POLICY BRIEF

Policy Solutions to Address Mass Shootings

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SYNOPSIS

In the past decade, mass shootings, particularly those that take place in public areas, have increasingly become part of the national conversation in the United States. Mass public shootings instill widespread fear, in part because of their seeming randomness and unpredictability. Yet when these incidents occur, which has been with somewhat greater frequency and lethality as of late, public calls for policy responses are immediate. In this policy brief, we review efforts to evaluate the effect of gun control measures on mass public shootings, including a discussion of our recently published study on the relationship between state gun laws and the incidence and severity of these shootings. The findings of this work point to gun permits and bans on large capacity magazines as having promise in reducing (a) mass public shooting rates and (b) mass public shooting victimization, respectively. Interestingly, however, most gun laws that we examined, including assault weapon bans, do not appear to be causally related to the rate of mass public shootings.

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POLICY SOLUTIONS TO ADDRESS MASS SHOOTINGS

After a year in which the COVID-19 pandemic significantly changed most aspects of social life—and even mass public shootings seemed to take pause—recent events remind us that these incidents have not gone away. With four mass public shootings (in Metro Atlanta, GA; Orange, CA; Boulder, CO; and Indianapolis, IN) all within a one-month time span this year, the problem has once again taken center stage in the consciousness of the American public.

When particularly deadly mass shootings take place, renewed attention is placed on the possible causes and potential solutions that could help the United States deal with this trenchant problem. Two of the most widely discussed factors often involve mental illness and gun availability. In both areas, claims are often influenced by political and emotional factors.[1]

In this policy brief, we discuss gun control and mass shootings, drawing on a recent empirical study we conducted that focused on a specific type of mass shooting—those that occur in public settings.[2] We first review definitions of mass shootings and then discuss issues related to identifying the effects of gun control measures. We conclude with an overview of our study and the implications it holds for future public policy.

What Is a Mass Shooting?

As another recent Rockefeller Institute policy brief noted, definitions of mass shootings are not consistent in the media nor in the scholarly literature.[3] Claims that "there were more mass shootings than days" generate a lot of attention, if not skepticism, particularly when compared to other estimates that are far lower.[4] The source of the discrepancies—and the resulting confusion about prevalence—is the varying definitions used by different databases and methods employed to collect data.[5]

For example, some sources define mass shootings as incidents in which three or more victims were shot *and* killed, not including the perpetrator,[6] while others use a threshold of four.[7] Some sources define a mass shooting as any incident in which four or more were shot *or* injured, which greatly increases the incident count.[8] Further, mass shootings are often differentiated according to where they took place, who the targets were, and the motivations underlying them. Media coverage and fear of mass shootings are higher for those incidents that occur in the public with relatively random targets.[9] Thus, some researchers focus on mass *public* shootings, defined as a shooting taking place in a public area with four or more deaths from gunfire within a 24-hour period and not linked to other criminal activity such as gang conflict, drug trade disputes, or robberies. In part, this distinction arises because of the sense that random massacres are qualitatively different than other, more profit-driven forms of crime. These public shootings with four or more fatalities represent roughly a quarter of all mass shootings in the US, according to the AP/USATODAY/Northeastern University database.[10]

Finally, some databases utilize public or open sources to identify mass shooting incidents,[11] whereas others use a triangulated approach, incorporating open sources as well as official records from the government, such as the *Supplementary Homicide Reports*.[12]

Being crystal clear about the definition of a mass shooting is not a trivial matter. It has important implications for the claims being made about the numbers of mass shootings the US has experienced as well as the factors that contribute to them. For example, our own federally-funded work has focused on mass public shootings in the US since 1976. From 1976 to 2020, we uncovered 165 distinct incidents of mass public shootings with a total of 1,167 victims killed by gunfire, for an average of 7.1 victim fatalities per incident.

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Compare this to the Gun Violence Archive's estimate of 2,957 incidents from 2013 to 2020 with a total of 3,161 fatalities (some of which were the assailant's death), for an average of 1.1 fatalities per incident. Clearly, these two databases are not focusing on the same phenomenon. Table 1, below, illustrates a sample of varying definitions of ongoing data collection efforts regarding mass shootings.

TABLE 1. **Definitions of Mass Shootings by Source**

Database	Definition of Shooting Incident	Years Included	Incident Total	Victims Fatally Shot	Average Victims per Incident
Fox/Duwe/Rocque	4+ victims killed by gunfire in public within 24 hours excluding felony-related incidents	1976-2020	165	1,167	7.1
Peterson/Densley	4+ victims killed by gunfire in public	1966-2020	174	1,219	7.0
AP/USATODAY/Northeastern University(a)	4+ victims killed by gunfire	2006-2020	348	1,883	5.4
The Washington Post	4+ victims killed by gunfire in public excluding felony-related incidents	1966-2020	176	1,246	7.1
Everytown for Gun Safety	4+ victims killed by gunfire	2009-2020	236	1,363	5.8
Mother Jones(b)	4+ victims killed by gunfire in public excluding domestic/ felony-related incidents	1982-2020	119	957	8.0
Gun Violence Archive(c)	4+ victims killed or injured by gunfire	2013-2020	2,957	3,161	1.1
Schildkraut	Multiple victims killed or injured by gunfire in public within 24 hours excluding gang violence or targeted militant or terroristic activity	1966-2020	402	1,449	3.6

a The AP/USATODAY/Northeastern University database and the FBI *Supplementary Homicide Reports* also track mass killings by means other than gunfire.

b The victim fatality threshold used by *Mother Jones* was reduced to three in 2013; fatality counts occasionally include offender deaths.

c The fatality counts in the Gun Violence Archive include offender deaths.

The definition that guides our work is: "An incident in which four or more victims excluding the perpetrator(s) are fatally shot in a public location within a 24-hr period in the absence of other criminal activity, such as robberies, drug deals, and gang conflict."

We focus on the types of mass shootings that generate the most fear and coverage in the media.[13] We specifically chose the long-standing four-victim threshold and based that on fatalities, not just injuries (which may be minor) to avoid conflating mass public shootings with less serious multiple victim shootings that are less likely to draw attention. The public and policymakers are concerned about more severe mass public shootings—research shows that the more deaths, the greater the attention. Thus, we wanted to isolate the types of incidents that are likely to drive policy.

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Can Mass Shootings Be Prevented?

Given the public's considerable concern about mass shootings and their tragic toll, policymakers are understandably looking for answers to why such incidents occur and how to stop them.[14] In the 1990s, when a spate of school shootings (which typically would fall under the mass public shooting criteria) unfolded, the federal government began to work on school shooter assessments and prevention strategies. Published reports indicated that much planning had often occurred prior to the attack and that the shooters frequently exhibited "concerning" behaviors beforehand. However, there was not one profile that would adequately characterize the spectrum of school shooters.[15]

Despite the tendency of observers in the US to focus on individual characteristics of shooters, there is one social factor that never fails to enter the mass shooting prevention discussion: guns. There is a perception, backed by data, that the US "leads the world" in mass public shootings.[16] Even the Gun Violence Archive makes this claim, stating that "mass shootings are, for the most part an American phenomenon."[17] Thus, some have looked to explanations of mass shootings that are unique to US culture. What is it about America, some ask, that leads to such high levels of mass violence? It could be, as some have pointed out recently, linked to our history of violence and turmoil, baked into the very DNA of the country.[18]

The US has more guns per capita than most other comparable nations, with about 40 percent of civilians owning or having access to a firearm in the home. Gun control efforts are politically complex, given the 2nd Amendment to the US Constitution and money involved in supporting gun rights.[19] Thus, whereas simply removing guns from civilians is not a viable solution, limiting access and increasing oversight on firearm access are possibilities that have been explored.

Research Evaluating Gun Control Policies and Mass Shootings

Discussions about the prevention of mass public shootings do not often recognize the wide range of policy approaches that could potentially be considered. While assault weapon bans and gun buybacks are often suggested immediately following a particularly severe mass shooting, there are a broad array of potential policies that could potentially affect the overall availability of firearms to individuals who may be inclined to commit violent crime, and therefore the likelihood of a mass shooting.[20]

Most gun control laws are not specifically meant to address mass shootings, but the assumption appears to be that since mass shootings are a subset of "ordinary" gun violence, the laws would also be effective in reducing their incidence or severity. But what does the research show?

The Rand Corporation reviewed the literature concerning the impact of "right to carry" laws—which allow individuals to carry concealed weapons without a permit—on the prevalence of mass shootings, finding mixed evidence.[21] In one of the earliest studies to examine whether such laws affect mass shootings, Duwe, Kovandzic, and Moody looked at whether shall issue laws (i.e., laws in which licenses for concealed weapons are provided so long as certain criteria are met) in the US from 1976-99 had any influence on mass shooting incidents and severity, finding no evidence that they did.[22] More recently, Fridel found that more permissive, looser concealed carry laws had a positive association with gun homicide rates from 1991 through 2016, but not with mass shootings.[23] However, her analysis did suggest that mass shootings were elevated in states with more guns per capita.

Perhaps no type of gun control legislation has been linked to mass shootings more than so-called "assault weapons bans," including the 1994 federal assault weapons ban (AWB). In March of 2021, in the wake of two mass public shootings in less than a week, President Joe Biden stated that the 1994 Assault Weapons Ban "brought down… mass killings," and then argued for a renewal of the law.[24]

It is important to note what the 1994 bill did and did not do, before discussing its association with mass shootings. The bill prohibited the possession, manufacture, or transfer of particular types of firearms that met the criteria for assault weapons, including characteristics such as large capacity magazines (LCM) holding more than 10 rounds, or flash suppressors. However, an exemption allowed citizens to retain their guns if they were obtained prior to the passage of the bill.

Several studies have examined the impact of the 1994 AWB on gun violence, in general, and mass shootings, in particular, with mixed results. Some work indicated that the ban had little influence on gun violence[25] and mass shootings of all types.[26] At the same time, other research has suggested that the ban did reduce the victim toll in general mass shooting incidents,[27] as well as mass public shootings,[28] and that large capacity magazines were linked to higher victim counts in public massacres.[29] The ban on LCMs may help explain why some work has found the AWB reduced mass shooting deaths.[30] For example, focusing on LCM bans, some research has found that these policies tend to reduce the lethality of mass shootings.[31]

Other studies have examined whether "permissiveness" of gun laws is related to the rate of mass shootings, with mixed results.[32] Lin and colleagues' study found no relationship between gun-law permissiveness and mass public shootings, while Reeping et al. examined mass shootings generally and did find that permissiveness was related to a higher rate of such incidents.[33] Thus, there is a lack of consensus on whether strict gun laws influence mass shootings. In part, this is due to differences in mass shooting data sources and variation in definitions of "permissiveness." As we noted, Lin and colleagues did not spell out how their permissiveness measure was created and it appeared to be based on concealed carry laws.[34]

The logic behind laws such as requiring a permit to purchase a firearm or bans on large capacity magazines is clear: making it harder to access guns and limiting the number of rounds that can be fired easily and quickly should reduce the opportunity to commit mass shootings and the number of people shot if one occurs. However, some disagree with this reasoning and suggest that a focus on high capacity magazines is misguided. For example, Kleck argued that large capacity magazines are rarely used in mass shootings and that most of the time shooters are equipped with multiple magazines.[35] Thus, if the assailant wants to shoot a large number of people, they have the means to do so, large capacity magazine or not.

Virginia Tech massacre memorial on the campus of Virginia Tech.[36]

Our Research on State Gun Laws and Mass Shootings

As part of a National Institute of Justice-funded project, we sought to provide information on the association between state gun laws and mass public shootings.[37] We focused on public shootings because they are the most frightening, generate the most media coverage, and usually result in the highest number of fatalities.[38] As previously stated, our definition of mass public shooting is as follows: "An incident in which four or more victims are fatally shot in a public location within a 24-hr period in the absence of other criminal activity, such as robberies, drug deals, and gang conflict."

Our research expands on previous work in two primary ways. First, we took advantage of a comprehensive list of mass public shooting incidents and victim counts in the US from 1976-2018 along with a database of 89 state gun laws with transparent definitions that the authors had compiled. This improves upon previous work that utilized limited data on both mass shootings and gun laws.

Over the course of the 43-year time period, we identified 156 unique mass public shootings with 2,839 victims shot, of whom 1,090 died. The one incident in Washington, DC was eliminated from the analysis because of the focus on state gun laws. Thus, the final tally was 155 mass public shootings with 2,827 victims. We then narrowed the analysis to eight gun laws that had been researched in previous mass shooting research and for which there was a logical connection to mass shootings. These laws, which are defined in the supplementary materials linked to our study, can be found in Table 2.[39]

We conducted two sets of analyses: one to assess the influence of laws on the incidence of mass public shootings and another to assess the influence of relevant laws on the severity of mass public shootings in terms of victim counts.

TABLE 2. **Description of State Firearm Laws Examined**

Law	Detailed Description	States with Law in 2018
Assault weapons ban	Law bans the sale of both assault pistols and other assault weapons.	CA, CT, MD, MA, NJ, NY
Extreme risk protection order law	Law allows law enforcement officers (but not necessarily family members) to initiate an immediate process to confiscate firearms from individuals deemed by a judge to represent a threat to themselves or others. Law must require the surrender and confiscation of firearms, including authorization for a search and confiscation of the individual's residence	CA, CT, DE, FL, IN, MD, MA, OR, RI, VT, WA
Large capacity ammunition magazine ban	Law bans the sale of large capacity magazines for both pistols and long guns.	CA, CO, CT, MD, MA, NJ, NY, VT
May issue law	Law provides authorities with discretion in deciding whether to grant a concealed carry permit, or the law bans all concealed weapons.	CA, CT, DE, HI, MD, MA, NJ, NY, RI
Permit requirement	All firearms may only be sold to and possessed by individuals with a valid license or permit to possess or carry firearms. This may or may not include requiring a firearm safety certificate and must apply to both licensed dealers and private sellers.	CA, CT, HI, IL, MA, NJ, RI
Relinquishment required if person becomes disqualified from gun ownership	Law requires that upon becoming prohibited from possessing a firearm, a person must relinquish all firearms in their possession. This must be a broad provision that covers most, if not all, categories of prohibited people.	CA, CT, HI, IL, MA, NY, PA
Universal background checks	Individuals must undergo a background check at point of sale to purchase any type of firearm. This may or may not include exemptions for buyers who have already undergone a background check for a concealed carry permit or other licensing requirements.	CA, CO, CT, DE, NV, NY, OR, RI, VT, WA
Violent misdemeanor law	Law prohibits firearm possession by people who have committed violent misdemeanors punishable by less than one year of imprisonment. Simple assault misdemeanors must be included. Does not count if there is an explicit exemption for crimes punishable by less than one year of imprisonment.	CA, CT, HI, MD

What Did We Find?

We first conducted regression analyses predicting the presence or absence of a mass public shooting event by state and year using what are called generalized estimating equations. The results produced odds ratios, which can be interpreted as the effect of predictors on the odds that a mass public shooting takes place. Our analysis included two sets of variables that could affect the odds of a mass public shooting occurring. In addition to variables that represented state gun laws, control variables such as divorce and unemployment rates represent economic and social factors that could contribute to mass shootings. Any odds ratio over one indicates a positive relationship between the variable and the likelihood of a mass public shooting. An odds ratio below one indicates a negative relationship meaning the variable contributes to lowering the likelihood of mass public shootings.

Next, we examined which predictors influenced the number of fatalities, given that a mass public shooting occurred, using a zero-inflated negative binomial model. These models produce incidence rate ratios, which are interpreted similarly to odds ratios, but are specific to *rates* of fatalities.

Figure 1 displays the odds ratios and incidence rate ratio for the statistically significant variables (both control and gun law variables). The black points are for odds ratios from the first model relating to public shooting occurrence and the red point is the incidence rate ratio for the second model examining the rate of fatalities.

Our first set of results indicated that **permit laws were related to fewer mass public shooting incidents**, but no other laws had an effect. Specifically, we found that permit laws were associated with a 60 percent lower odds of a mass public shooting across time and place. Second, when examining rates of fatalities, **we found that large capacity magazine bans were related to fewer victims**. Specifically, LCM bans were associated with a 38 percent reduction in fatal victimizations and 77 percent reduction in nonfatal victimizations. However, none of the other laws were found to be associated either with the incidence or severity of mass public shootings. We found no evidence that assault weapon bans deter these events or reduce fatalities when such events occur. These findings are consistent with previous work, but, as noted, research on the federal assault weapons ban is mixed.

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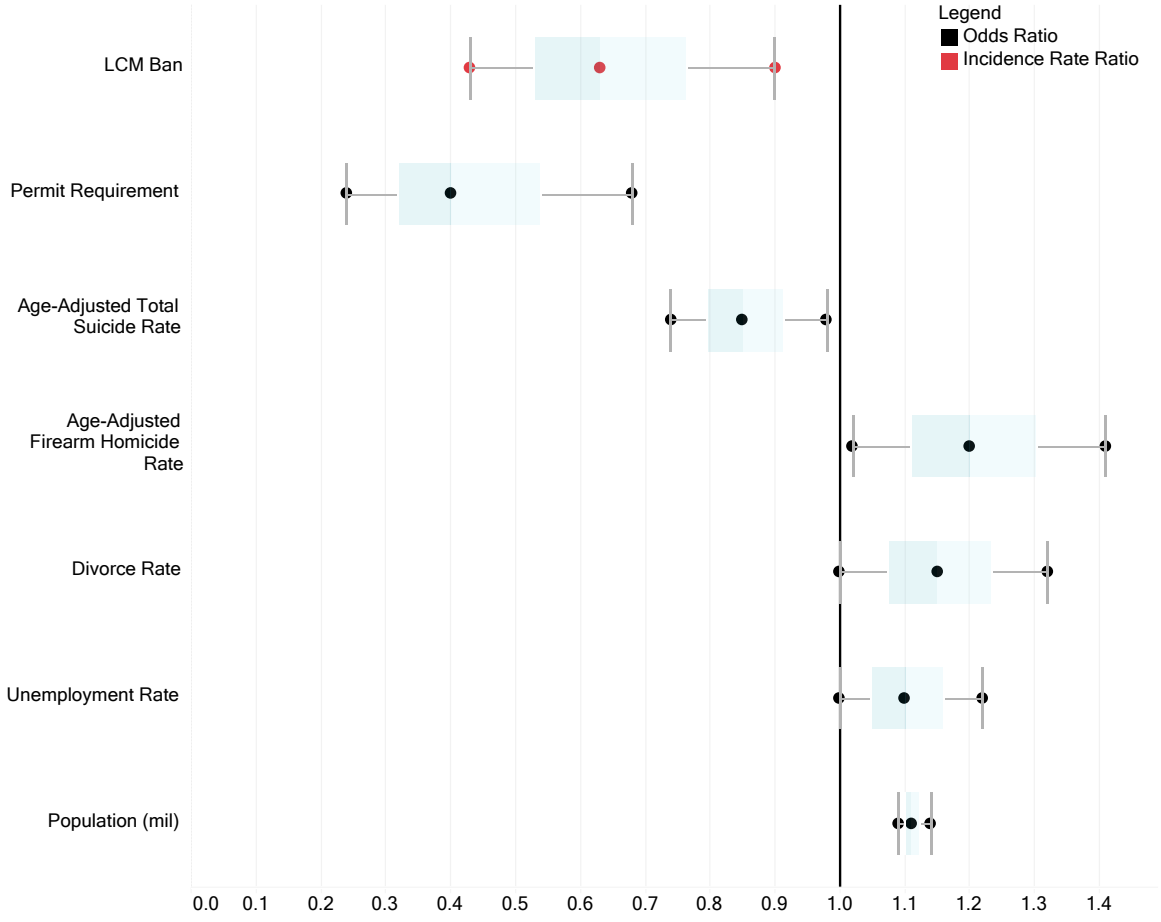
FIGURE 1. Odds Ratios and Incidence Rate Ratios from Regressions Examining the Effect of Gun Laws and Control Variables on Mass Public Shootings



NOTE: The red dot is from the negative binomial regression predicting the number of fatalities per mass public shooting. It was the only statistically significant variable. Only statistically significant variables in the models are shown ($p < .05$). The odds ratio for "Permit Requirement" is less than one, indicating a negative relationship between the presence of such law and the predicted odds of a mass shooting incident. The incidence rate ratio for "LCM Ban" can be interpreted similarly to the odds ratios, but relates specifically to the rate of casualties rather than the number of incidents. For a comprehensive discussion of methods and results, please reference the original published study.[40]

Policy Recommendations

While mass public shootings remain rare events, evidence is accumulating on the types of gun control measures that may be effective in reducing their incidence and severity. Our research is consistent with previous studies[41] suggesting that: (1) requiring a permit to purchase or possess a gun may reduce the incidence of mass public shootings; and (2) banning large capacity magazines may reduce the number of victims when such a shooting occurs.

As many as 10 states currently require a state-issued permit in order to purchase or possess *any* type of weapon, including a handgun, long gun, or so-called assault weapon. Several studies have demonstrated that permit laws reduce overall rates of firearm homicide.[42] Thus, an increased difficulty in obtaining a gun appears to translate into a decreased use of guns in the commission of crime. This same conceptual framework may explain our finding that states with permit laws experience a lower rate of mass public shootings.

The capacity of ammunition magazines may have a more logical connection to the number of casualties linked to a mass shooting because it determines the number of times the assailant can fire without having to reload or switch to another firearm. Although reloading a magazine with a fresh clip or swapping firearms may take only a few seconds, it does present an opportunity for would-be victims to escape and for bystanders or law enforcement to intervene. Despite this logic, though, research has suggested interventions by the police or public have not occurred.[43]

The mechanism linking permits and large capacity magazines to the incidence and severity of mass public shootings is somewhat unclear. We suspect that laws that make it more difficult to obtain the type of weapon meant to kill large numbers of people in a short period of time affect not only the ability to carry out such incidents but also the extent to which plans to commit such atrocities are translated into action. This may be the difference between high and low fatality mass shootings.

While it might seem logical that banning the sale of assault weapons would reduce the incidence of mass public shootings, this conceptual hypothesis relies on the assumption that if not for the existence of assault weapons, an individual would not carry out a planned mass shooting. We are aware of no evidence to suggest that a potential mass shooter would decide not to follow through with a planned shooting if assault weapons were not available on the retail or secondary markets. Moreover, the features that define an "assault weapon" are not necessarily relevant to the actual lethality of the firearm. Certain of the features that characterize an assault weapon are largely cosmetic: for example, a telescoping stock, a second pistol grip, a grenade launcher, a bayonet lug, or a flash suppressor. Although these features may make a weapon look like a military-style rifle, they do not all directly translate into increased lethality. What *does* translate into increased lethality, it seems—and the evidence shows—is magazine capacity.

The evidence on other gun control laws is inconsistent and warrants further exploration. In addition, a straightforward equation linking the overall number of guns to mass shootings appears to be too simplistic. For example, in our study, a measure of gun ownership (using a proxy) was not associated with mass public shooting incidents. Access, on its own, does not appear to be the primary driver of these events.

While laws such as universal background checks at point of sale and violent misdemeanor laws were not associated with mass public shootings in our study that does not mean they should not be implemented as a means of reducing violent crime in general. The effects of background checks are somewhat unclear, but the Rand Corporation found "moderate" effects of dealer background checks on reducing firearm homicides.[44]

Decisions about implementing firearm laws should be based not merely on whether they affect mass public shootings but whether they influence more commonplace forms of firearm violence, including both homicide and suicide. While our study showed that permit laws and large capacity magazine bans were associated with reductions in the incidence and severity of mass public shootings, future work should explore additional types of laws as well as continue to determine which laws reduce ordinary gun violence more generally.

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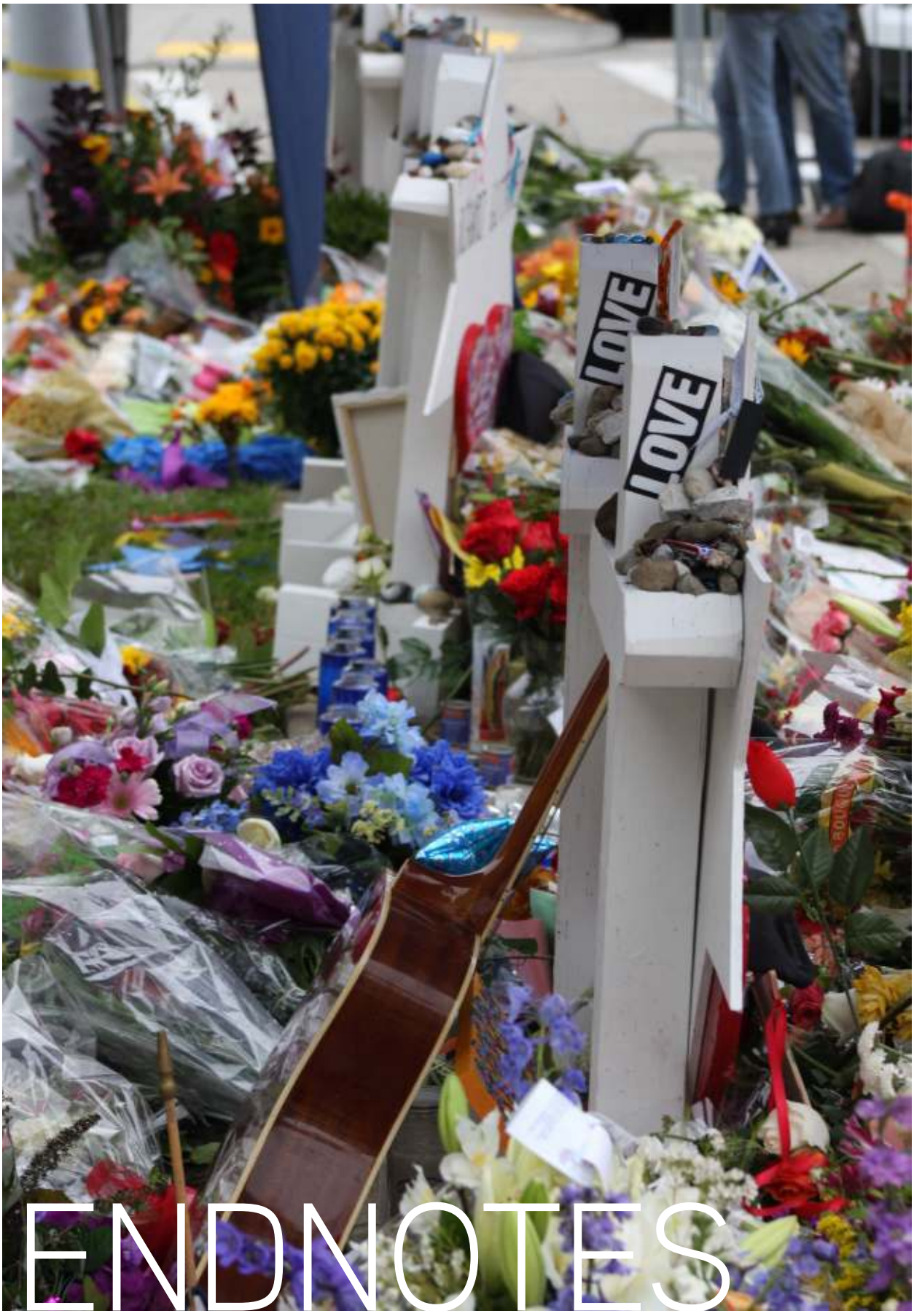

ENDNOTES

1 Jonathan M. Metzl and Kenneth T. MacLeish, "Mental Illness, Mass Shootings, and the Politics of American Firearms," *American Journal of Public Health* 105, 2 (2015): 240-9, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4318286/. Megan L. Ranney and Jessica Gold, "The Dangers of Linking Gun Violence to Mental Illness," *Time*, August 7, 2019, https://time.com/5645747/gun-violence-mental-illness/. Hasin Yousaf, "Sticking to One's Guns: Mass Shootings and the Political Economy of Gun Control in the United States," *Journal of the European Economic Association* (March 30, 2021), https://doi.org/10.1093/jeea/jvab013.

2 Michael Siegel et al., "The relation between state gun laws and the incidence and severity of mass public shootings in the United States, 1976–2018," *Law and Human Behavior* 44, 5 (2020): 347, https://psycnet.apa.org/fulltext/2020-78672-001.pdf.

3 Jaclyn Schildkraut, *Can Mass Shooting Be Stopped? To Address the Problem, We Must Better Understand the Phenomenon* (Albany, NY: Rockefeller Institute of Government, July 2021), https://rockinst.org/issue-area/2021-can-mass-shootings-be-stopped/.

4 Jason Silverstein, "There were more mass shootings than days in 2019," CBS News, January 2, 2020, https://www.cbsnews.com/news/mass-shootings-2019-more-than-days-365/.

5 James Alan Fox and Jack Levin, "Mass confusion concerning mass murder," *The Criminologist* 40, 1 (January/February 2015): 8-11, https://www.researchgate.net/publication/275333553_Mass_confusion_concerning_mass_murder.

6 Mark Follman, Gavin Aronsen, and Deanna Pan, "A Guide to Mass Shootings in America," *Mother Jones*, May 26, 2021, https://www.motherjones.com/politics/2012/07/mass-shootings-map/.

7 William J. Krousse and Daniel J. Richardson, *Mass Murder with Firearms: Incidents and Victims, 1999-2013* (Washington, DC: Congressional Research Service, July 30, 2015), https://fas.org/sgp/crs/misc/R44126.pdf.

8 "Explainer," Gun Violence Archive, accessed July 30, 2021, https://www.gunviolencearchive.org/explainer.

9 James Alan Fox et al., "The Newsworthiness of Mass Public Shootings: What Factors Impact the Extent of Coverage?," *Homicide Studies* 25, 3 (2020): 239-55, https://doi.org/10.1177/1088767920974412.

10 "AP/USAToday/Northeastern University Database," News@Northeastern, accessed July 30, 2021, https://news.northeastern.edu/tag/ap-usatoday-northeastern-university-database/.

11 "Mass Shootings in America," Stanford Libraries, accessed July 30, 2021, https://library.stanford.edu/projects/mass-shootings-america.

12 Grant Duwe, "Patterns and prevalence of lethal mass violence," *Criminology & Public Policy* 19, 1 (2020): 17-35, https://doi.org/10.1111/1745-9133.12478.

13 Fox, et al., "The Newsworthiness of Mass Public Shootings: What Factors Impact the Extent of Coverage?"

14 Megan Brenan, "Nearly Half in U.S. Fear Being the Victim of a Mass Shooting," Gallup, September 10, 2019, https://news.gallup.com/poll/266681/nearly-half-fear-victim-mass-shooting.aspx.

15 Mary Ellen O'Toole, *The School Shooter: A Threat Assessment Perspective* (Quantico, VA: Critical Incident Response Group, National Center for the Analysis of Violent Crime, FBI Academy, 2000), https://www.fbi.gov/file-repository/stats-services-publications-school-shooter-school-shooter/view. Bryan Vossekuil et al., *The Final Report and Findings of the Safe School Initiative: Implications for the Prevention of School Attacks in the United States* (Washington, DC: United States Secret Service and United States Department of Education, 2004), https://www2.ed.gov/admins/lead/safety/preventingattacksreport.pdf.

16 Adam Lankford, "Public Mass Shooters and Firearms: A Cross-National Study of 171 Countries," *Violence and Victims* 31, 2 (2016): 187-99, https://doi.org/10.1891/0886-6708.vv-d-15-00093.

17 "Mass Shooting Methodology and Reasoning," Gun Violence Archive, accessed July 30, 2021, https://www.gunviolencearchive.org/explainer/mass-shooting-methodology-and-reasoning.

18 Helaine Olen, "Opinion: What connects America's mass shootings? Easy access to guns." *The Washington Post*, March 19, 2021, https://www.washingtonpost.com/opinions/2021/03/19/what-connects-americas-mass-shootings-easy-access-guns/.

19 "US gun control: What is the NRA and why is it so powerful?," BBC, August 6, 2020, https://www.bbc.com/news/world-us-canada-35261394.

20 Lacey Wallace, "Could a national buyback program reduce gun violence in America?," The Conversation, August 4, 2019, https://theconversation.com/could-a-national-buyback-program-reduce-gun-violence-in-america-120060.

21 "The Effects of Concealed-Carry Laws," Gun Policy in America, RAND Corporation, updated April 22, 2020, https://www.rand.org/research/gun-policy/analysis/concealed-carry.html.

22 Grant Duwe, Tomislav Kovandzic, and Carlisle E. Moody, "The Impact of Right-to-Carry Concealed Firearm Laws on Mass Public Shootings," *Homicide Studies* 6, 4 (2002): 271-96, https://doi.org/10.1177%2F108876702237341.

23 Emma E. Fridel, "Comparing the Impact of Household Gun Ownership and Concealed Carry Legislation on the Frequency of Mass Shootings and Firearms Homicide," *Justice Quarterly*, July 23, 2020, https://doi.org/10.1080/07418825.2020.1789693.

24 Glenn Kesler, "Biden's claim that the 1994 assault-weapon law 'brought down' mass shootings," *The Washington Post*, March 24, 2021, https://www.washingtonpost.com/politics/2021/03/24/bidens-claim-that-1994-assault-weapons-law-brought-down-mass-shootings/.

25 Christopher S. Koper and Jeffrey A. Roth, "The Impact of the 1994 Federal Assault Weapon Ban on Gun Violence Outcomes: An Assessment of Multiple Outcome Measures and Some Lessons for Policy Evaluation," *Journal of Quantitative Criminology* 17, 1 (2001): 33-74, https://www.jstor.org/stable/23366772?seq=1#metadata_info_tab_contents. Christopher S. Koper and Jeffrey A. Roth, "Impact of the 1994 Federal Assault Weapon Ban on Gun Markets: An Assessment of Short-Term Primary and Secondary Market Effects," *Journal of Quantitative Criminology* 18, 3 (2002): 239-66, https://www.jstor.org/stable/23366709?seq=1#metadata_info_tab_contents.

26 Daniel W. Webster et al., "Evidence concerning the regulation of firearms design, sale, and carrying on fatal mass shootings in the United States," *Criminology & Public Policy* 19, 1 (2020): 171-212, https://doi.org/10.1111/1745-9133.12487.

27 Charles DiMaggio et al., "Changes in US mass shooting deaths associated with the 1994-2004 federal assault weapons ban: Analysis of open-source data," *Journal Of Trauma and Acute Care Surgery* 86, 1 (2018): 11–7, https://doi.org/10.1097/ta.0000000000002060.

28 Mark Gius, "The impact of state and federal assault weapons bans on public mass shootings," *Applied Economics Letters* 22, 4 (2014): 281–4, http://dx.doi.org/10.1080/13504851.2014.939367.

29 Sherry Towers, Danielle Wallace, and David Hemenway, "Temporal trends in public mass shootings: high-capacity magazines significantly increase fatality counts, and are becoming more prevalent," medRxiv, December 15, 2019, https://doi.org/10.1101/2019.12.12.19014738.

30 DiMaggio et al., "Changes in US mass shooting deaths associated with the 1994-2004 federal assault weapons ban: Analysis of open-source data."

31 Louis Klarevas, Andrew Conner, and David Hemenway, "The Effect of Large-Capacity Magazine Bans on High-Fatality Mass Shootings, 1990-2017," *American Journal of Public Health* 109, 12 (2019): 1754-61, https://ajph.aphapublications.org/doi/10.2105/AJPH.2019.305311. Christopher S. Koper, "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 (2020): 147-70, https://doi.org/10.1111/1745-9133.12485. Webster et al., "Evidence concerning the regulation of firearms design, sale, and carrying on fatal mass shootings in the United States."

32 Ping-I Lin, et al., "What have we learned from the time trend of mass shootings in the U. S.?," *PLOS One* 13, 10 (2018), http://dx.doi.org/10.1371/journal.pone.0204722. Paul M. Reeping et al., "State gun laws, gun ownership, and mass shootings in the US: Cross sectional time series," *British Medical Journal* 364 (2019): l542, https://doi.org/10.1136/bmj.l542.

33 Ibid.

34 Siegel et al., "The relation between state gun laws and the incidence and severity of mass public shootings in the United States, 1976–2018."

35 Gary Kleck, "Large-Capacity Magazines and the Casualty Count in Mass Shootings: The Plausibility of Linkages," *Justice Research and Policy* 17, 1 (2016): 28-47, https://doi.org/10.1177%2F1525107116674926.

36 "VT April 16 memorial," by User B is licensed under CC BY-SA 4.0, https://commons.wikimedia.org/wiki/File:VT_April_16_memorial.jpg.

37 Siegel et al., "The relation between state gun laws and the incidence and severity of mass public shootings in the United States, 1976-2018."

38 Fox, et al., "The Newsworthiness of Mass Public Shootings: What Factors Impact the Extent of Coverage?"

39 Bradley D. McAuliff, editor, "Supplemental Material for The Relation Between State Gun Laws and the Incidence and Severity of mass Public Shootings in the United States, 1976-2018," American Psychology Association, accessed July 30, 2021, https://supp.apa.org/psycarticles/supplemental/lhb0000378/lhb0000378_supp.html.

40 Siegel et al., "The relation between state gun laws and the incidence and severity of mass public shootings in the United States, 1976-2018."

41 For example, Klarevas, Conner, and Hemenway, "The Effect of Large-Capacity Magazine Bans on High-Fatality Mass Shootings, 1990-2017" and Webster et al., "Evidence concerning the regulation of firearms design, sale, and carrying on fatal mass shootings in the United States."

42 Cassandra F. Crifasi et al., "Association between Firearm Laws and Homicide in Urban Counties," *Journal of Urban Health* 95, 3 (2018): 383-90, https://doi.org/10.1007/s11524-018-0273-3. Anita Knopov et al., "Impact of State Firearm Laws on Homicide Rates among Black and White Populations in the United States, 1991-2016," *Health and Social Work* 44, 4 (2019): 232-40, https://doi.org/10.1093/hsw/hlz024. Kara E. Rudolph et al., "Association Between Connecticut's Permit-to-Purchase Handgun Law and Homicides," *American Journal of Public Health* 105, 8 (2015): e49-54, https://dx.doi.org/10.2105%2FAJPH.2015.302703. Michael Siegel et al., "The Impact of State Firearm Laws on Homicide Rates in Suburban and Rural Areas Compared to Large Cities in the United States, 1991-2016," *Journal of Rural Health* 36, 2 (2020): 255-65, https://doi.org/10.1111/jrh.12387. Daniel Webster, Cassandra Kercher Crifasi, and Jon S. Vernick, "Effects of the Repeal of Missouri's Handgun Purchaser Licensing Law on Homicides," *Journal of Urban Health* 91 (2014): 293-302, http://dx.doi.org/10.1007/s11524-014-9865-8.

43 Kleck, "Large-Capacity Magazines and the Casualty Count in Mass Shootings: The Plausibility of Linkages."

44 "Effects of Background Checks on Violent Crime," Gun Policy in America, RAND Corporation, updated April 22, 2020, https://www.rand.org/research/gun-policy/analysis/background-checks/violent-crime.html.

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