What Science Tells Us About the Effects of Gun Policies

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Good public policies are based on facts and data, and the most effective laws—including gun laws—are written when policymakers understand the effects of such laws on a range of outcomes and can weigh the inherent trade-offs. For gun policies, relevant outcomes can include, among others, the health of the gun industry, individuals' ability to defend themselves, and homicide and suicide rates. In other words, policymakers need to understand the costs and benefits that different policies are likely to produce for society as a whole, including gun owners, communities wracked by violence, and other affected groups. This is not to say that all lawmakers need is an understanding of the true effects of policies. There are many other considerations as well, such as whether policies are consistent with Second Amendment protections or might infringe on other rights. Nevertheless, understanding the true effects of policies on a variety of outcomes is essential to creating policies that are both fair and effective.

Methodology

Learn more about the guidelines and steps used in our review of gun policy research »

As part of the RAND Gun Policy in America initiative, we conducted rigorous and transparent reviews of what current scientific knowledge could tell the public and policymakers about the true effects of many gun policies that are frequently discussed in state legislatures. Our first such review, released in 2018, synthesized

the available scientific data from studies published between 2004 and 2016 examining how 13 classes of state-level gun policies affect firearm-related deaths, violent crime, the gun industry, participation in hunting and sport shooting, and other outcomes. In 2020, we released an expanded and updated review, which added five new classes of gun policies and extended the period over which we conducted our literature search to span from 1995 to 2018. Another update, expanding the literature search to include studies published through 2020, was released in 2023. With continued growth in the number of new scientific publications on gun policy, we incorporate those studies in our updated analyses, in several areas drawing new or revised conclusions about the quality of evidence available to support claims about the effects of various policies.

We restricted our analyses to only those studies using methods designed to identify possible causal effects of the policies. For instance, studies that reported simple correlations between gun policies and various outcomes at a single point in time did not meet our inclusion criteria, because such studies provide no evidence that it is the gun policy itself that explains the outcome differences rather than other social, demographic, or historical differences between jurisdictions with and without those policies. However, even among the research studies that met our criteria of using methods more appropriate for establishing the causal effects of gun policies, the methodological quality of studies varies. A team of RAND methodologists analyzed the methodological quality of each individual study and then applied standardized and explicit criteria for determining the strength of the evidence provided by the body of research regarding the effect of each policy. We categorized the scientific evidence on a relativistic scale, shown below.

Strength of Evidence Definitions

No Studies

No studies meeting our inclusion criteria evaluated the policy's effect on the outcome.

Inconclusive

Studies with comparable methodological strengths identified inconsistent evidence for the policy's effect on an outcome, or a single study found only uncertain or suggestive effects.

Limited

At least one study meeting our inclusion criteria and not otherwise compromised by noted methodological weaknesses reported a significant effect of the policy on the outcome, and no studies with equivalent or stronger methods provided contradictory evidence.

Moderate

Two or more studies found significant effects in the same direction, and contradictory evidence was not found in other studies with equivalent or stronger methods.

Supportive

Three studies found significant effects in the same direction using at least two independent data sets, and contradictory evidence was not found in other studies with equivalent or stronger methods.

Summarizing the Available Evidence

After reviewing several thousand candidate studies, we identified 152 that met our inclusion criteria. These studies provided evidence for 52 of the 144 main policy effects we set out to examine (that is, the effects of each of the 18 policies on each of the eight main outcomes). We concluded that there was some evidence of an increase or decrease on an outcome for 15 of the policy effects, there was inconclusive evidence for 37 additional effects, and there were no qualifying studies that had evaluated any of the remaining effects (92). The table below summarizes the strength of evidence and direction (increase or decrease) of the effects that the scientific literature currently provides, with links to detailed syntheses of the available research.

Policies Regulating Who May Legally Own, Purchase, or Possess Firearms

	DEFENSIVE GUN USE	GUN INDUSTRY OUTCOMES	HUNTING AND RECREATION	MASS SHOOTINGS	POLICE SHOOTINGS	SUICIDE
Extreme Risk Protection Orders				Inconclusive		Limited
Minimum Age Requirements				Inconclusive		Supportive
Prohibitions Associated with Domestic Violence				Inconclusive		Inconclusive
Prohibitions Associated with Mental Illness						Inconclusive
Surrender of Firearms by Prohibited Possessors				Inconclusive		Inconclusive

Policies Regulating Firearm Sales and Transfers

	DEFENSIVE GUN USE	GUN INDUSTRY OUTCOMES	HUNTING AND RECREATION	MASS SHOOTINGS	POLICE SHOOTINGS	SUICIDE
Background Checks		Inconclusive		Inconclusive	Inconclusive	Inconclusive
Bans of Low-Quality Handguns		Inconclusive				Inconclusive
Bans on the Sale of Assault Weapons and High-Capacity Magazines		Limited		Limited	Inconclusive	Inconclusive
Firearm Safety Training Requirements		Inconclusive		Inconclusive		
Firearm Sales Reporting, Recording, and Registration Requirements		Inconclusive		Inconclusive		Inconclusive

	DEFENSIVE GUN USE	GUN INDUSTRY OUTCOMES	HUNTING AND RECREATION	MASS SHOOTINGS	POLICE SHOOTINGS	SUICIDE
Licensing and Permitting Requirements		Inconclusive		Limited		Inconclusive
Lost or Stolen Firearm Reporting Requirements						
Waiting Periods		Inconclusive		Inconclusive		Moderate

Policies Regulating the Legal Use, Storage, or Carrying of Firearms

	DEFENSIVE GUN USE	GUN INDUSTRY OUTCOMES	HUNTING AND RECREATION	MASS SHOOTINGS	POLICE SHOOTINGS	SUICIDE
Child-Access Prevention Laws		Inconclusive		Inconclusive		Supportive
Concealed-Carry Laws		Inconclusive		Inconclusive	Limited	Inconclusive
Gun-Free Zones						
Laws Allowing Armed Staff in K–12 Schools						
Stand-Your-Ground Laws	Inconclusive	Inconclusive		Inconclusive		Inconclusive

Across all of the 18 policies that we examined, only three—child-access prevention laws, concealed carry laws, and stand-your-ground laws—had evidence that we classified as *supportive*, our highest evidence rating, for an effect on a particular outcome. Specifically, there is supportive evidence that child-access prevention laws reduce firearm self-injuries (including suicides), firearm homicides or assault injuries, and unintentional firearm injuries and deaths among youth. In addition, we found supportive evidence that stand-your-ground laws increase firearm homicides and supportive evidence that shall-issue concealed carry laws increase total and firearm homicides.

Notably, all three of these types of laws differ from many of the other policies we considered in our analysis. Most of the other policies affect either the small proportion of guns that are newly acquired every year (e.g., background checks, waiting periods) or a relatively small proportion of gun owners (e.g., prohibitions that target the mentally ill or domestic violence offenders). The three laws for which we found stronger evidence, in contrast, influence how the existing stock of gun owners can legally store, carry, or use their firearms. With such large numbers of guns potentially affected, these laws may have greater chances of producing observable effects in population-level statistics than other types of laws.

Our conclusions for concealed carry laws differ from those in our previous review of the research, which found only inconclusive evidence for the effect of such laws on total and firearm homicides. However, eight new studies meeting our inclusion criteria have since been published, and all but one of these studies suggest that less

restrictive concealed carry permitting laws elevate homicide rates; one finds uncertain effects. Given the effect sizes and evidence that concealed carry permit holders are rarely convicted for violent crimes (e.g., Texas Department of Public Safety, 2022; Minnesota Department of Public Safety, 2022), it is unlikely that increased homicides perpetrated by legal concealed carry permit holders represent a substantive mechanism driving these effects. However, widespread behavioral changes associated with more-permissive concealed-carry laws, such as increased prevalence of handgun carrying (e.g., Rowhani-Rahbar et al., 2017), may have unintended consequences that could explain the association of these laws with increased homicides. For instance, it could be that as more people carry firearms, there are more opportunities for these firearms to be stolen and thereafter enter criminal firearm markets (e.g., see Donohue et al., 2022). Conceivably, as more law-abiding citizens carry weapons, others who may be higher-risk and prohibited from possessing a firearm become more likely to carry guns illegally. Again, these are candidate theories that may or may not explain the observed effects of these laws. More research is needed to understand the true mechanisms driving these effects, particularly considering changes to concealed-carry legislation in response to the 2022 Supreme Court decision in *New York State Rifle and Pistol Association v. Bruen*.

We found moderate evidence, our second-highest evidence rating, that background check requirements reduce total and firearm homicides. Most of the studies in this area examined the effects of dealer background checks or the combined effects of dealer and private-seller background checks when both are required by a state. We found moderate evidence that dealer background checks reduce firearm homicides and moderate evidence that background checks on both dealer and private sales (universal background checks) reduce total homicides. In prior editions of this review, research evidence favored the conclusion that dealer background checks reduced homicide rates, but evidence of the effects of extending these checks to include private sales was inconclusive. Since then, new studies suggest that background checks on private sales may also reduce homicides.

We also found moderate evidence that minimum age of purchase laws reduce firearm suicides, waiting periods reduce rates of firearm suicide and total homicide and that some gun possession prohibitions associated with domestic violence reduce intimate partner homicides.

We found evidence that several other policies increase or decrease one of the outcomes examined. To view detailed syntheses of the research that led to each of these findings, as well as the evidence that we categorized as inconclusive, click on the associated box in the table above.

Despite these findings, a large majority of the effects for which we sought scientific evidence have not been investigated with sufficient rigor to be included in our review. Indeed, we found no studies examining the effects of any of the 18 policy

types on police shootings or on hunting and recreation outcomes, just three studies examining how the policies affect defensive gun use, and relatively few studies evaluating effects of the policies on gun industry outcomes. These are all outcomes that are frequently raised as concerns in gun policy debates. Because there is little empirical research examining these outcomes, policymakers have limited ability to use evidence to comprehensively consider how laws are likely to affect different interests.

Does Weak Evidence Mean Gun Laws Don't Work?

While there is a growing and increasingly robust literature on the effects of many gun laws on several outcomes, there remains a highly limited base of rigorous scientific evidence concerning the effects of many commonly discussed gun policies. Importantly, however, where we conclude that evidence for a policy is weak, that does not mean that the policy is ineffective; the policy itself might well be quite effective. The absence of evidence about a law can result from the law not having been studied or studied well, which may reflect shortcomings in the contributions that science has made to policy debate, the absence of available data on key outcomes, or a variety of other methodological challenges facing gun policy evaluation researchers. Weaker evidence may also partly reflect the policies we chose to investigate, all of which have been implemented in some U.S. states and so have proven to be politically and legally feasible (at least in some jurisdictions). This decision meant that none of the policies we examined would dramatically increase or decrease the stock of guns—estimated by the Small Arms Survey to be more than 393 million firearms in 2017—or gun ownership rates—with about one-third of households estimated to own firearms in 2016—in ways that may produce more readily detectable effects on public safety, health, and industry outcomes.

Still, even relatively small effects of gun policies are important to the people and communities affected. Even a 1-percent reduction in homicides nationally would correspond to approximately 2,500 fewer deaths over a decade.

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By highlighting where scientific evidence is accumulating, we hope to build consensus around a shared set of facts that have been established through a transparent, nonpartisan, and impartial review process. In so doing, we also mean to highlight areas where more and better information could make important contributions to establishing fair and effective gun policies.

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References

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