intensive case management services as well as community-delivered CBT. At present, READI Chicago is undergoing the largest randomized controlled trial of this model. Early findings from the first 20 months of the study suggest that READI reduced arrests for shootings and homicides, but these preliminary findings did not reach statistical significance (Bhatt et al., 2023). The results of the study’s full 40-month follow-up is forthcoming.

### ***Group Violence Intervention and Gun Violence Reduction Strategy***

Group violence intervention works as a partnership between law enforcement and communities to intervene with individuals at highest risk of committing acts of violence (Braga & Weisburd, 2015). This intervention often goes by other names, such as focused deterrence, as developed by David Kennedy of the National Network of Safe Communities, or more recently the Gun Violence Reduction Strategy, as implemented



by David Muhammad of the National Institute of Criminal Justice Reform.

This strategy pairs community leaders and law enforcement to engage high-risk individuals as identified by law enforcement or community leaders. It operates under the philosophy that those who commit violent behaviors

will cease doing so if they perceive the costs to outweigh the benefits. Thus, both community leaders and law enforcement relay a commitment to strict imposition of criminal sanctions for violent behaviors while simultaneously offering tangible benefits for those who engage in peaceful behaviors such as job training, drug treatment, and other social services. This carrot-and-stick approach aims to empower community members, improve police-community relations, and decrease criminal behaviors.

Research demonstrates this approach is effective in decreasing gun violence when implemented with fidelity. One systematic review of 24 studies found the approach results in a significant, moderate decrease in crime (Braga et al., 2018). An evaluation of Oakland's experience reported a 46 percent decrease in homicides and 49 percent decrease in nonfatal shootings associated with implementation of the model (Muhammad, 2018).

## **Environmental Approaches to Community Violence**

Gun violence is affected by the environments in which people live, work, and socialize. Environmental approaches engage various sectors of society to create a safer environment and can have an effect independently or in conjunction with CVI initiatives that focus on individuals.

### ***Place-Based Interventions***

Communities most affected by community violence typically have a long history of disinvestment and still feel the effects of decisions, such as redlining, made decades ago. These communities often have a physical environment that elevates the risk for violence.

Dr. Eugenia South from the University of Pennsylvania has conducted multiple studies of the effects of simple interventions, such as improving the physical environment, on gun violence. For example, structural repairs to distressed homes in high-violence



neighborhoods, such as fixing exterior walls, decreased crime by 25.4 percent in the city block where repairs occurred (South et al., 2021). Similar results have been found with other “cleaning and greening” programs. Interventions as simple as weeding and mowing grass, removing trash, and installing or repairing exterior lighting have all shown results (Kondo et al., 2018). The addition of more costly elements, such as installing large murals, has not been found to be required to see decreases in violence.

### **Lead Abatement**

Childhood exposure to lead, a heavy metal, is a long-term risk factor for many forms of violence (Reyes, 2015). Lead exposure during childhood has been found to interrupt the development of the brain, specifically the prefrontal cortex, an area of critical importance to human planning, cognition, and memory. Many scholars link the removal of lead from gasoline as a contributing factor to the significant decrease in crime that occurred in the 1990s (Taylor et al., 2016).

Childhood lead exposure is yet another driver of racial inequity. Current estimates indicate that Black children have more than twice the likelihood of an elevated blood lead level when compared to White children (Yeter et al., 2020). The United States still has a large burden of lead water service lines, particularly in areas of the industrial Midwest.

Congress recently identified lead abatement as a priority area of investment. The bipartisan Infrastructure Investment and Jobs Act in 2021 (Infrastructure Investment and Jobs Act, 2021) included \$15 billion for lead pipe removal. With proactive planning, this investment not only could improve childhood development and educational achievement, but also decrease long-term rates of gun violence (Fischer et al., 2022).

### **Health Insurance**

Given the tremendous physical and psychological consequences of gun violence, health insurance is a necessity for those affected. Before the Patient Protection and Affordable Care Act’s Medicaid expansion, gun violence survivors were disproportionately uninsured (Coupet et al., 2018). Since its passage, Medicaid has become the



largest payer of medical costs associated with gun violence in the United States, with the notable exception of states that have not expanded Medicaid (US Government Accountability Office, 2021).

Medicaid coverage allows survivors of gun violence to access previously out-of-reach health services and promotes financial stability for enrollees. Evidence suggests that a downstream effect of these factors is decreased community violence. One study calculated that the expansion of Medicaid eligibility to 138 percent of the federal poverty level is associated with an 8.1 percent decrease in criminal homicides (He & Barkowski, 2020). In more recent years, targeted Medicaid benefits have been created to directly reimburse CVI organizations to promote multidisciplinary, longitudinal care for these patients (Zavala et al., 2022).

### Support for Community Violence Intervention Programs

Although CVI programming has existed in scattered locations throughout the United States for at least 25 years, until recently there has been only nominal support. As early as 1996, the Department of Justice recognized CVI programs, specifically HVIPs, as promising practices for violence prevention (Office for Victims of Crime, 1996). However, substantial funding would not come for many years.

In the 2010s, states began funding CVI programs through the Victims of Crime Act's Crime Victims Fund (Health Alliance for Violence

Intervention, 2021). The Crime Victims Fund derives monies through criminal fines and fees, rather than tax dollars. This fund is subsequently disbursed to states, which have broad discretion in how they distribute it. One portion of the fund disburses funding to service organizations that support crime victims through Victims of Crime Assistance grants. Some CVI programs were deemed eligible and received funding from state administering agencies in the 2010s because survivors of community violence are almost uniformly also victims of crime. As the Crime Victims Fund reached a funding peak in 2017, states began experimenting with larger investments, culminating in New Jersey and Virginia using Victims of Crime Assistance funding to create statewide networks of HVIPs.



Additional investments followed the election of President Biden, who released a CVI plan shortly after taking office (White House, 2021a). The plan clarified that CVI programs were eligible to apply for 26 different federal grant programs, providing access to billions of dollars in competitive grant funds. The plan also directed the Centers for Medicare & Medicaid Services to clarify that CVI programming is reimbursable under existing Medicaid state plan authorities and waiver programs, leading seven states (California, Colorado, Connecticut, Illinois, Maryland, New York, and Oregon) to create a Medicaid violence prevention service benefit. The centerpiece of the plan was a proposal for an eight-year, \$5 billion investment in CVI, which was introduced as legislation by Senator Cory Booker (D-NJ) and Representative Steven Horsford (D-NV) but has not been enacted (Break the Cycle of Violence Act, 2021; Break the Cycle of Violence Act, 2022).



In June 2021, the Biden administration launched a 15-city CVI collaborative. This initiative brought together the public and private sectors to lay the groundwork for growing a CVI ecosystem across jurisdictions throughout the United States (White House, 2021b). It paired local governments with philanthropic funding as well as nationally recognized CVI training and technical assistance providers, including the Health Alliance for Violence Intervention, the Community-Based Public Safety Collaborative, the National Institute of Criminal Justice Reform, and Cities United.

The largest financial investment in CVI to date stemmed from the implementation of the American Rescue Plan Act of 2021 (Alliance for Safety and Justice, 2021). The Act was designed to provide financial support to help the US recover from the economic and social effects of the COVID-19 pandemic; Congress allocated \$1.9 trillion to local and state governments in direct financial assistance. Importantly, guidance on implementation defined these effects broadly, specifically stating that programs designed to combat pandemic-related increases in gun violence were eligible (Coronavirus State and Local Fiscal Recovery Funds, 2022). Subsequently, approximately \$2 billion in American Rescue Plan Act funds have been committed for CVI programs.



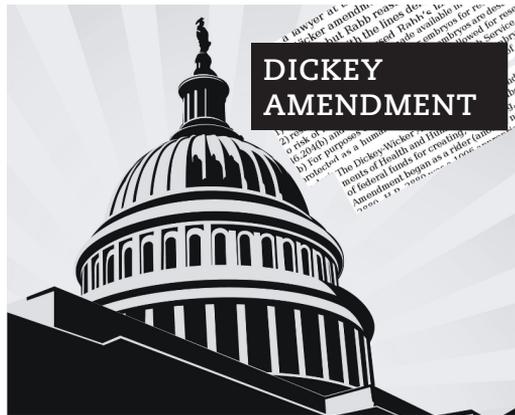
The Bipartisan Safer Communities Act (2022) marked the first substantial congressionally directed investment in CVI strategies to date. In addition to various gun regulations, the legislation created a \$250 million fund over five years for the US Department of Justice to create the Community-Based Violence Intervention and Prevention Initiative (White House, 2021a). With an additional \$50 million added through the federal budget, the US Department of Justice distributed \$100 million in direct support for CVI programming in 2022.

Many cities and states have created dedicated offices of violence prevention (National Institute for Criminal Justice Reform, 2023). At the local level, these offices commonly focus on funding, developing, and managing the creation of a CVI ecosystem. They

are often housed in the mayor’s office and act to coordinate programs and ensure a collaborative “all of government” approach. When implemented effectively, this ensures various service needs are available to those at risk of violence, ranging from safe activities with parks and recreation offices to emergency relocation services from the local housing authority. The narrow mission of these offices plays a critical role in applying for and drawing down funds from state and federal grants. Offices of violence prevention at the state level have generally focused on the coordination of funding streams.

### **Future Work and Challenges**

Although significant progress has been made in the field of community violence, many challenges remain. At the most basic level, the United States does not currently have the data infrastructure to respond to real-time changes in the community violence landscape (Brownlee, 2023). This deficiency has downstream consequences that limit the ability of localities to design CVI ecosystems that best match community needs. For example, with access to more timely data, cities might deploy different numbers of street outreach programs in different geographic locations. An HVIP might adjust staffing patterns to better match the days and times patients arrive at the hospital with violent injuries. Better data can directly yield better programming.



Further research on each individual CVI model is also necessary. The field is still recovering from a historic underfunding of gun violence prevention research stemming from the Dickey Amendment (1996), which prohibited the use of Centers for Disease Control and Prevention funding “to advocate or promote gun control.” This resulted in a nearly 25-year chilling effect on federal gun violence prevention research. Although these restrictions were lifted in recent years, the federal investment in community violence research remains orders of magnitude smaller than diseases with comparable mortality (Stark & Shah, 2017). The remaining research agenda is broad and includes a more complete evaluation of individual CVI program model effectiveness, further refinement of program elements (e.g.,

comparisons of different mental health approaches to meet the needs of violence survivors), and implementation of science evaluations of program development and deployment.

Beyond research, the CVI field faces considerable challenges in recruiting, retaining, and training its workforce. Given the relative youth of the CVI field, the existing workforce is relatively small. The field not only must recruit a new generation of violence prevention professionals, but also continue to develop violence-prevention oriented career advancement opportunities for frontline workers. At present, the employment pipeline consists predominately of frontline workers, program managers, and more recently, the addition of national organizations that provide training and technical assistance. To meet demand, a substantial investment in workforce development is crucial.

## **Conclusion**

Community violence is a public health crisis in the United States. More than 100,000 Americans are shot or killed with a firearm each year, with a disproportionate impact on Black and Brown communities. Fortunately, a variety of strategies to combat this issue has been deployed, such as CVI programing, environmental interventions, and expansion of financial assistance in the form of Medicaid health insurance. Although community violence is deeply entrenched and casts a long shadow, current evidence suggests that solutions exist. As we have come to understand that violence is preventable, it is up to all of us—researchers, advocates, and policymakers alike—to act.

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## References

- Alliance for Safety and Justice. (2021, April). *Federal Advocacy Brief: The Promise of the American Rescue Plan*, (1), 1–19. <https://allianceforsafetyandjustice.org/wp-content/uploads/2021/04/ARP-Report-Issue-1-2.pdf>
- American Psychological Association. (n.d.). *PTSD Clinical Practice Guideline: What is cognitive behavioral therapy?* <https://www.apa.org/ptsd-guideline/patients-and-families/cognitive-behavioral.pdf>
- American Rescue Plan Act, Pub. L. No. 117-7 (2021). <https://www.congress.gov/bill/117th-congress/house-bill/1319>
- Bhatt, M., Heller, S., Kapustin, M., Bertrand, M., & Blattman, C. (2023). *Predicting and preventing gun violence: An experimental evaluation of READI Chicago* (Working Paper No. 30852). National Bureau of Economic Research. <https://doi.org/10.3386/w30852>
- Bipartisan Safer Communities Act, Pub. L. No. 117-159 (2022). <https://www.congress.gov/bill/117th-congress/senate-bill/2938/text>
- Braga, A. A., Weisburd, D., & Turchan, B. (2018). Focused deterrence strategies and crime control: An updated systematic review and meta-analysis of the empirical evidence. *Criminology & Public Policy*, 17(1), 205–250. <https://doi.org/10.1111/1745-9133.12353>

- Braga, A. A., & Weisburd, D. L. (2015). Focused deterrence and the prevention of violent gun injuries: Practice, theoretical principles, and scientific evidence. *Annual Review of Public Health, 36*(1), 55–68. <https://doi.org/10.1146/annurev-publhealth-031914-122444>
- Break the Cycle of Violence Act, S.2275, 117th Cong. (2021). <https://www.congress.gov/bill/117th-congress/senate-bill/2275>
- Break the Cycle of Violence Act, H.R.4118, 117th Cong. (2022). <https://www.congress.gov/bill/117th-congress/house-bill/4118>
- Brownlee, C. (2023, May 23). *What if the CDC could track gun violence like a virus?* The Trace. <https://www.thetrace.org/2023/05/gun-violence-death-data-cdc-faster/>
- Buckner, J. D., Jeffries, E. R., Crosby, R. D., Zvolensky, M. J., Cavanaugh, C. E., & Wonderlich, S. A. (2018). The impact of PTSD clusters on cannabis use in a racially diverse trauma-exposed sample: An analysis from ecological momentary assessment. *The American Journal of Drug and Alcohol Abuse, 44*(5), 532–542. <https://doi.org/10.1080/00952990.2018.1430149>
- Bureau of Alcohol, Tobacco, Firearms, and Explosives. (2023). National Firearms Commerce and Trafficking Assessment (NFCTA): Crime guns—volume two: Part III: Crime guns recovered and traced within the United States and its territories. US Department of Justice. Retrieved June 6, 2023, from <https://www.atf.gov/firearms/docs/report/nfcta-volume-ii-part-iii-crime-guns-recovered-and-traced-us/download>
- Bureau of Justice Assistance. (2022, April 19). *Community Based Violence Intervention and Prevention Initiative (CVIPI)*. US Department of Justice. <https://bja.ojp.gov/program/community-violence-intervention/overview>
- Butts, J. A., Roman, C. G., Bostwick, L., & Porter, J. R. (2015). Cure violence: A public health model to reduce gun violence. *Annual Review of Public Health, 36*(1), 39–53. <https://doi.org/10.1146/annurev-publhealth-031914-122509>
- Centers for Disease Control and Prevention. (2022). *Violence prevention: Community violence prevention*. <https://www.cdc.gov/violenceprevention/communityviolence/index.html>
- Centers for Disease Control and Prevention. (2023). *WISQARS—Web-based Injury Statistics Query and Reporting System*. <https://www.cdc.gov/injury/wisqars/index.html>
- City of Chicago. (2023). *Violence Reduction Dashboard*. <https://www.chicago.gov/city/en/sites/vrd/home.html>
- Cooper, C., Eslinger, D. M., & Stolley, P. D. (2006). Hospital-based violence intervention programs work. *The Journal of Trauma: Injury, Infection, and Critical Care, 61*(3), 534–540. <https://doi.org/10.1097/01.ta.0000236576.81860.8c>
- Corbin, T. J., Purtle, J., Rich, L. J., Rich, J. A., Adams, E. J., Yee, G., & Bloom, S. L. (2013). The prevalence of trauma and childhood adversity in an urban, hospital-based violence intervention program. *Journal of Health Care for the Poor and Underserved, 24*(3), 1021–1030. <https://doi.org/10.1353/hpu.2013.0120>
- Coronavirus State and Local Fiscal Recovery Funds. 31 C.F.R. § 35 (2022). <https://www.govinfo.gov/content/pkg/FR-2022-01-27/pdf/2022-00292.pdf>

Coupet, E., Jr., Karp, D., Wiebe, D. J., & Kit Delgado, M. (2018). Shift in U.S. payer responsibility for the acute care of violent injuries after the Affordable Care Act: Implications for prevention. *The American Journal of Emergency Medicine*, 36(12), 2192–2196. <https://doi.org/10.1016/j.ajem.2018.03.070>

CVI Ecosystem. (n.d.). *What is a CVI ecosystem?* <https://www.cviecosystem.org/what-is-cvi>

Dickey Amendment. Omnibus Consolidated Appropriations Act, Pub. L. No. 104-208 (1996).

Fischer, K. R., Cooper, C., Marks, A., & Slutkin, G. (2020). Prevention professional for violence intervention: A newly recognized health care provider for population health programs. *Journal of Health Care for the Poor and Underserved*, 31(1), 25–34. <https://doi.org/10.1353/hpu.2020.0005>

Fischer, K. R., Walton, E., & Jasani, G. N. (2022). United States' infrastructure bill contains hidden \$15 billion investment in violence prevention: Lead abatement. *Frontiers in Public Health*, 10, Article 885460. <https://doi.org/10.3389/fpubh.2022.885460>

Goldstick, J. E., Cunningham, R. M., & Carter, P. M. (2022). Current causes of death in children and adolescents in the United States. *New England Journal of Medicine*, 386(20), 1955–1956. <https://doi.org/10.1056/NEJMc2201761>

Greene, M. B. (2016, August 22). *Repeat injuries, variability and recommended research guidelines* [Paper presentation]. Healing Justice Alliance National Conference, Baltimore, MD, United States.

Greenspan, A. I., & Kellermann, A. L. (2002). Physical and psychological outcomes 8 months after serious gunshot injury. *The Journal of Trauma: Injury, Infection, and Critical Care*, 53(4), 709–716. <https://doi.org/10.1097/00005373-200210000-00015>

He, Q., & Barkowski, S. (2020). The effect of health insurance on crime: Evidence from the Affordable Care Act Medicaid expansion. *Health Economics*, 29(3), 261–277. <https://doi.org/10.1002/hec.3977>

Health Alliance for Violence Intervention. (n.d.-a). *What is a hospital-based violence intervention program (HVIP)?* <https://www.thehavi.org/what-is-an-hvip>

Health Alliance for Violence Intervention. (n.d.-b). *Violence prevention professional training*. <https://www.thehavi.org/violence-prevention-professional-training>

Health Alliance for Violence Intervention. (2021, October). *Transformative guidance on victim services funding for hospital-based violence intervention programs*. <https://www.thehavi.org/s/HAVI-VOCA-toolkit.pdf>

Heller, S. B., Shah, A. K., Guryan, J., Ludwig, J., Mullainathan, S., & Pollack, H. A. (2017). Thinking, fast and slow? Some field experiments to reduce crime and dropout in Chicago. *The Quarterly Journal of Economics*, 132(1), 1–54. <https://doi.org/10.1093/qje/qjw033>

Hofmann, S. G., Asnaani, A., Vonk, I. J. J., Sawyer, A. T., & Fang, A. (2012). The efficacy of cognitive behavioral therapy: A review of meta-analyses. *Cognitive Therapy and Research*, 36(5), 427–440. <https://doi.org/10.1007/s10608-012-9476-1>

Infrastructure Investment and Jobs Act. 23 U.S.C. § 101 (2021). <https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf>

Kaufman, E. J., Wiebe, D. J., Xiong, R. A., Morrison, C. N., Seamon, M. J., & Delgado, M. K. (2021). Epidemiologic trends in fatal and nonfatal firearm injuries in the US, 2009–2017. *JAMA Internal Medicine*, 181(2), 237–244. <https://doi.org/10.1001/jamainternmed.2020.6696>

Kegler, S. R., Simon, T. R., Zwald, M. L., Chen, M. S., Mercy, J. A., Jones, C. M., Mercado-Crespo, M. C., Blair, J. M., Stone, D. M., Ottley, P. G., & Dills, J. (2022). Vital signs: Changes in firearm homicide and suicide rates—United States, 2019–2020. *Morbidity and Mortality Weekly Report (MMWR)*, 71(19), 656–663. <https://doi.org/10.15585/mmwr.mm7119e1>

Kondo, M. C., Andreyeva, E., South, E. C., MacDonald, J. M., & Branas, C. C. (2018). Neighborhood interventions to reduce violence. *Annual Review of Public Health*, 39(1), 253–271. <https://doi.org/10.1146/annurev-publhealth-040617-014600>

Marks, A., Toscano, L., & Zeimer, M. (2018, June). Supporting male survivors of violence: Keys to collaboration between hospital-based violence intervention and cure violence programs (Brief No. 2). Healing Justice Alliance. <https://www.thehavi.org/s/Keys-to-Collaboration-HVIPs-Cure-Violence.pdf>

Muhammad, D. (2018, January). *Oakland's successful gun violence reduction strategy*. National Institute for Criminal Justice Reform. <https://nicjr.org/wp-content/uploads/2018/02/Oakland%E2%80%99s-Successful-Gun-Violence-Reduction-Strategy-NICJR-Jan-2018.pdf>

National Institute for Criminal Justice Reform. (2023, May). *National offices of violence prevention network landscape scan*. <https://ovpnetwork.org/wp-content/uploads/2023/05/OVP-Report050923.pdf>

Nunn, J., Erdogan, M., & Green, R. S. (2016). The prevalence of alcohol-related trauma recidivism: A systematic review. *Injury*, 47(3), 551–558. <https://doi.org/10.1016/j.injury.2016.01.008>

Office for Victims of Crime. (1996, October 25). *Victims of gang violence: A new frontier in victim services: A report, recommendations, and action plan of the Victims of Gang Violence Planning Group (Paper No. NCJ163389)*. US Department of Justice Office of Justice Programs. <https://www.ncjrs.gov/pdffiles1/Digitization/163389NCJRS.pdf>

Papachristos, A. V., Wildeman, C., & Roberto, E. (2015). Tragic, but not random: The social contagion of nonfatal gunshot injuries. *Social Science & Medicine*, 125, 139–150. <https://doi.org/10.1016/j.socscimed.2014.01.056>

Purtle, J., Dicker, R., Cooper, C., Corbin, T., Greene, M. B., Marks, A., Creaser, D., Topp, D., & Moreland, D. (2013). Hospital-based violence intervention programs save lives and money. *Journal of Trauma and Acute Care Surgery*, 75(2), 331–333. <https://doi.org/10.1097/TA.0b013e318294f518>

Reyes, J. W. (2015). Lead exposure and behavior: Effects on antisocial and risky behavior among children and adolescents. *Economic Inquiry*, 53(3), 1580–1605. <https://doi.org/10.1111/ecin.12202>

Rich, J. A., & Grey, C. M. (2005). Pathways to recurrent trauma among young black men: Traumatic stress, substance use, and the “code of the street.” *American Journal of Public Health*, 95(5), 816–824. <https://doi.org/10.2105/AJPH.2004.044560>

Roca. (n.d.). *How we do it*. <https://rocainc.org/how-we-do-it/our-intervention-model/>

Sims, D. W., Bivins, B. A., Obeid, F. N., Horst, H. M., Sorensen, V. J., & Fath, J. J. (1989). Urban trauma: A chronic recurrent disease. *The Journal of Trauma: Injury, Infection, and Critical Care*, 29(7), 940–947. [https://journals.lww.com/jtrauma/abstract/1989/07000/urban\\_trauma\\_\\_a\\_chronic\\_recurrent\\_disease.6.aspx](https://journals.lww.com/jtrauma/abstract/1989/07000/urban_trauma__a_chronic_recurrent_disease.6.aspx)

Smith, K. E., & Staton, M. (2019). Synthetic cannabinoid use among a sample of individuals enrolled in community-based recovery programs: Are synthetic cannabinoids actually preferred to other drugs? *Substance Abuse*, 40(2), 160–169. <https://doi.org/10.1080/08897077.2018.1528495>

South, E. C., MacDonald, J., & Reina, V. (2021). Association between structural housing repairs for low-income homeowners and neighborhood crime. *JAMA Network Open*, 4(7), Article e2117067. <https://doi.org/10.1001/jamanetworkopen.2021.17067>

Spitzer, S. A., Vail, D. G., Dey, T., Salim, A., & Jarman, M. P. (2023). The Impact of redlining on modern-day firearm injuries: A nationwide study of federal policy. *Annals of Surgery*, 278(5), e1123–e1127. <https://doi.org/10.1097/SLA.0000000000005860>

Stark, D. E., & Shah, N. H. (2017). Funding and publication of research on gun violence and other leading causes of death. *JAMA*, 317(1), 84–85. <https://doi.org/10.1001/jama.2016.16215>

Taylor, M. P., Forbes, M. K., Opeskin, B., Parr, N., & Lanphear, B. P. (2016). The relationship between atmospheric lead emissions and aggressive crime: An ecological study. *Environmental Health*, 15(1), Article 23. <https://doi.org/10.1186/s12940-016-0122-3>

US Government Accountability Office. (2021, June). *Firearm injuries: Health care service needs and costs* (Report No. GAO-21-515). <https://www.gao.gov/assets/gao-21-515.pdf>

Violence Policy Center. (2023, April). *Black homicide victimization in the United States: An analysis of 2020 homicide data*. <http://vpc.org/studies/blackhomicide23.pdf>

Webster, D. W., Tilchin, C. G., & Doucette, M. L. (2023, March). *Estimating the effects of safe streets Baltimore on gun violence: 2007–2022*. Johns Hopkins Bloomberg School of Public Health and Center for Gun Violence Solutions. <https://publichealth.jhu.edu/sites/default/files/2023-03/estimating-the-effects-of-safe-streets-baltimore-on-gun-violence-march-2023.pdf>

White House. (2021a, April 7). Fact sheet: More details on the Biden-Harris administration’s investments in community violence interventions [Press release]. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/07/fact-sheet-more-details-on-the-biden-harris-administrations-investments-in-community-violence-interventions/>

White House. (2021b, June 23). Fact sheet: Biden-Harris administration announces comprehensive strategy to prevent and respond to gun crime and ensure public safety [Press release]. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/06/23/fact-sheet-biden-harris-administration-announces-comprehensive-strategy-to-prevent-and-respond-to-gun-crime-and-ensure-public-safety/>

Wical, W., Richardson, J., & Bullock, C. (2020). A credible messenger: The role of the violence intervention specialist in the lives of young black male survivors of violence. *Violence and Gender*, 7(2), 66–69. <https://doi.org/10.1089/vio.2019.0026>

Wiebe, D. J., Blackstone, M. M., Mollen, C. J., Culyba, A. J., & Fein, J. A. (2011). Self-reported violence-related outcomes for adolescents within eight weeks of emergency department treatment for assault injury. *Journal of Adolescent Health*, 49(4), 440–442. <https://doi.org/10.1016/j.jadohealth.2011.01.009>

Yeter, D., Banks, E. C., & Aschner, M. (2020). Disparity in risk factor severity for early childhood blood lead among predominantly African-American black children: The 1999 to 2010 US NHANES. *International Journal of Environmental Research and Public Health*, 17(5), 1552. <https://doi.org/10.3390/ijerph17051552>

Zavala, C., Buggs, S. A., & Fischer, K. R. (2022). States should use Medicaid to support violence intervention efforts. *Journal of Trauma and Acute Care Surgery*, 92(2), e25–e27. <https://doi.org/10.1097/TA.0000000000003471>

*"Firearm injury has reached epidemic proportions in the United States. Now is the time to move forward with specific strategies that evidence shows will reduce the harms associated with firearms. It is also time to adopt a comprehensive approach designed to expand our understanding of firearm injury and develop new ways to tackle this problem."*

**– THE ASPEN HEALTH STRATEGY GROUP**

**48,830 FIREARM DEATHS - OR 134 EACH DAY -  
OCCURRED IN THE US IN 2021 (CDC, 2021)**



## Image Citations



P. 1: Ivan Pierre Aguirre, The New York Times/Redux

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P. 25: Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System, Mortality 2018-2021 on CDC WONDER Online Database, released in 2021. <http://wonder.cdc.gov/ucd-icd10-expanded.html> (iStock image)

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P. 39: Gun Violence Archive  
<https://www.gunviolencearchive.org/charts-and-maps>

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P. 51: Gun Violence Archive past years  
<https://www.gunviolencearchive.org/past-tolls> (iStock image)

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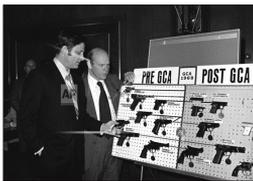
P. 61: This is Our APPS Program (video). State of California - Department of Justice - Office of the Attorney General.  
<https://oag.ca.gov/ogvp/apps-database>



**P. 65:** <https://www.cdc.gov/violenceprevention/pdf/cardiffmodel/cardiff-toolkit508.pdf>



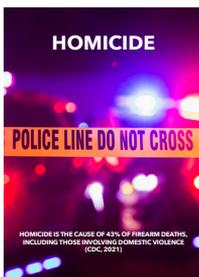
**P. 75:** Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System, Mortality 2018-2021 on CDC WONDER Online Database, released in 2021. <http://wonder.cdc.gov/ucd-icd10-expanded.html> (iStock image)



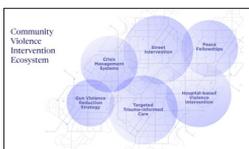
**P. 80:** AP Photo/Henry Griffin. ID: 7504230124



**P. 81:** Stream Pipe Trunk Distribution Venue, Flickr <https://www.flickr.com/photos/waffleboy/20423952292>



**P. 95:** Centers for Disease Control and Prevention. (2023). WISQARS—Web-based Injury Statistics Query and Reporting System. <https://www.cdc.gov/injury/wisqars/index.html> (iStock image)



**P. 100:** Community Violence Intervention Ecosystem. The Health Alliance for Violence Intervention. [www.thehavi.org](http://www.thehavi.org)



**P. 102:** Hospital-Based Violence Intervention Programs (HVIPS). The Health Alliance for Violence Intervention. [www.thehavi.org](http://www.thehavi.org)

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**P. 109:** Lamkey Rod/CNP/ABACA/Shutterstock

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**P. 119:** Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System, Mortality 2018-2021 on CDC WONDER Online Database, released in 2021. <http://wonder.cdc.gov/ucd-icd10-expanded.html> (Shutterstock image)

# REDUCING THE HEALTH HARMS OF FIREARM INJURY

A Report of the Aspen Health Strategy Group

The mission of the Aspen Health Strategy Group (AHSG), part of the Health, Medicine & Society Program at the Aspen Institute, is to promote improvements in policy and practice by providing leadership on complex health issues. AHSG brings together senior leaders representing a mix of influential sectors, including health, business, philanthropy, and technology, to tackle a single health issue annually through year-long, in-depth study. Co-chairs are Kathleen Sebelius, 21st U.S. Secretary of Health and Human Services and former Governor of the State of Kansas, and William Frist, former U.S. Senator from Tennessee and former Senate Majority Leader.

The topic of AHSG's ninth annual report is reducing the health harms of firearm injury. This compilation opens with a consensus report based on the group's in-depth learning process, followed by a set of background papers. Taken together, these papers explore the causes and consequences of gun violence, but also the opportunities - using the tools of public health - to lessen the terrible toll of injury and death associated with firearms.



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