

# COMMENT

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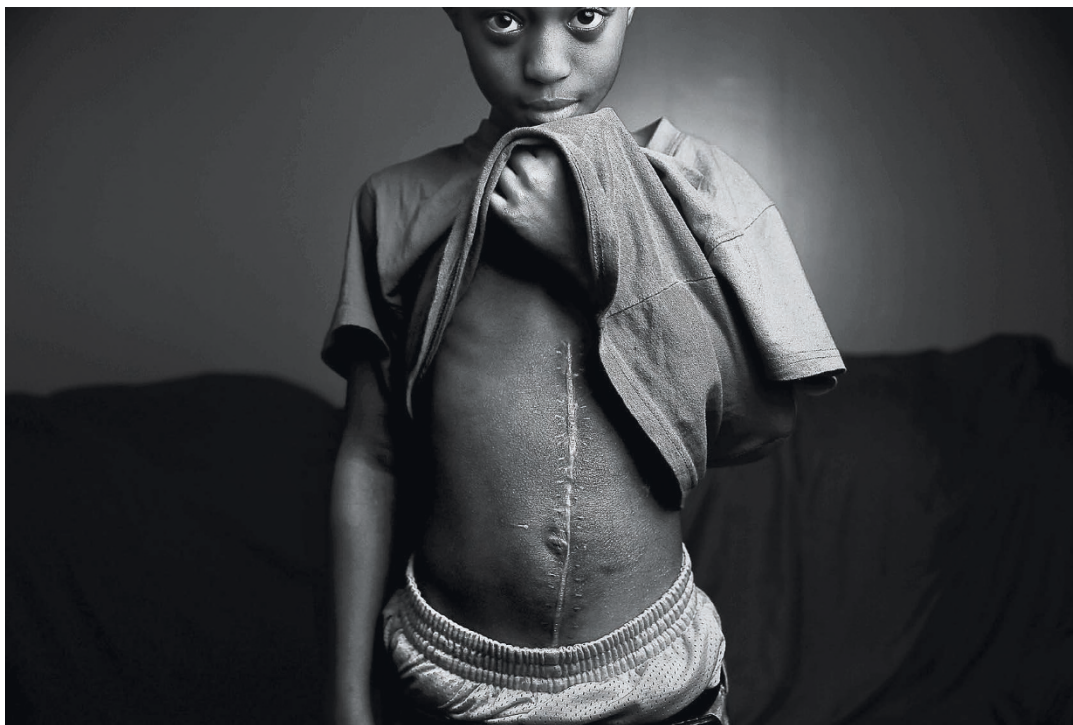


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E. JASON WAMBSGANS/CHICAGO TRIBUNE/ZUMA



This 11-year-old boy from Chicago was shot at his home.

## Fight the silencing of gun research

As anti-science sentiment sweeps the world, it is vital to stop the suppression of firearms studies, argues **David Hemenway**.

In the half-century since the assassination of Martin Luther King, more civilians in the United States have been killed with guns than American soldiers have died in all US wars since the nation was founded in 1776. Currently, on an average day, about 300 Americans are shot and 100 die from gunshot wounds — in murders, attempted suicides or accidents (see [go.nature.com/2qnp4m2](http://go.nature.com/2qnp4m2)).

And the problem may be worsening. According to one study, the rate of mass shootings tripled between 2011 and 2014 (see [go.nature.com/2rkdtaw](http://go.nature.com/2rkdtaw)). During the

past decade, gun suicides increased by 30%; gun murders increased by more than 18% from 2014 to 2015; and 2015 saw 2,600 more gun deaths than 2014 (see [go.nature.com/2qnp4m2](http://go.nature.com/2qnp4m2)).

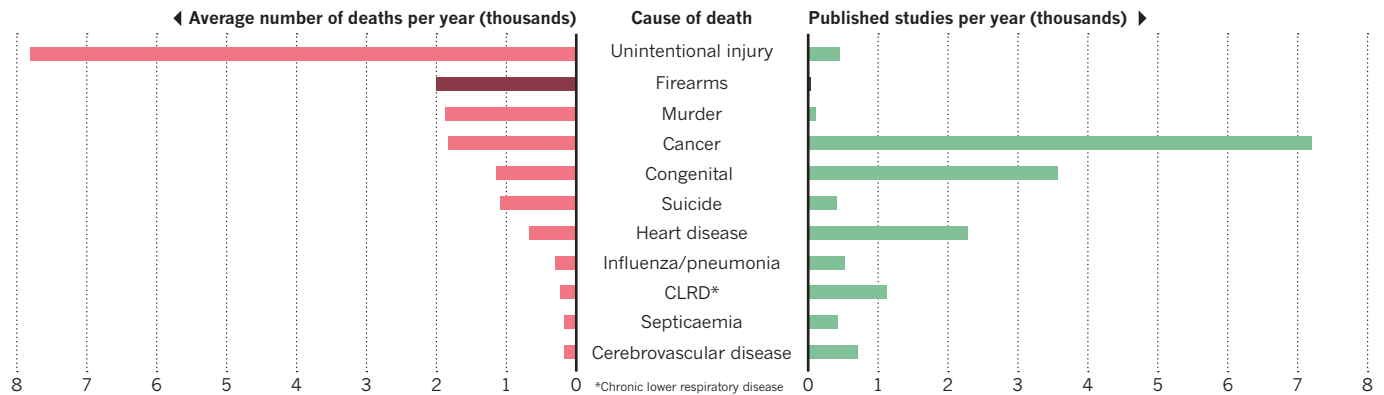
Yet the US government, at the behest of the gun lobby, limits the collection of data, prevents researchers from obtaining much of the data that are collected and severely restricts the funds available for research on guns. I have watched this first-hand, being one of a half-dozen or so gun researchers in the United States who has continuously published in this field over the past two decades.

During his presidency, Barack Obama made little headway in addressing the US gun problem. From 2013, Congress continually blocked his attempt to provide the principal public-health agency, the Centers for Disease Control and Prevention (CDC), with funds to support firearms research. Overall, his accomplishments were minor — administrative tweaks to improve the background-check system used to determine whether someone is eligible to purchase a firearm, for instance.

Now I'm even more worried. President Donald Trump has declared that he will eliminate gun-free zones in schools and ►

## UNDER-STUDIED

Nearly 2,000 children (aged 1–17) died in the United States between 1991 and 2010 from injuries caused by firearms. Very few studies on guns were published during this period. Publications on firearms are compared to those on ten leading causes of death. 'Unintentional injury', 'murder' and 'suicide' include deaths caused by firearms.



SOURCES: J. A. LADAPPO ET AL. J. AM. MED. ASSOC. 310, 532–534 (2013)/CDC

► military bases. He intends to roll back Obama's executive orders, and promote a national right to carry guns by insisting that states with more stringent gun requirements recognize permits obtained in other states for carrying a concealed weapon.

Because of a two-decade stranglehold on US gun research, there are few, if any, scientific studies for people to refer to when promoting or countering proposed changes to gun control. Policymakers are essentially flying blind for what is currently classified as the third leading cause of US injury and death, after motor vehicles and opioids (see [go.nature.com/2rpky2y](http://go.nature.com/2rpky2y)).

In April, tens of thousands of people gathered in Washington DC and more than 600 other cities to support research and evidence-based policymaking. Scientific associations, private foundations and others who care about scientific enquiry should harness this energy to combat the suppression of gun research. Indeed, the experiences of US firearms researchers should be a wake-up call for anyone questioning how much scientists' activities can be curtailed in a democratic society.

## CUTTING DEATHS

Eight years ago, I wrote *While We Were Sleeping* (Univ. California Press, 2009), a book about 64 public-health success stories around the world tied to injury and violence prevention. In most cases, data and research were crucial to success.

For example, studies conducted between the 1960s and 1990s showed that, in the United States, 16-year-old drivers were 10 times more likely to die behind the wheel than 40-year-olds, and 3 times more likely to die than 19-year-olds. A 1971 study of North Carolina drivers found that young people were at particularly high risk of being killed at night and when other teens were in the front passenger seat. These findings were replicated over the next two decades, thanks in part to data obtained by the Fatality Analysis Reporting System (FARS) created by the National

Highway Traffic Safety Administration.

From 1997, following the lead of New Zealand, a few US states created 'graduated licensing systems' on the back of these findings: teens could drive, but only under certain circumstances, such as during the day. Statistical evaluations using FARS data showed the public-health benefits of these laws. Within a decade, similar laws were adopted in all 50 states. These have reduced the crash risk of 16-year-olds by 20–40% (ref. 1).

Good data systems have been important for promoting and evaluating many other successful injury-prevention programmes and interventions. New pedestrian policies in the Netherlands, including traffic-calming measures such as speed bumps, reduced pedestrian fatalities by 73% between 1975 and 2001. And a host of programmes in Sweden — such as free swimming lessons and the construction of walking paths to playgrounds and schools — reduced rates of injury-induced child deaths to the lowest in the world. Data were also important for the 1997 motorcycle helmet law in Taiwan, which reduced head-injury fatalities by 22% (ref. 2), and for the 2002 road-traffic laws in Japan, which reduced alcohol-related traffic fatalities per billion kilometres by 38% (ref. 3).

Thanks to these kinds of success, evidence-based policy has become a mantra in governments worldwide. This makes the absence of research on the use of firearms in the United States even more glaring.

## SMALL DATA

Among the world's two-dozen highest-income countries, the United States has average rates of non-gun crime and violence. But with many more guns and the weakest gun laws, it has by far the most gun deaths per capita. An American 5- to 14-year-old is more than 18 times more likely to be murdered with a gun, 11 times more likely to use a gun to take their own life and 12 times more likely to be killed in a gun accident than children of the same age in other high-income

countries<sup>4</sup>. Compared with older age groups, 5- to 14-year-olds have low rates of firearm mortality. Still, in the past decade, a yearly average of 182 children were victims of firearm murders, 96 used a gun to kill themselves and 36 were killed unintentionally with a gun (see [go.nature.com/2qnp4m2](http://go.nature.com/2qnp4m2)). Although more than 300 died each year from firearms, many times that number were shot and survived.

Meanwhile the CDC's National Violent Death Reporting System has still not been established in ten states because of insufficient funds. This standardized surveillance system, modelled on FARS, assembles data from death certificates, police reports and the findings of medical examiners or coroners. The missing states, such as Idaho, Montana, Texas and Florida, are mainly in the south or mountain states, where rates of gun ownership and gun death are high.

In 2005, the CDC also eliminated the two questions on firearms that used to be in its Behavioral Risk Factor Surveillance System. This is an annual telephone survey of more than 400,000 adults, designed to reveal trends in health-related behaviours such as sleep, seat-belt use and immunizations.

Data on guns traced at the request of the police are collected by the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). But since 2003, amendments have prohibited the ATF from releasing these data for use by researchers or others. At the state level, data related to concealed-carry permits — the types of individual who obtain permits, the number and types of felony they commit, and so on — are almost impossible to obtain.

Worse, federal funding for firearms research has all but disappeared since 1996 — after the 1994 mid-term elections had resulted in Republicans taking over Congress. A recent analysis<sup>5</sup> indicated that, given the size of the public-health problem (see 'Under-studied'), firearms research funding for 2004–15 should have been US\$1.4 billion. The actual figure was less

than one-sixtieth of that: \$22 million.

Currently, the CDC does not fund any firearms research. It has not been prohibited from doing so. But, in my view, its leaders fear their organization being punished. At scientific meetings in the past two decades, I have encountered CDC personnel who are afraid to say the words 'guns' or 'firearms'. If I am on the phone to a CDC scientist and the conversation turns to firearms, usually they ask if they can call me back from their private mobile phone and then go outside to do so. And who can blame them? Former US surgeon general Vivek Murthy, whose nomination by Obama met initial resistance because he once said that gun violence was a public-health issue, was dismissed by Trump in April.

Other federal funders have not stepped up. For example, between 1973 and 2012, the National Institutes of Health (NIH) gave 486 grants for the study of cholera, diphtheria, polio and rabies, during which time there were around 2,000 cases of these 4 diseases. In this same period, the NIH doled out three research grants for work on firearms (see [go.nature.com/2sdtjpb](http://go.nature.com/2sdtjpb)), and more than 4 million civilians were shot.

Likewise, few foundations have ventured into gun research. This may be because at least one person on the board is a member of, or a supporter of, the gun lobby. More likely, it is to avoid being attacked. The Joyce Foundation in Chicago, Illinois, which has allocated around \$3 million a year to support gun-violence prevention in the past 20 years — is branded as 'gun grabbers' or 'anti-firearm zealots' by gun advocates. Who would want the hassle when there are so many other issues worth supporting?

## REASONS FOR HOPE

So what can be done? It is difficult to get funding to do gun research. And when my research is discussed in the media, I can count on receiving nasty and bizarre e-mails: "You are an ignorant fool or an intolerable liar"; "Stop embarrassing Harvard"; or "Your entire reputation rests on media bias". Yet working on firearms issues is rewarding — in large part, because it is easy to break new ground, and any advance can save lives.

In April, for example, my colleagues and I published the first journal article<sup>6</sup> on gun theft, showing among other things that 60% or more of stolen guns come from the south of the United States. Such information could help law enforcers to direct their efforts more effectively: more than 300,000 guns are stolen each year, and gun theft seems to be a prime way for guns to get into illegal hands. (We are now writing the first article on what is actually taught in gun-training classes.)

One of the few facts supported by overwhelming scientific evidence is that, in the United States, people with guns in their

homes are three times more likely to die from suicide<sup>7</sup>. Working with experts in public health and suicide prevention, physicians, gun retailers, trainers and advocates, we are trying to find ways to reduce people's access to guns during high-risk periods for suicide<sup>8</sup>.

Studies from other countries have shown that changing the means by which people can take their own lives can have a dramatic impact on overall suicide rates. In Switzerland, for instance, suicide deaths fell after the number of Swiss soldiers was halved in 2003 and 2004. (Fewer soldiers meant a decrease in the availability of guns nationwide<sup>9</sup>, among other variables.) One possibility in the United States is to try to convey the risk in gun-training classes, and have trainers recommend that people put their guns into the care of some-

## PEOPLE WITH GUNS IN THEIR HOMES ARE THREE TIMES MORE LIKELY TO DIE FROM SUICIDE.

one else if household members show signs of depression or other mental-health issues.

Another reason for hope is that one state has already shown how much can be achieved with a small injection of resources. California, the most populous state, now has the strongest US gun laws, as judged by the Law Center to Prevent Gun Violence in San Francisco. These laws seem to be proving effective: rates of firearm fatalities in California fell by more than 55% between 1993 and 2015 (see [go.nature.com/2qnp4m2](http://go.nature.com/2qnp4m2)).

Among the various restrictions in California, background checks are required for all gun purchases; most assault weapons (semi-automatic firearms designed for rapid fire and combat use) are banned; handgun purchases are limited to one per person per month to reduce gun trafficking; and police can use their discretion when it comes to granting people a concealed-carry permit. As of January 2016, California was also the first state to put a firearms restraining order into effect (see [go.nature.com/2qay4qt](http://go.nature.com/2qay4qt)). Modelled on restraining orders for domestic violence, this gives families and police the right to petition for the removal of firearms from potentially dangerous individuals.

Establishing more stringent gun-control laws is much easier to do on the back of good data. And, in my view, a lot of the credit for California's legal changes goes to one funder, the California Wellness Foundation in Woodland Hills. It made the reduction of violence

in its home state a major focus when it was established in 1992. It has since provided more than \$130 million for activities designed to help prevent violence, including data collection and research. California, with its thorough tracking system for gun purchases and state funds for independent firearms research, offers a template for what other states can do. And the Wellness Foundation shows what other granting agencies might do.

Perhaps the single most important shift that needs to happen, however, is the broader realization, both in the United States and elsewhere, of the harm that can come from lobbyists blocking or misrepresenting research. A law in Florida — ruled unconstitutional in February — would have made physicians fearful of talking about guns with their patients. They could talk about wearing seat belts and getting exercise, but might lose their licence if they 'inappropriately' talked about the dangers of guns in the home<sup>10</sup>.

Alarming, the gun lobby is increasingly aligning itself with a broad political movement that sees science not as a search for truth and understanding, but as a tool for promoting partisan agendas (see [go.nature.com/2sderwh](http://go.nature.com/2sderwh)). The American Bar Association and many medical societies have spoken out on the firearm funding limitations imposed by Congress<sup>11</sup>. Now all scientific associations need to add their voices.

The following construction is overused, but in this context, it is felicitous: first they came after firearms research, but I did not speak up because I do not engage in firearms research. Then they came for the climatologists, but I did not speak up because I am not a climatologist.

The attempt to muzzle research requires constant push-back. I am always shocked to remember how recent the Enlightenment was, and how fragile is the freedom to be able to make careers out of the search for truth. ■

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