

MISFIRES

in the Gun Control Debate

Researchers face roadblocks and a dearth of informative data

By Meghan Rosen

Buying a handgun in Connecticut means waiting—lots of waiting. First comes an eight-hour safety course. Then picking up an application at a local police department. Review of the application (which includes a background check and fingerprinting) can take up to eight weeks. If approved, the state issues a temporary permit, which the buyer trades in at state police headquarters for a permanent one. Then it's back to the store for the gun.

Head west to Missouri, though, and buying a

handgun is practically a cakewalk. Customers at Osage County Guns in Belle, Mo., for example, can walk into the store and walk out with a gun if they pass the FBI's instant background check, says John Dawson, the store's chief technical officer.

"If a person knew exactly what they wanted," he says, the store could, "in theory, complete the transaction in about 15 minutes."

Missouri and Connecticut have staked out opposite ends of the gun law spectrum. Connecticut didn't require handgun buyers to get a permit until 1995. Missouri had a tough law on the books, but repealed it in 2007. The states' laws have flip-flopped, making for a fascinating natural experiment on gun laws' effects on gun violence.

The states "had mirror image policy changes, and mirror image results," says Daniel Webster, a health policy researcher at Johns Hopkins University.

Flipping the laws was associated with 15 percent fewer gun suicides in Connecticut and 16 percent more in Missouri, a statistical analysis by Webster and colleagues, published last year in *Preventive Medicine*, estimated. Similar analyses by Webster



Handguns on display at the Shooting, Hunting and Outdoor Trade Show in Las Vegas in January.

JOHN LOCHER/AP IMAGES

in 2014 and 2015 indicated a 40 percent reduction in Connecticut gun homicide numbers, and an 18 percent rise in Missouri.

The evidence is very suggestive, says Harvard University researcher David Hemenway. But it's not extensive enough to persuade everyone — or to move national policy.

In fact, questions loom about the impact of all sorts of policies, from background checks to assault weapons bans to gun buybacks. That's partly because gun research faces roadblocks at every turn: Scientists have to deal with data shutouts, slashed funding and, occasionally, harassment.

For a few questions, however, researchers have come up with solid answers: There's a convincing link between gun availability and gun suicide, for one. And studies from the United States and abroad suggest that some gun laws do rein in gun violence. To make firm conclusions, though, scientists are desperate for more data.

But the U.S. Centers for Disease Control and Prevention can't collect gun data like it used to, and information about guns used in individual crimes is locked up tight. Under current federal laws, Hemenway says, "It's almost impossible for researchers to get even the data that are available."

Locked up

In a squat brick building tucked in the hills of Martinsburg, W.Va., gun data are overflowing.

Thousands of cardboard boxes, stacked high in tidy columns, line the hallways of the federal government's National Tracing Center. In the parking lot, steel shipping containers hold even more boxes. Each box contains about 2,000 pages of gun purchase records. To trace a gun, the center's employees often search through these records by hand.

That's their job: tracking when and where guns used in crimes were originally purchased, and by whom. It's a huge undertaking: In 2015, the center, part of the Bureau of Alcohol, Tobacco, Firearms and Explosives, or ATF, received more than 373,000 gun trace requests from law enforcement.

Such a mass of data is a researcher's dream. But current laws keep gun traces secret. The agency shares traces only with law enforcement. The public can see just summaries or aggregate data.

Webster has used this data to paint a rough picture of how Missouri's repeal affected the flow of guns to criminals. In 2006, when buying a handgun required a permit, 56.4 percent of guns

recovered by police had been originally sold by a Missouri gun dealer. In 2012, five years after the state nixed the permit requirement, the number rose to 71.8 percent, Webster and colleagues reported in the *Journal of Urban Health* in 2014.

The findings suggest that it's easier now for criminals in Missouri to get their hands on legally purchased guns. But Webster can't say for certain whether more guns are moving to criminals — or whether legal gun owners are committing more crimes. For that, he'd need to see the individual gun traces.

About a decade ago, researchers who wanted such detailed data could get it. "We'd just hand them a DVD," says ATF information specialist Neil Troppman. "Those days are long over."

A handful of laws snarl the process, from how a gun trace begins to who can see the data.

One big hitch in the system: Police officers who find a gun at a crime scene can't always look up the

owner's name on a computer. That's because there is no national registry — no searchable database of guns and their owners. To set one up would be illegal. So police have to submit a request to the tracing center, which tracks the gun's movement from manufacturer or importer to dealer. Then the ATF can ask the dealer who bought the gun. If the dealer has gone out of business, ATF employees dig for the answer themselves, in old gun purchase records stockpiled at the tracing center. The process takes an average of five days. And after law enforcement gets the data, federal law makes sure no one else can see it.

Federal constraints

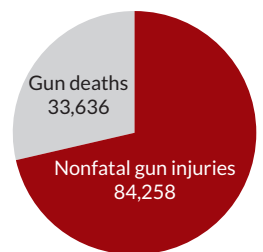
In 2003, Congress unleashed a beast of a bill with an amendment that effectively tore out the ATF's tongue. The Tiahrt amendment was the first in a series of provisions that drastically limited the agency's ability to share its crime gun data — no giving it to researchers, no making it public, no handing it over under Freedom of Information Act requests (the public's channel for tapping into information from the federal government).

Funding for gun control research had dried up a few years earlier. There's no outright ban, but a 1996 amendment had nearly the same effect. It's known as the Dickey amendment, and it barred the CDC from using funds to "advocate or promote gun control." According to a 2013 commentary in *JAMA*, that meant almost any research on guns.

3.8X
higher

Rate of suicides by gun in states with high versus low levels of gun ownership

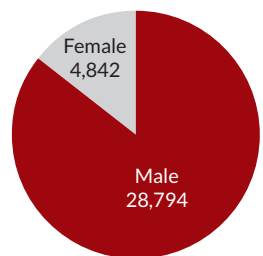
U.S. gun injuries and deaths, 2013



U.S. gun-related deaths

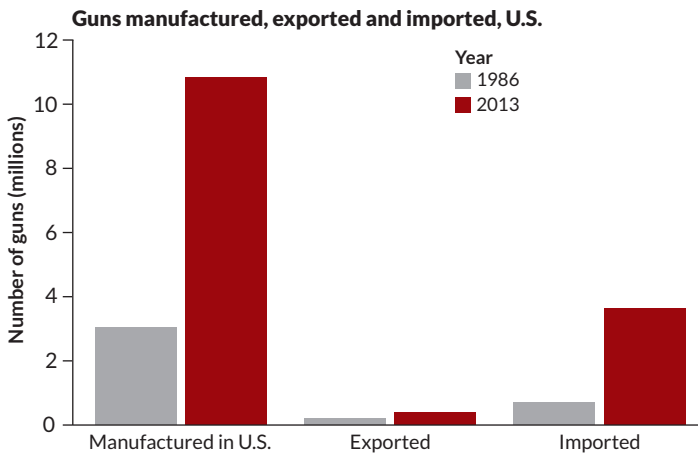


U.S. gun deaths, by sex



Stark reality In 2013, 33,636 people died from gun injuries in the United States (top pie chart). Suicides outnumbered homicides almost 2-to-1 (middle). Males made up the bulk of gun deaths.

SOURCE: CDC



More guns available Both the manufacture and import of guns in the United States have climbed significantly since the mid-1980s. Exports have risen too, but the majority of guns stay in the country. SOURCE: ATF/FIREARMS COMMERCE IN THE UNITED STATES 2015

If the 1996 law’s language was vague, Congress made the message clear by cutting the CDC’s budget by \$2.6 million — exactly the same amount the agency had spent the previous year on gun violence research. The funds were later reinstated, but earmarked for other things. So the CDC largely backed off, except for some basic tallying, says spokesperson Courtney Lenard, because of the funding cuts and because Congress “threatened to impose further cuts if that research continued.”

In 2011, Congress hit the National Institutes of Health with similar restrictions. About a year later, President Obama tried to ease the choke hold: He ordered the CDC to research the causes and prevention of gun violence, and called on Congress to provide \$10 million in funding. Finally, 17 years after the CDC cuts, news reports proclaimed that the ban had been lifted and research could resume. But Congress never authorized the money, and the CDC remained on the sidelines. This April,

nearly 150 health and science organizations, universities and other groups signed a letter urging Congress to restore the CDC’s funding.

Meanwhile, research on gun violence and gun control trudges forward: Researchers can sometimes convince law enforcement agencies to share data on guns linked to crimes, and grants can come from private foundations. Yet even with limits on research, the science in some cases is solid: A gun in the home, for example, increases the odds a person will commit suicide by about 3-to-1. Here, Hemenway says, “The weight of the evidence is overwhelming.”

But how to use laws to reduce gun violence remains hotly contested, and opinions among the public, and even scientists, are polarized.

Critics of gun control laws think the matter is clear: Again and again studies show that gun control policies just don’t work, says economist John Lott, who has written extensively on the subject. Take background checks, he says, “Given that these laws are costly, you’d like to believe there’s some evidence that they produce a benefit.”

Webster acknowledges the divisive split in opinions. “The vast majority of people are on one side of the fence or the other,” he says. “They’ll point to a study that is convenient to their political arguments and call it a day.”

Bad for your health

For researchers who manage to navigate the legal tangles and funding troubles of gun research, actually doing the research itself isn’t easy.

Unlike clinical trials in medicine, where scientists can give, for example, a cholesterol drug to half a study’s participants and then compare the effects between users and nonusers, scientists studying gun violence can’t dole out new handguns

to one group and none to another and see what happens.

Instead, researchers turn to observational studies. That means looking at how — and if — suicides track with gun ownership in different groups of people and over time, for example. Finding a link between two observations doesn’t necessarily mean they’re connected. (People have linked the yearly number of Nicolas Cage movies to swimming pool drownings, after all.) But finding a lot of links can be telling.



Roughly 10,000 boxes full of gun purchase records line the halls and walls of the federal government’s National Tracing Center in Martinsburg, W.Va.

For suicides, the link to gun access holds strong — among old people, young people, women, adolescents, “you name it,” Hemenway says. Lots of guns means lots of suicides by gun, he says.

In 2007, Hemenway and colleagues examined gun ownership rates and statewide suicide data from 2000 to 2002. People in states with a high percentage of gun owners (including Wyoming, South Dakota and Alaska) were almost four times as likely to kill themselves with guns as people living in states with relatively few gun owners (such as Hawaii, Massachusetts and Rhode Island), the researchers reported in the *Journal of Trauma Injury, Infection and Critical Care*.

More recently, a 2013 study in Switzerland compared suicide rates before and after an army reform that cut the number of Swiss soldiers by half. After the reform, fewer people had access to army-issued guns — and the suicide rate dipped down by about two per 100,000 men age 18–43. That’s about 30 men each year who didn’t die from suicide, the study’s authors estimated in the *American Journal of Psychiatry*.

A 2014 review of 16 such studies, published in the *Annals of Internal Medicine*, came to the same conclusion, again: Access to guns meant higher risk of suicide.

“The evidence is unassailable,” says Stanford University criminologist John Donohue. “It’s as strong as you can get.”

Mental illness factors into suicide too, says Jeffrey Swanson, a medical sociologist at Duke University. (Some 21 to 44 percent of suicides reported to the CDC are committed by people with mental health problems.) And federal laws aren’t particularly good at keeping guns away from mentally ill people. A 1968 law prohibits gun sales to a narrow slice of people with a history of mental illness, but it’s easy for others to slip through the cracks. Even people the law does target can end up with guns — because states don’t have to report mental health records to the FBI’s national background-check system.

“You’ve got tons of records that would disqualify people from buying guns,” Swanson says, but they don’t necessarily make it into the system.

Even if the United States had a perfect mental health care system and cured schizophrenia and bipolar disorder and depression, he says, the overall problem of gun violence would still exist. Mentally ill people just aren’t that violent

toward others, Swanson noted in the *Annals of Epidemiology* in 2015. In fact, people with mental illness committed fewer than 5 percent of U.S. gun killings between 2001 and 2010, according to the CDC.

“People think that in order to fix gun violence, we need to fix the mental health care system,” Swanson says. That’s wrong, he argues. “It’s a diversion from talking about guns.”

Weak laws

After Sandy Hook, San Bernardino and other high-profile mass shootings, people have been talking about what gun control laws, if any, actually work.

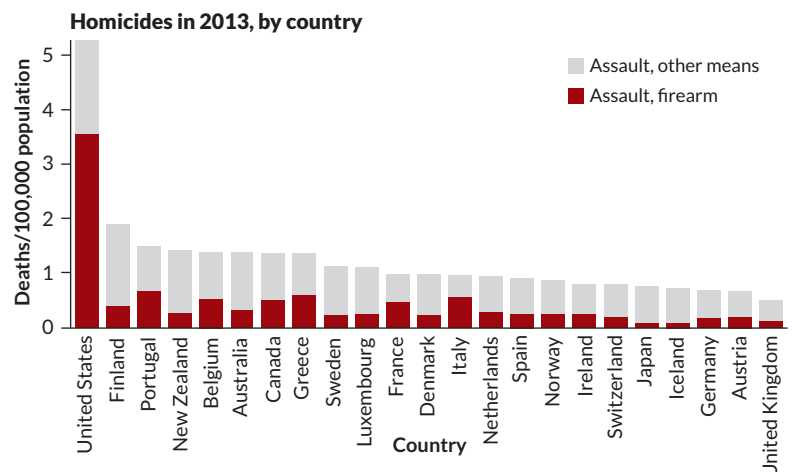
Unfortunately, there’s just not enough evidence to make strong conclusions about most laws, Hemenway says. In 2005, for example, a federal task force reviewed 51 studies of gun laws, mostly in the United States, and came up empty-handed. The task force couldn’t say whether any one of the laws made much of a difference. The efficacy of U.S. gun laws is hard to pin down

for two main reasons, Hemenway says: Gun laws aren’t typically very strong, and studies tend to look at overall effects on violence.

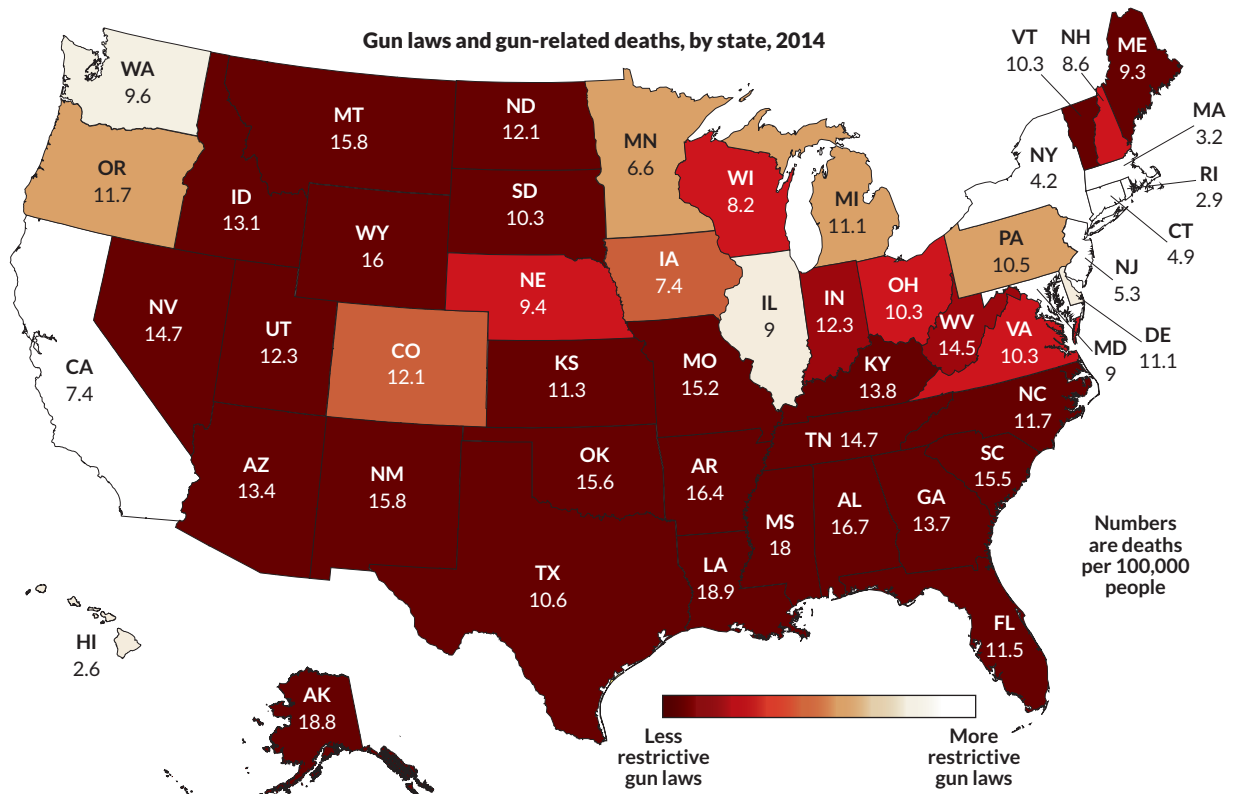
One major study published in *JAMA* in 2000 analyzed suicide and homicide data from 1985 to 1997 to evaluate the impact of the Brady Act, a 1994 federal law that requires background checks for people buying guns.

Eighteen states and the District of Columbia already followed the law. So researchers compared

People with mental illness committed fewer than 5 percent of U.S. gun killings between 2001 and 2010.



Standing out In 2013, the United States led 22 countries in deaths from gun homicides (red). The rates of other homicides (gray) were closer to rates in other countries. SOURCE: GLOBAL BURDEN OF DISEASES, INJURIES AND RISK FACTORS, INST. HEALTH METRICS AND EVAL.



Making connections Gun laws vary dramatically across the United States. Public health researchers have linked states' gun laws to levels of gun violence. Louisiana and Alaska, for example, led the country in the number of gun deaths per 100,000 people in 2014. These states also have weaker gun laws (darker colors) than states such as California and New York (lighter colors). SOURCES: CDC, LAW CENTER TO PREVENT GUN VIOLENCE

suicide and homicide rates with those in the 32 states new to the law. If Brady curbed gun violence, those 32 states should see dips in deaths.

That didn't happen (with one exception: Gun suicides in those states dropped in people age 55 and older — by about 1 per 100,000 people).

"I don't think anybody was really shocked," Webster says. After all, Brady had a gaping hole: It didn't require background checks for guns bought from private sellers (including those at gun shows). The loophole neutered Brady: People who didn't want a background check could simply find a willing private seller. That's just too easy, Webster says: It's like letting people decide whether they want to go through the metal detector at the airport.

Like the Brady Act, the 1994 Federal Assault Weapons Ban didn't seem to do much to prevent violence, criminologist Christopher Koper and colleagues concluded in a 2004 report to the U.S. Department of Justice. The law, which expired in 2004, imposed a 10-year ban on sales of military-style semiautomatic guns. These weapons fire one bullet per trigger squeeze and have features like threaded barrels (which can be used

for screwing on silencers) or barrel mounts (for attaching bayonets). The 1994 law also banned most large-capacity magazines (storage devices that feed guns more than 10 rounds of ammo).

But like Brady, the ban came with a catch: It didn't apply to weapons and magazines made before September 13, 1994. That's a lot of exemptions. At the time, the United States had more than 1.5 million assault weapons and nearly 25 million guns with large-capacity magazines, reported Koper, of George Mason University in Fairfax, Va.

"The more complete the bans are, the better the effects seem to be," Donohue says. Take Australia: In 1996, the country enacted strict laws and a gun buyback program after a mass shooting killed 35 people in Tasmania. The ban made certain long-barreled guns illegal (including semiautomatic rifles and pump-action shotguns — weapons that let people fire lots of rounds quickly), and the country bought back and destroyed more than 650,000 guns.

With the law, Donohue says, "Australia effectively ended the problem of mass shootings."

And as economists Christine Neill and Andrew

Leigh found, the law drastically cut down the number of gun suicides, too.

Tough laws

Eleven years after Australia launched its tough gun control legislation, Neill, of Wilfrid Laurier University in Canada, and Leigh, then at Australian National University in Canberra, announced that the law might actually be saving lives.

Critics attacked. One petitioned Neill’s university to reprimand her. Then they came for Leigh’s e-mails. He had to hand over any that mentioned firearms or guns. Had there been anything improper — any whiff that the researchers were biased — Neill believes gun advocates would have pounced.

Neill and Leigh, now an Australian politician, had uncovered telling changes in different regions’ suicide rates between 1990–1995 and 1998–2003. “Firearms suicides fell most in Tasmania, by a long shot,” Neill says, almost 70 percent, the team later reported in 2010 in the *American Law and Economics Review*.

Australia’s law, called the National Firearms Agreement, or NFA, applied to all of the country’s states and territories, but some had more guns than others. Tasmania, for example, had the most guns bought back, Neill says: 7,302 guns per 100,000 people. More guns bought back meant bigger drops in suicide rates, she says.

It’s a stark result, and suggests that tough laws can have big impacts. Australia “did an outright ban and something akin to a confiscation of guns,” Webster says. “That’s never going to happen in the United States.”

Instead, the United States goes for smaller laws, fashioned mostly state-by-state. Still, some may be effective. Blocking domestic violence offenders’ access to guns seems to cut down on homicides, for example. From 1982 to 2002, states with restraining order laws that bar offenders from buying guns had rates of intimate partner homicide that were 10 percent lower than in states lacking the laws, researchers reported in 2006 in *Evaluation Review*.

In 2010, Webster and colleagues reported similar results at the city level. He and colleagues tracked intimate partner homicides from 1979 to 2003 in 46 U.S. cities. Those that made it hard for people with domestic violence restraining orders to get guns had 19 percent fewer intimate partner homicides compared with cities with less stringent laws, the team reported in *Injury Prevention*.

“These are pretty consistent findings,” Webster says. Those state policies seem to be working.

Big picture only Gun trace data are available to researchers only in aggregate. Researchers can look at the total number and the types of guns traced in a state. But they can’t learn the where and when of a gun linked to a specific crime.

Can researchers get these answers?

What gun shop sold the gun?	No
Who bought the gun?	No
When was the gun traced?	No
How long before the gun ended up in a crime?	No

Conclusions about other, more well-known laws, such as “right-to-carry,” are less convincing. Such laws, which allow people to carry concealed handguns in public, could offer people a means of defense. Or they could make it easier for people in an argument to whip out a gun.

“The findings are all over the map,” Hemenway says. A report from the National Research Council in 2005 found no causal link between right-to-carry laws and crime. It also concluded that people do use guns to protect themselves (say, by threatening or shooting an attacker) but how often is hard to say. Estimates vary from 100,000 to 2.5 million times per year in the United States.

Economist Mark Gius of Quinnipiac University in Hamden, Conn., estimated that restricting people’s right to carry boosts a state’s murder rate by 10 percent, he reported in 2014 in *Applied Economics Letters*.

Donohue’s 2014 results lean a different way. The Stanford researcher updated the NRC analysis with more than a decade of new data and found that laws letting people carry concealed weapons boost violent crime — a bit. Based on data from 1979 to 2012, his statistical modeling showed that a state with a right-to-carry law would experience 8 percent more aggravated assaults than a state without such a law, for example.

“More and more evidence is amassing that these laws are harmful,” Donohue says, but he concedes that there’s still uncertainty. “I’m not quite ready to say that we’ve nailed it down.”

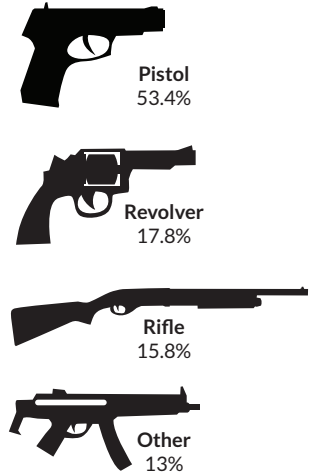
Less uncertainty would require more analyses and more data. But in this field, even that doesn’t guarantee consensus.

“The problem is that there are many ways to slice the data,” Donohue says. “Almost nothing is as clear as the advocates make it — on both sides.” ■

Explore more

- Garen J. Wintemute. “The epidemiology of firearm violence in the twenty-first century United States.” *Annual Review of Public Health*. March 2015.

Types of guns traced, 2014



Pistols were more than half of the 246,087 guns the Bureau of Alcohol, Tobacco, Firearms and Explosives traced for involvement in a crime in the United States and its territories in 2014. Revolvers and rifles were a distant second and third. Other firearms traced included machine guns, tear gas launchers and flare guns.

SOURCE: ATF

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