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Annual Review of Clinical Psychology

Epidemiology of Mass Shootings in the United States

Jillian K. Peterson,[1] James A. Densley,[2] Molly Hauf,[3] and Jack Moldenhauer[4]

[1]Department of Criminology and Criminal Justice, Hamline University, Saint Paul, Minnesota, USA; email: jpeterson68@hamline.edu

[2]School of Criminology and Criminal Justice, Metropolitan State University, Saint Paul, Minnesota, USA

[3]College of Liberal Arts, Hamline University, Saint Paul, Minnesota, USA

[4]Department of Economics, Tufts University, Medford, Massachusetts, USA

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Abstract

This in-depth review delves into the multifaceted realm of mass shootings and explores their epidemiology from a psychological perspective. The article presents a comprehensive examination of the prevalence, perpetrator and victim profiles, motives, and contributing factors associated with mass shootings. By investigating the intricate relationship between masculinity, domestic violence, military service, social media, fame-seeking, suicidal ideation, mental illness, and firearms, this article sheds light on the multifaceted nature of mass shootings. Moreover, it discusses the importance of implementing effective prevention strategies to address this growing public health concern. The findings from this review serve as a valuable resource for researchers, practitioners, policy makers, and the community at large, facilitating a deeper understanding of mass shootings and fostering the development of evidence-based solutions to prevent these tragic incidents.

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Contents

INTRODUCTION 11.2
MASS SHOOTING DEFINITIONS AND TRENDS 11.2
MASS SHOOTING VICTIMS AND PERPETRATORS 11.5
Victims 11.5
Perpetrators 11.6
Perpetrator Grievances and Motivations 11.7
MENTAL ILLNESS AND MASS SHOOTINGS 11.9
FIREARMS AND MASS SHOOTINGS 11.10
REACTING TO AND PREPARING FOR MASS SHOOTINGS 11.11
PREVENTING MASS SHOOTINGS 11.13
Access to Mental Health Services 11.13
Suicidality Prevention 11.14
Social Media Reforms 11.15
Crisis Intervention and Threat Assessment 11.15
Firearms Policy 11.16
CONCLUSION 11.17

INTRODUCTION

Mass shootings have become more frequent and deadly occurrences in the United States over the past several decades, generating a sense of fear, uncertainty, and deep concern about the safety of individuals and communities. These tragic events are often associated with high rates of mortality and morbidity and leave a profound, lasting impact on survivors, families, and society as a whole. Understanding the epidemiology of mass shootings is critical for developing effective prevention and intervention strategies as well as for informing public policy and promoting public health.

In this review, we draw on the latest research and data to examine the incidence, risk factors, and consequences of mass shootings. Specifically, we examine the definition and measurement of mass shootings, the trends and patterns in mass shooting incidents over time, the factors associated with mass shootings, the psychological and behavioral profiles of mass shooters, and the impact of mass shootings on mental health, public safety, and society at large.

We also review the current state of knowledge on the prevention and management of mass shootings, including the role of mental health screening and intervention; the implementation of gun safety measures, active shooter drills, and other public policies aimed at reducing the risk of mass shootings; and the development of crisis response plans and postevent support for survivors and affected communities.

Overall, this review aims to provide a comprehensive and evidence-based overview of the epidemiology of mass shootings to help inform clinical practice, public policy, and future research in this important area of study.

MASS SHOOTING DEFINITIONS AND TRENDS

Mass shootings are defined differently across various sources (Bridges et al. 2023) (**Table 1**). Some characterize them as incidents where three or more victims, excluding the perpetrator, are fatally shot, while others consider four or more fatalities as the threshold. Another definition includes any incident where four or more individuals are shot or injured, thus encompassing a broader

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Table 1 Mass shooting definitions

Source	Victim threshold	Inclusion/exclusion criteria	Time and space	Years included	Total incidents
Advanced Law Enforcement Rapid Response Training (ALERRT 2023)	N/A	"An individual, or individuals, actively killing or attempting to kill multiple unrelated people in a public space"	Public	2000–2022	520
AP/*USA TODAY*/ Northeastern University (AP 2024)	4+ killed, excluding unborn children and the offender(s)	None	Any, within a 24-hour period	2006–present	574
Everytown for Gun Safety (2023)	4+ killed, excluding the offender(s)	None	Any	2009–present	290
FBI (2023)	N/A	"An active shooter is an individual actively engaged in killing or attempting to kill people in a populated area."	"Populated area"	2000–2022	462
Greene-Colozzi & Silva (2022)	4+ killed or the offender must "demonstrate behavioral evidence suggesting mass victim intent"	Excludes familicide or shootings related to other criminal activity. Victims must be chosen at random or for their symbolic value.	"[A]t one or more public or populated locations" within a 24-hour period	1966–2019	494
Gun Violence Archive (2023)	4+ shot, including the offender(s)	None	Single event, at the same general time and location	2014–present	4,681
Mother Jones (Follman et al. 2023)	3+ killed, excluding the offender(s)	Excludes domestic or "conventionally motivated crimes" such as gang violence and armed robbery	Public, within one event	1982–present	137
Schildkraut & Elsass (2016)	"Multiple victims (both injuries and fatalities)"	"[M]ust not correlate with gang violence or targeted militant or terroristic activity"; victims must be chosen at random or for their symbolic value	"[A]t one or more public or populated locations" within a single 24-hour period	1966–2020	402
Stanford Mass Shootings in America (Stanford Geospat. Cent. 2016)	3+ shot, excluding the offender(s)	Excludes "identifiably gang, drug or organized crime related shootings"	Public, within a 24-hour period	1982–2016	344
The Violence Project (Peterson & Densley 2023a)	4+ killed, excluding the offender(s)	Excludes domestic/ felony-related incidents	Public, within one event	1966–present	190
The Washington Post (Washington Post Staff 2023)	4+ killed, excluding the offender(s)	Excludes domestic/ felony-related incidents	Public, within one event	1966–2021	189

range of events. This expansive definition includes, among other incidents, domestic altercations, gang disputes, drug-related conflicts, and robberies. For the purposes of this article, we primarily rely on The Violence Project's database of mass shootings, a comprehensive repository of the life histories of mass shooters (see Peterson & Densley 2023a). Funded by the National Institute of Justice and sourced from public records, this database defines a mass shooting as follows:

> a multiple homicide incident in which four or more victims are murdered with firearms—not including the offender(s)—within one event, and at least some of the murders occurred in a public location or locations in close geographical proximity (e.g., a workplace, school, restaurant, or other public settings), and the murders are not attributable to any other underlying criminal activity or

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> commonplace circumstance (armed robbery, criminal competition, insurance fraud, argument, or romantic triangle). (Krouse & Richardson 2015, p. 10)

The United States is a prominent outlier on the global stage regarding the prevalence of mass public shootings (Lankford 2019). One study found that the United States accounted for around a third of the world's mass shooters from 1966 to 2012 despite representing only about 5% of the global population (Lankford 2016). Another study found that mass shootings in the United States account for 73% of all mass shooting incidents in developed countries (Silva 2023a). This stark discrepancy is not merely statistical but reflects deeper societal and systemic issues, including the United States' unique relationship with firearms, marked by the country's high civilian gun ownership rates (Lemieux 2014); the potential cultural factors that might emphasize individualism and fame-seeking behaviors; the role of media in sensationalizing such events; and the potential gaps or inadequacies in the mental health care system and in law enforcement response and prevention (see Madfis & Lankford 2023). Further, mass shootings have become embedded within our cultural fabric, to the extent that each incident inspires more incidents and even scripts their style and substance, from the weapons perpetrators use to the legacy tokens they leave behind (Newman & Fox 2009).

Mass public shootings in the United States are probabilistically rare events that have become more frequent and deadlier; their incidence has increased dramatically in the last decade (Duwe 2020, Lankford & Silver 2020). Using the above definition, the worst year on record for US mass public shootings was 2018 with nine incidents, followed by 2021 with eight, and 2017, 2019, and 2022 with seven each (see **Figure 1**). The death count per shooting also rose dramatically. Seven of the 10 deadliest mass shootings in modern history occurred in the 10 years from 2012 to 2022: Sandy Hook in 2012 (27 dead), Orlando in 2016 (49 dead), Las Vegas in 2017 (60 dead), Sutherland Springs in 2017 (26 dead), Parkland in 2018 (17 dead), El Paso in 2019 (22 dead), and Uvalde in 2022 (21 dead).

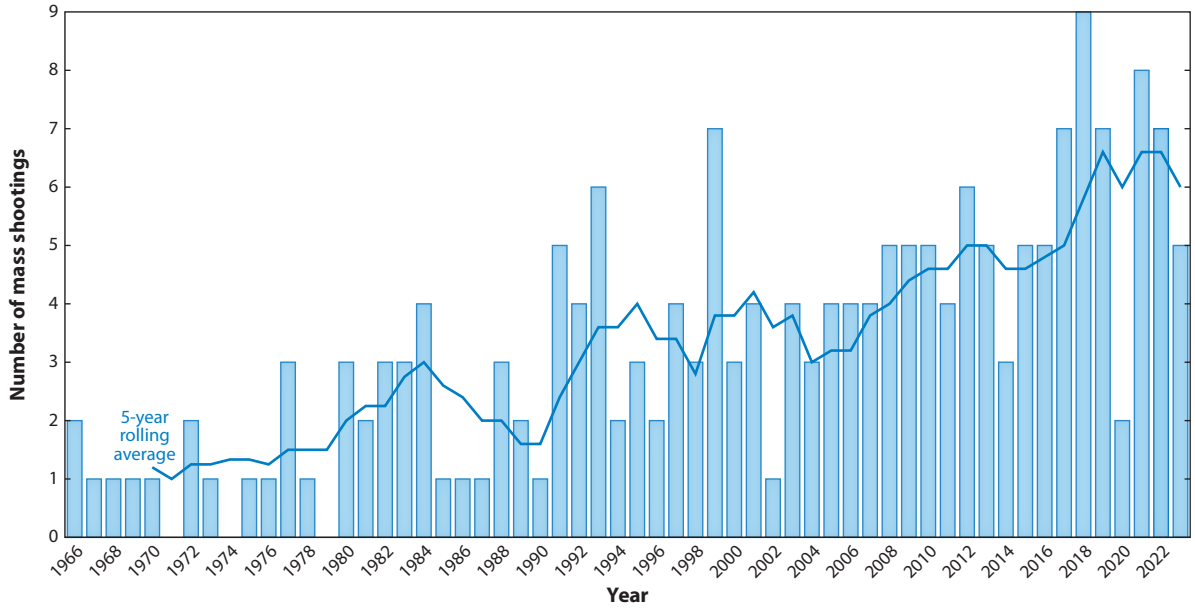

Figure 1

Mass public shooting incidents in the United States, 1966 to May 2023 ($N = 190$). The line denotes the 5-year rolling average.

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According to the Violence Project database (Peterson & Densley 2023a), from 1966 to May 2023, California experienced the most mass public shootings with 29 (15%), followed by Texas with 21 (11%) and Florida with 13 (7%). Factoring in population size, however, the per capita rate is highest in Alaska (3 cases), Colorado (8 cases), and Kentucky (6 cases). Most mass shootings take place in the South (37.6%) and West (32.5%). They are more likely to occur in urban (52.1%) as opposed to suburban (24.7%) or rural (23.2%) locations, but again that likely reflects population density.

Mass public shootings most commonly occur in places of work and commerce. Shootings in K–12 schools, which generate significant media coverage (Fox et al. 2020), constitute only 7% of all cases; by contrast, retail shootings account for 20% of all cases. Forty-four percent of mass shooters are insiders of the locations that they target (where insider is defined as a current or former student or employee, a frequent patron, or a parishioner). Insider status is most common for perpetrators who target K–12 schools and colleges and universities, 88% of whom are current or former students, and 59 of 194 mass shooters total (30%) in the Violence Project database targeted their own workplace (Peterson & Densley 2023a).

The Violence Project database shows that workplace shootings have declined from their peak in the 1980s and 1990s (Peterson & Densley 2023a). Mass shootings today are far more likely to occur at commercial and retail sites. Mass shootings prompted by delusions and hallucinations are also down, while mass shootings motivated by hate and fame-seeking are up dramatically. Lankford & Silver (2020) argue that the rise of celebrity culture in the age of mass media and social media has led to more mass public shooters who are motivated to kill a large number of victims for fame or attention, as well as more shooters who have been directly influenced by past mass shooters.

MASS SHOOTING VICTIMS AND PERPETRATORS

Victims

The 194 perpetrators in the Violence Project database killed a total of 1,364 victims (Peterson & Densley 2023a). The victims were majority male and ranged in age from 1 to 90 with a mean age of 40. The victims were about 50% White, 9% Black, 15% Latinx, and 6% Asian—a distribution that generally reflects the racial/ethnic demographics of the American population, although the race of about 17% of the victims is unknown. In 8.8% of mass shootings, at least one victim was a family member, and in 11.3% of shootings, a current or former romantic partner was one of the victims.

Survivors of mass shootings are additional victims. Because these events are seemingly random and unpredictable, they create a sense of helplessness, making them potentially more traumatic than other forms of death (Rowhani-Rahbar et al. 2019). Compared to survivors of other national disasters, survivors of mass shootings are at a greater risk for mental health problems (Lowe & Galea 2016, Novotney 2018). Surviving victims report a broad range of emotions, such as anger, sadness, fear, frustration, helplessness, and an eroded sense of safety and trust. Survivors of mass shootings also report symptoms of depression, anxiety, cognitive issues, and posttraumatic stress disorder (PTSD) (SAMHSA 2017). Over a quarter of people who witness a mass shooting develop PTSD according to the National Center for PTSD, and an additional third will develop acute stress disorder (Novotney 2018). However, estimates of PTSD in surviving victims vary widely from 3% to 91% depending on the study and on how symptomology is defined (Abrams 2022).

In addition to affecting those who are killed, are injured, or directly witness a mass shooting (primary victims), a mass shooting also affects the community where it occurs (secondary victims) and even the broader country (tertiary victims). In communities where a mass shooting occurs, studies show that at least 5–10% of people (other than primary victims) develop PTSD (Lowe &

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Galea 2016). Schools, organizations, workplaces, and businesses in communities affected by mass shootings have been described as "covictims" because they are also psychologically affected by the shooting even if not physically injured (Rowhani-Rahbar et al. 2019).

Mass shootings receive incessant media coverage (Fox et al. 2020), which can result in additional traumatization (SAMHSA 2017). One 3-year longitudinal study found that media consumption of the Boston Marathon bombings predicted PTSD symptoms 6 months later, which in turn predicted media consumption and acute stress after the Pulse nightclub shooting, perpetuating a cycle of media use and distress (Thompson et al. 2019). Studies have found that approximately 80% of adults in the United States report feeling stressed about mass shootings (SAMHSA 2017). This stress results in avoidance of locations like shopping malls, movie theaters, and large community events for fear of being shot (APA 2019). A 2023 study tested the reliability and validity of a new Mass Shootings Anxiety Scale (MSAS) for use as a screening tool in clinical practice (Lee 2023).

School shootings, in particular, create a deep sense of fear in communities (Everytown for Gun Safety 2022). A national study from 2018 found that three out of four youth report mass shootings as a primary source of stress, and around 20% of youth report that the potential for a school shooting causes them daily stress (APA 2018). A recent quasi-experimental study examined data from Crisis Text Line in the 4 days before and 4 days after the 2022 shooting at Robb Elementary School in Uvalde, Texas, and found a significant increase in the number of conversations that mentioned firearms and, within those specific conversations, references to grief (Weitzel et al. 2023).

Perpetrators

The 194 perpetrators in the Violence Project mass shootings database from 1966 to May 2023 (Peterson & Densley 2023a) range in age from 11 to 72 (mean = 34, median = 32) with clusters of perpetrators in their early twenties and early forties. In terms of race and ethnicity, mass shooters are 53% White, 21% Black, 9% Latinx, and 7% Asian, meaning they trend closely with the US general population, but White and Latinx shooters are slightly underrepresented, and Black shooters are slightly overrepresented (Jewett et al. 2022).

Mass shooters are over 97% male, and two of the four female mass shooters in the Violence Project database partnered with a male mass shooter to commit their crime (Peterson & Densley 2023a). The overwhelming representation of men among mass shooters has led to the examination of correlates rooted in patriarchal social structures. For example, the term aggrieved entitlement refers to a mindset involving a perceived sense of entitlement that has been thwarted or challenged, leading to feelings of anger, resentment, and a desire for revenge (Vito et al. 2018). This manifests as a perceived loss or threat to one's status, power, or control, stemming from personal failures, perceived injustices, or challenges to ideals of traditional masculinity (e.g., dominance, aggression, emotional suppression) and exacerbated by feelings of social isolation (Kalish & Kimmel 2010).

History of crime and violence. Criminal histories are present in over half of mass shooting perpetrators, and more than a third (35%) have histories of domestic abuse, according to the Violence Project database (Peterson & Densley 2023a). Additional research has shown a significant correlation between past domestic violence and subsequent acts of fatal mass violence; perpetrators exhibit a pattern of coercive control toward their partners and/or family members (Geller et al. 2021). The link between domestic abuse and mass shootings can similarly be attributed to deep-seated issues related to anger, entitlement, and a desire to exert dominance (Matias et al. 2020, Silva et al. 2021). For example, unresolved anger and hostility can lead to an escalation of violence with the potential to extend beyond the domestic setting. Domestic abuse also creates an environment

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characterized by trauma and fear that affects both the victims and the perpetrators. The result is a "cycle of violence" where the abuser becomes desensitized to inflicting harm and increasingly inclined toward using violence to resolve conflicts or exert control (Widom 1989). This cycle of violence can extend to public spaces in the form of mass shootings, driven by distorted perceptions of power and revenge (Fox et al. 2018).

Military service. A quarter of all mass shooters have military backgrounds, a notable contrast to the 7% in the general population (Schaeffer 2023). In the Violence Project database, the 50 shooters with military experience served an average of 44 months (range: 1 month to 14 years), typically enlisting at age 19 (Peterson & Densley 2023a). On average, 9 years elapsed between their military departure and committing a mass shooting, though two were still active servicemen during their offenses.

Several factors might explain the high prevalence of past military service among mass shooters. First, the military often appeals to those seeking purpose and structure, attracting individuals who may feel socially isolated or disconnected—traits common to many mass shooters (West & Thomson 2023). Second, while military training emphasizes discipline and national security, it also imparts firearms proficiency. Fourteen mass shooters in the Violence Project database even earned medals for sharpshooting or marksmanship (Peterson & Densley 2023a). This skill set, combined with difficulties transitioning back to civilian life, can be dangerous. Some mass murderers, described as "pseudocommandos," display an obsession with weapons and detail their attacks (Fox et al. 2018, Holmes & Holmes 1992).

Third, combat and related traumas can leave psychological scars. Veterans may grapple with PTSD, depression, and substance abuse (Inoue et al. 2022), which, when poorly managed, can heighten the risk of violence. Among shooters with military backgrounds, 38% had been discharged due to mental or behavioral issues. This figure rose to 57% in the past decade. For instance, a 2009 nursing home shooter referred to himself as Michael the Archangel postenlistment, while a 2016 sniper who targeted police officers had multiple misconduct records, including insubordination and intoxication.

K–12 school mass shooters. K–12 school mass shooters have a unique profile. According to the Violence Project database, they tend to be White (81.3%), male (100%), and current or former students of the school (87.5%) (Peterson & Densley 2023a). Over half have some past involvement with fights, and 62.5% have a history of playing violent video games. Perpetrators of school mass shootings are equally likely to have been bullied or to have been a bully (37.5%). Over two-thirds have a documented history of childhood trauma (i.e., physical, sexual, and emotional abuse), and most have shown signs of crisis (87.5%) and have had a previous suicide attempt (74.9%) before the shooting. One study of 25 American male school shooters found that 72% of the perpetrators (18 out of 25) reported having experienced at least one adverse childhood experience (ACE), a common way to measure childhood trauma (Dowdell et al. 2022), while another study suggests a potential connection between early childhood trauma and mass shootings generally (Peterson & Densley 2021). Almost all school mass shooters leak their plans to others (93.8%) and engage in significant planning (87%). About half leave a legacy token behind to be found, such as a journal, manifesto, or video. Nearly 90% have an interest in guns and are proficient with firearms.

Perpetrator Grievances and Motivations

Some evidence suggests that the occurrence of a mass shooting event can inspire or motivate others to commit similar acts of violence. The phenomenon of mass shooting contagion, an extension of the "copycat effect" (Surette 2013), refers to the possibility that media coverage, news reports, and social media discussion of mass shootings can inadvertently lead to the replication of these

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horrific events (Fox et al. 2021, Meindl & Ivy 2018). A 2015 study found that mass shootings are temporally contagious for approximately 2 weeks; each produces an average of 0.2–0.3 subsequent attacks and creates another cycle of violence that can be difficult to break (Towers et al. 2015).

Research suggests that mass shootings can be contagious in a similar way to other social phenomena, such as suicide, riots, and political revolutions (Gladwell 2015). It is thought that individuals who are already struggling with mental health issues, social isolation, and/or feelings of anger and resentment may be more susceptible to the influence of mass shooting contagion because they literally see themselves in the words and deeds of past mass shooters (Peterson & Densley 2021). People in crisis may equally be drawn to certain ideologies (i.e., political, religious) as a way to justify their actions and legitimize their beliefs (Capellan & Anisin 2018, Silva 2023b).

In the Violence Project database (Peterson & Densley 2023a), about 21% of mass shooters were motivated by hate; although this is a less common motivation than economic factors or employment issues (32%) and interpersonal issues (24%), mass shooters who subscribe to a particular ideology may see themselves as part of a broader movement or cause, which can increase their sense of purpose and belonging (see Peterson & Densley 2021). For example, the perpetrator of the 2019 El Paso shooting, which targeted individuals of Hispanic descent and left 23 people dead, reportedly posted a screed online outlining his views on race and immigration. Similarly, the perpetrator of the 2018 Pittsburgh synagogue shooting, which left 11 people dead, held anti-Semitic beliefs and was motivated by his views on the Jewish community.

One way that mass shooters may become drawn to certain ideologies is through online forums or social media platforms (Peterson et al. 2023b). Prior research has found that exposure to violent content on social media may desensitize individuals to violence, making it easier for them to carry out violent acts (Am. Acad. Pediatr. Counc. Commun. Media 2009). This may be particularly true for individuals who spend a lot of time online, as they may become accustomed to seeing violent content on a regular basis.

By connecting like-minded individuals, modern online spaces can also provide a sense of community and validation for those who hold extremist or fringe beliefs (Peterson & Densley 2017). These platforms facilitate the spread of conspiracy theories and extremist ideologies, which can fuel a sense of anger and resentment toward certain groups or individuals (Densley 2021). Political polarization and the increasing divisiveness of American society are potentially contributing factors to the rise in mass shootings (see Peterson & Densley 2021). As individuals become more entrenched in their political beliefs and more distrustful of those who hold different views—a by-product of online "filter bubbles" (Pariser 2011) and "echo chambers" (O'Hara & Stevens 2015)—the resulting environment of hostility and anger may radicalize and motivate some individuals to carry out violent acts.

Relatedly, one possible reason for mass shooting contagion is that perpetrators of these events have been portrayed in the media as powerful, successful, and influential. A recent study of public mass shooters from 2000 to 2019 found that a higher number of casualties, certain types of targets (schools, government, houses of worship), younger perpetrators, perpetrators with signs of mental illness, and hate-driven mass shootings result in more media coverage (Fox et al. 2020). This can reinforce perceptions about who perpetrates mass shootings. However, another study that tried to disentangle the relationship between news coverage of mass shootings and the short-term prevalence of such events found that news reporting of mass shootings has little impact on the subsequent prevalence of mass shootings in the short term (Fox et al. 2021).

Several K–12 school shootings have followed the 1999 Columbine High School shooting "blueprint" in part because media coverage of the event sensationalized the actions of the perpetrators and contributed to a cult of personality surrounding them (Peterson & Densley 2021,

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p. 98). Several mass shooting perpetrators have been motivated by a desire for fame or notoriety (Bushman 2018, Langman 2018, Lankford & Silver 2020). They see a mass shooting as a way to gain recognition and achieve a level of infamy (Silva & Greene-Colozzi 2021). According to the Violence Project database, about a quarter leave behind a manifesto and other legacy tokens in an attempt to explain their actions and garner attention for their cause (Peterson & Densley 2023a). Famously, the perpetrator of the 2007 Virginia Tech massacre sent a news organization a package of materials that was aired publicly, including videos of himself discussing his plans and drawing inspiration from Columbine.

The media's search for a digestible motive can at times exaggerate the causality of ideology in mass shootings (Densley & Peterson 2022, Schildkraut et al. 2021), whereas it is a combination of certain personal beliefs and life circumstances that creates the perfect storm leading to violent behavior. Still, the contagion effect of mass shootings has important implications for the prevention and response to these tragic events (Peterson & Densley 2021). Reducing media coverage of these events could help combat the spread of fame-seeking behavior and prevent future mass shootings from occurring. And when media do report on mass shootings, it is important that they do so in a responsible and ethical manner, avoiding sensationalism and gratuitous coverage of the perpetrator's name, image, and background, and focusing instead on the victims and the impact of the shooting (Lankford & Madfis 2017).

MENTAL ILLNESS AND MASS SHOOTINGS

Politicians and the media often blame mass shootings on untreated mental illness (Duxbury et al. 2018). However, only a small number of studies to date have systematically analyzed the role of serious mental illness in mass shootings (Dutton et al. 2013, Stone 2015; for a review, see Peterson & Densley 2023c). Taylor (2018) examined 152 mass murders and found that 30% of the perpetrators had either a confirmed or suspected serious mental illness. In an analysis of mass killings over the last century, Rocque & Duwe (2018) studied 185 perpetrators and found that 59% had either been diagnosed with a serious mental illness or demonstrated serious signs of a mental illness. Another study of 1,315 mass murderers since 1900 found psychotic symptoms among 11% of perpetrators (Brucato et al. 2022).

Data from the Violence Project database (Peterson & Densley 2023a) indicate that 18.6% of perpetrators had been previously hospitalized for psychiatric reasons, 28.4% had been in counseling, and 22.7% had taken psychiatric medication (the last of these is comparable to the rate of having taken psychiatric medication among the US general population; Moore & Mattison 2017). In the prior 6 months before their shooting, 18.6% of perpetrators had received some sort of mental health treatment.

In terms of diagnosis, 24.2% showed evidence of a mood disorder diagnosis (compared with 9.7% of the US population in a given year), 6.2% showed evidence of an autism spectrum disorder diagnosis (compared with 1.8% of the general population), and 24.7% showed evidence of a psychotic disorder diagnosis (compared with 1% of the general population) (Peterson & Densley 2023a). Perpetrators could show evidence of more than one category of mental illness (8.8% of perpetrators showed evidence of both a mood disorder diagnosis and a thought disorder diagnosis). An additional 23.7% of perpetrators demonstrated signs of a mental illness but no evidence of a former diagnosis. If hospitalization, counseling, psychiatric medication, and previous diagnosis are combined, 54.6% of perpetrators had some sort of mental health history, which is somewhat higher than general population levels (Kessler et al. 2005). If signs of a mental illness are also included, 71.1% of perpetrators had a mental health history. Lankford & Cowan (2020) reanalyzed the mental health coding in the Violence Project database and found that even the more "mentally healthy" perpetrators could be recoded as having some signs of mental illness. This highlights

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the difficulty in both defining and coding mental illness using publicly available records (see also Metzl et al. 2021, Peterson & Densley 2023c, Skeem & Mulvey 2020).

Symptoms like delusions (i.e., a fixed false belief system), hallucinations (i.e., perceiving something that is not there), and cognitive disruptions (i.e., confused, disturbed, or disrupted patterns of thought)—all characteristics of psychosis—can directly instigate violent behavior (Douglas et al. 2009, McNiel et al. 2000, Peterson et al. 2014). Psychosis appears in various mental health disorders, including schizophrenia, mood disorders, and trauma-related conditions. The American public often perceives individuals with psychosis as potential threats to themselves and others (Pescosolido et al. 2019). While most people with psychosis are not violent (DeAngelis 2021), research indicates a heightened risk of violence among them compared to those without mental illness (Douglas et al. 2009). Specific psychotic symptoms, like persecutory delusions (i.e., believing they are being pursued) or command hallucinations (i.e., hearing voices instructing harm), can elevate this risk for a subset of these individuals (DeAngelis 2021).

A study on mass shooters using the *Mother Jones* database found that of the 28 shooters who survived their acts, 20 had a diagnosed psychotic disorder (schizophrenia or delusional disorder). However, in another sample, only 8 out of 20 had a schizophrenia diagnosis (Glick et al. 2021). A diagnosis does not conclusively mean that psychosis directly inspired the act, as one cannot conclusively interpret someone's thought processes. Peterson et al. (2022) found that in most mass shootings (69.8%), psychotic symptoms were not a factor. In 11% of cases, they may have played a minor role in influencing the shooter's decisions, and in 8.7% of cases, they played a moderate role alongside other motives.

In about 10.5% of the mass shootings considered in Peterson et al.'s (2022) study, psychotic symptoms played a major role, meaning the shooter was known to have experienced psychosis both before and during the crime, was responding to delusions or hallucinations in planning and committing the crime, and had no other known motive. These numbers align with Skeem et al.'s (2016) findings, where psychosis directly preceded violent acts in 12% of high-risk individuals with prior hospitalization. For this subset of individuals, consistent, high-quality mental health treatment might have averted violence. Yet, for the majority (around 90%), the motives behind mass shootings are multifaceted. Hence, effective interventions must consider additional factors beyond psychotic symptoms.

FIREARMS AND MASS SHOOTINGS

The acquisition of firearms is a critical component of all gun violence (Densley 2023). The Violence Project data (Peterson & Densley 2023a) show that a majority of mass shooters obtain their weapons through Federal Firearms Licensees and other legal channels, making the accessibility and availability of firearms key factors enabling mass shootings. Indeed, a trends analysis found that states with more relaxed gun control laws and higher rates of gun ownership have higher rates of mass shootings (Reeping et al. 2019).

Under federal law in the United States, certain individuals are prohibited from purchasing firearms, including individuals with felony convictions and individuals with a history of mental illness that includes an involuntary commitment to a psychiatric hospital. In some cases, however, mass shooters with a history of mental illness or criminal activity have not been identified as prohibited purchasers because of failures to submit all legal actions that would prohibit a person from owning a firearm to the national background check system (Laquer & Wintemute 2019; for a review, see Peterson & Densley 2021). The families of the victims of a mass shooting that took place in Sutherland Springs, Texas, in 2017 even sued the federal government because the shooter, who was in the Air Force, had a history of domestic violence that should have been flagged in the

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background system to prevent him from buying a weapon, but the Air Force had never entered the information into the database (US Dep. Justice 2023).

In many states, individuals can purchase firearms from private sellers without undergoing a background check, meaning that prospective mass shooters who would be prohibited from purchasing firearms through a licensed dealer can still purchase them through private sales (Laquer & Wintemute 2019). Another way that mass shooters may obtain their weapons is through theft. Individuals who are not legally allowed to own firearms may steal weapons to obtain them. Firearms used in school shootings are often stolen from private homes in part because the perpetrators are schoolchildren too young to legally own their own firearms (Peterson & Densley 2021).

There has been a concerning trend in recent years of assault weapons being bought and used in mass shootings (Cook & Donohue 2022). Assault weapon use has become a politically charged issue: Some gun owners and gun rights advocates argue that these weapons are necessary for self-defense or sporting purposes, while others argue that they are too dangerous to be available for purchase by civilians. Per the 1994 Federal Assault Weapons Ban, an assault weapon is any semi-automatic gun that can accept a detachable ammunition magazine and that includes one or more additional features that are unnecessary for sports or self-defense, such as a folding, telescoping, or thumbhole rifle stock.

Research shows that the use of assault weapons in mass shootings has become more prevalent in recent years. According to the Violence Project data (Peterson & Densley 2023a), from 1966 to May 2023, there were 190 mass shootings in the United States, and in 17 of the 33 deadliest shootings (52%), the shooters used assault weapons. In addition, the use of assault weapons in mass shootings increased from 19% in the 1990s and 2000s to 34% in the 2010s and 59% in the 2020s.

The increased use of assault weapons in mass shootings has been attributed to several factors. One factor is the availability of these weapons. Assault weapons are aggressively marketed and widely available for purchase in the United States (Busse 2021), and there are currently no federal laws that restrict their sale or ownership. In addition, many states have weakened their gun laws and thereby made it easier to acquire assault weapons (Smart et al. 2023).

Another factor is the perceived effectiveness of assault weapons in committing mass shootings and achieving mass casualties versus other types of firearms. The use of assault weapons in previous mass shootings may also serve as a model or inspiration for future shooters (Peterson & Densley 2021). Research has found that state-level assault weapons bans significantly reduce the annual incidence of mass shootings (Blau et al. 2016, Gius 2015), and, relatedly, state high-capacity magazine bans are associated with reductions in mass shooting incidents and deaths (Klarevas et al. 2019, Webster et al. 2020).

REACTING TO AND PREPARING FOR MASS SHOOTINGS

Mass shootings do not only affect the individuals and communities directly involved; they also create a sense of fear and anxiety that spreads throughout society (Rowhani-Rahbar et al. 2019). As highlighted above, these incidents often receive significant media coverage (Fox et al. 2020), leading to a heightened awareness and perception of risk among the general population. A recent study examining search engine data found that both "mental health" and "guns" were searched for with greater frequency the week after a mass shooting had occurred (Vargas et al. 2020). The study reports that Americans' perceptions of mental illness incorporate more associations with violence and politics after a mass shooting.

One of the ways in which mass shootings create a generalized sense of fear is by challenging individuals' beliefs about the safety and predictability of their environment. Mass shootings can occur in a variety of public settings, including schools, workplaces, and places of worship, and can happen seemingly without warning. This unpredictability can create a sense of vulnerability and

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a loss of control over one's environment, leading to feelings of fear and anxiety (Brenan 2019). In addition, the high rates of mortality and morbidity associated with mass shootings can lead individuals to perceive the risk of being a victim of a similar event as much higher than it actually is (APA 2019).

The implementation of active shooter drills in schools and workplaces reflects a risk mitigation strategy, aiming to prepare students and employees for mass shootings by enhancing their readiness and response capabilities. Research has found that drills can help people feel empowered and more confident in their ability to respond to a shooting (for a review, see Schildkraut & Nickerson 2022). By practicing different response strategies, participants can build "muscle memory" and may feel more capable of protecting themselves and others in the event of an emergency. Drills may also improve communication and make participants more prepared to work together to protect students, employees, and visitors in the event of an emergency (Schildkraut & Nickerson 2022).

At the same time, it is important to balance the potential benefits of drills with the potential drawbacks. One of the main concerns with drills is that they can cause psychological distress and trauma for participants, particularly children (Huskey & Connell 2021). The drills can be intense and realistic, involving simulated gunfire, loud noises, and other sensory stimuli designed to create a sense of urgency and panic. This can be overwhelming and traumatic for some people, particularly those who have special needs or who have experienced trauma in the past (ElSherief et al. 2021).

To minimize the potential harm associated with lockdown and active shooter drills, they should be conducted in a sensitive, trauma-informed way that takes into account the specific needs and concerns of different groups of people (Schildkraut & Nickerson 2022). Still, another concern is that active shooter drills normalize violence and make it seem like an inevitable part of daily life, potentially contributing to the contagion effect of mass shootings (Peterson & Densley 2021). By repeatedly practicing for the possibility of a shooting, schools and workplaces may be creating a sense of fear and paranoia that is not necessarily warranted by the actual statistical risk of a shooting. Given that many mass shooting perpetrators are current or former students and employees, there is also concern that active shooter drills inadvertently inspire prospective shooters and train them in the exact response of a shooting, providing information that could make shootings worse and shooters more difficult to stop (Peterson & Densley 2021).

To that end, routine activities theory and situational crime prevention can be used to understand the target selection in mass shootings and identify opportunities for prevention. According to routine activities theory, criminal events occur when three factors converge: the presence of motivated offenders, the presence of suitable targets, and the absence of capable guardians (Cohen & Felson 1979). In the context of mass shootings, the motivated offenders are the shooters, the suitable targets are the locations where large numbers of people gather, and the absence of capable guardians refers to the lack of security measures to prevent or respond to an attack (Silva & Greene-Colozzi 2021).

Situational crime prevention strategies can be used to reduce the opportunities for mass shootings by targeting these three factors (Schildkraut et al. 2019). For example, increasing the presence of capable guardians in the form of armed security or trained staff hypothetically could help prevent attacks, although research shows that for suicidal shooters, armed security could serve more as an incentive to attack than as a deterrent (Peterson et al. 2021a). Improving physical security measures such as installing metal detectors or bullet-resistant glass can also make potential targets less attractive to shooters, albeit with trade-offs regarding campus climate and perceptions of safety (Mowen & Freng 2019).

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Another way to apply situational crime prevention to mass shootings is to focus on the situational factors that precede attacks. For example, shooters may conduct surveillance or reconnaissance of potential targets prior to an attack (Silver et al. 2018). Strategies such as training staff to recognize and report suspicious behavior or implementing surveillance measures can help identify potential shooters and prevent attacks before they occur (Peterson & Densley 2021).

Consistent with routine activities theory (Cohen & Felson 1979), humans are creatures of habit, and mass shooters tend to target places they know (Schildkraut et al. 2019). Targeting familiar locations may be a way for shooters to exact revenge or make a statement about a perceived injustice (Fox et al. 2018). For example, a student who has experienced bullying or mistreatment at school may choose to target their school as a way of seeking revenge. Similarly, a disgruntled employee who feels wronged by their employer may choose to target their workplace as a way of making a statement. A person who has attended a certain school or worked at a particular location for an extended period of time may also be more familiar with the layout of the building, the schedules of the occupants, and the security measures in place, and this knowledge can make it easier for them to plan and successfully carry out an attack.

Mass shooters also target certain locations for their symbolic value (Fox et al. 2018). Certain locations may hold cultural, historical, political, and/or personal significance to the shooter, and attacking them may be a way to express a grievance, make a political statement, and/or provoke a reaction from society. For example, a shooter may target a religious institution as a way of expressing their hatred or intolerance toward a particular group of people, or they may target a government building as a way of expressing their dissent or opposition. By attacking a location that holds cultural or historical significance, the shooter may also receive more media attention and be remembered more prominently in the public consciousness. In some cases, this desire for fame or recognition may be a primary motivator for the shooter (Lankford & Silver 2020), as they may feel powerless or insignificant in their personal life and seek to gain attention through a violent act.

PREVENTING MASS SHOOTINGS

Preventing mass shootings from occurring involves recognizing the complex and complicated pathway that perpetrators take toward violence. This path can involve trauma, mental health concerns, a crisis point, suicidality, a grievance, online radicalization, leaking plans, access to firearms, and access to the site of the shooting. Prevention can occur at any point along this pathway. There is not one clear solution to preventing a mass shooting but, rather, several promising areas that can work in tandem.

Access to Mental Health Services

The role that mental illness plays in the lives of perpetrators of mass shootings varies from perpetrator to perpetrator. Mental illness is only one factor on a long pathway to violent behavior, and symptoms are often triggered by stress, unemployment, relationship struggles, exposures to violence, and trauma (Peterson & Densley 2021). A recent study that explored the timing of key life events in the 14 deadliest public mass shootings since Columbine found that perpetrator mental health contacts often began more than a decade before their mass shooting and ended a year before their attack (Lankford & Silva 2021). It was not the case that mental illness symptoms appeared suddenly right before the attack.

However, the prevalence of mental illness and mental health concerns among perpetrators of public mass shootings has implications for policy and practice. In addition to having the most permissive gun laws and higher rates of gun ownership than almost any other country, the United

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States also has higher rates of mental illness and lower rates of treatment than comparable nations (Peterson & Densley 2018, 2023c). It is possible that access to affordable, community-based mental health treatment and assistance services may help prevent mass shootings in some cases. For people experiencing a serious and persistent mental illness like psychosis for the first time, the biggest barriers to seeking treatment are generally stigma, a lack of knowledge or difficulty recognizing mental illness, and not knowing where to seek help (Scholten et al. 2003).

On a larger scale, investment is needed in the social and political determinants of health and well-being, such as those in housing, employment, food security, and education, that have a major influence on individual and community mental health and safety (Metzl et al. 2021). Universal health care, paid maternity leave, and access to affordable childcare are examples of common policies in other wealthy democracies (with lower rates of mental illness) that reduce stress and financial strain (Case & Deaton 2020). In addition, investments in school-based mental health resources, including counselors, social workers, and social-emotional learning curricula, could facilitate the early detection of mental health concerns and the identification of healthy coping mechanisms, particularly for young boys exposed to trauma.

Suicidality Prevention

Suicide—self-inflicted injury with the intent to die—is a pressing public health concern in the United States. Between 2001 and 2021, US suicide rates increased by over 30%, and suicide is now the second leading cause of death for individuals aged 10–34 (Garnett & Curtin 2023). For every suicide, there are around 29 attempts. While there is a notable overlap between suicide and mental illness, having suicidal tendencies does not always equate to having a mental illness. Most suicides stem from depression, psychosis, or substance abuse, but factors like trauma and stress also play significant roles (Brådvik 2018).

In the United States, a mere 4% of murderers die by suicide during their crimes (Eliason 2009, Lankford 2015). Yet, this statistic is considerably higher for mass shooters (Lankford et al. 2021). Roughly 38% of mass shooters end their lives, and another 10% instigate their own deaths at the hands of law enforcement (Kelly 2010). Peterson & Densley (2021) corroborated these statistics, revealing that a third of mass public shooters had prior suicidal tendencies (defined as previous attempts of suicide or writing/telling others about suicidal thoughts), over 40% died by suicide during their act, and about 20% were fatally shot, typically by the police.

As noted above, mass shootings are public displays intended for others to witness, often marking the planned end for the perpetrators (Peterson & Densley 2021). To be immortalized for their final act, shooters often resort to suicide. Given the terminal nature of these actions, suicide prevention methods could be crucial in thwarting them. Strategies like suicide prevention training, screenings, and firearms restrictions might double as mass shooting deterrents (Peterson & Densley 2021).

The United States has observed a parallel rise in mass shootings, suicides, drug overdoses, and alcohol-related deaths, which are collectively termed "deaths of despair" (Case & Deaton 2020). Peterson & Densley (2023b) argue that while mass shootings are often grimly portrayed as isolated incidents of inexplicable violence, they should be viewed within this broader context as harrowing manifestations of widespread emotional and psychological suffering. Mass shootings driven by despair mirror other self-destructive behaviors stemming from the same underlying issues. The act of a mass shooting, tragically designed to be both a public spectacle and the final chapter in the shooter's life, underscores the extreme desperation felt by the individual. To this end, recent studies discovered that threats of shootings, especially among youth, were largely indicative of seeking help rather than fame, and these threats were more associated with prior counseling and suicidality (Peterson et al. 2021b). Given that nearly half of all mass shootings involve such leakage of

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plans, treating these signals as critical intervention opportunities is essential. Responses should prioritize suicide screenings and resource connection over punitive actions that could further isolate individuals (Peterson et al. 2021b, 2023a,b).

Social Media Reforms

To address the intertwined issues of mass shootings and social media (Peterson et al. 2023b), a multipronged strategy is essential. Social media platforms should prioritize active monitoring for warning signs or threats and streamline user-reporting mechanisms to swiftly flag concerning content (Peterson & Densley 2021). Adjusting platform algorithms can deter the creation of echo chambers and minimize the amplification of extremist content, promoting a broader spectrum of viewpoints and counternarratives (O'Hara & Stevens 2015). Raising user awareness through educational campaigns can spotlight the risks of online radicalization and emphasize the value of genuine social interactions. Enhanced collaboration between these platforms and law enforcement can ensure rapid responses to imminent threats (Peterson et al. 2023a). Moreover, considering past abuses, some social media platforms might consider restricting or closely overseeing live-streaming features (Peterson & Densley 2021). A holistic approach could also involve partnerships with mental health professionals, paving the way for robust support systems for users who express alarming emotions or sentiments.

Crisis Intervention and Threat Assessment

In the aftermath of a mass shooting, various acquaintances of the perpetrator—from family members to coworkers and even law enforcement—frequently report noticeable behavioral changes preceding the violent act. A study examining 15 of the deadliest mass shootings from 1998 to 2018 revealed that perpetrators displayed more alarming behaviors and were more frequently reported than other active assailants (Lankford et al. 2019). The 2018 Parkland shooting case study pinpointed several instances where potential interventions were overlooked (Schildkraut et al. 2022).

According to the Violence Project database, 82% of mass shooting perpetrators exhibited signs of impending crisis, although not necessarily tied to mental health, in the time leading up to their acts (Peterson & Densley 2023a). Such signs included isolation, paranoia, depression, and erratic behaviors like mood swings (Peterson & Densley 2023b). Notably, nearly 60% displayed three or more of these atypical behaviors.

Considering this, crisis intervention and suicide prevention emerge as vital elements in halting mass shootings. Establishing crisis response teams or threat assessment initiatives in schools and workplaces—common locations for these incidents—can aid in identifying individuals at risk and determining the most effective interventions (Borum et al. 1999).

The behavioral threat assessment approach focuses on evaluating a person's behaviors and communications to gauge their potential for harm rather than simply profiling based on characteristics (Follman 2022, Meloy & O'Toole 2011, NASP Sch. Saf. Crisis Response Comm. 2020, Natl. Threat Assess. Cent. 2018, Reddy et al. 2001). Despite mandates and recommendations in many states, less than half of US schools maintain active threat assessment teams (Natl. Assoc. State Boards Educ. 2022, Natl. Cent. Educ. Stat. 2018), and concerns linger about the potential negative effects of such programs, such as contributing to hostile environments and perpetuating racial biases (Kelly 2018, Whitaker et al. 2020). However, research indicates that threat assessments can enhance the school atmosphere, decrease punitive measures, and promote counseling interventions for those assessed (Fein et al. 2004, Maeng et al. 2020, Nekvasil & Cornell 2015). Moreover, they provide alternatives to punitive actions, like counseling or mental health treatments (Cornell et al. 2012). An analysis of 1,836 threat assessments also found no significant differences in threat

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assessment outcomes by race, although Black students were referred for threat assessment at a higher rate than White students (Cornell et al. 2018).

One of the reported benefits of threat assessment is that it can help create alternatives to arrest in the case of school threats (Maeng et al. 2020), such as diversion, which involves redirecting the individual who made the threat away from the criminal justice system and toward other interventions, such as counseling or mental health treatment. This approach recognizes that many individuals who make threats may be struggling with underlying mental health and/or emotional issues and that addressing these issues may be more effective in preventing future harm than simply punishing the individual (Peterson et al. 2021b). Other alternatives to arrest may include restorative justice practices and empathy training, which aim to repair harm and restore relationships between individuals (van Berkhout & Malouff 2015), or community-based interventions, such as mentoring and job training programs.

Relatedly, police and mental health worker co-responder models, where a specially trained officer and a mental health crisis worker respond together to mental health calls for service (for a review, see Puntis et al. 2018), could help facilitate intervention for people in crisis. Co-responder models draw on the combined expertise of the officer and mental health professional to link people with mental illnesses to appropriate services or provide other effective and efficient responses. For example, had the Santa Barbara County Sheriff's Office used this model when conducting a welfare check on the 2014 Isla Vista shooter a month before his deadly rampage, perhaps they would have found cause to enter or search his residence and find the arsenal he had amassed for his crime, thus preventing it (Peterson & Densley 2021).

Firearms Policy

The federal landscape on gun regulations primarily rests on two foundational laws: the National Firearms Act of 1934 (NFA) and the Gun Control Act of 1968 (GCA). The NFA focused on taxing the manufacture and transfer of specific firearms and ammunition and mandating registration for particular weapons like machine guns. Meanwhile, the GCA extended the regulation net to include interstate firearms sales, introduced licensing for firearms dealers, necessitated dealer recordkeeping, and established categories of individuals—like convicted felons—who are ineligible for gun purchases. The subsequent 1993 Brady Handgun Violence Prevention Act enhanced the GCA, mandating background checks by federally licensed firearms dealers, though it left a loophole for private sales.

The FBI's National Instant Criminal Background Check System (NICS) filters prospective gun buyers. Initiated in 1998, its full potential remained unrealized until 2007 because states hesitated to enter mental health records. The 2007 Virginia Tech tragedy, rooted in mental health concerns, propelled Congress to pass the NICS Improvement Amendment Act (2007), bolstering mental health record submissions. After passage of this legislation, such submissions to NICS rose exponentially, representing almost one-third of all gun-disqualifying conditions by 2013 (Swanson et al. 2015).

The GCA's realm of "prohibited persons" encompasses individuals committed involuntarily for mental health or substance issues and those declared dangerous. However, states wield discretion in interpreting and applying this law, creating disparities in outcomes. The Supreme Court's verdicts in cases like *District of Columbia v. Heller* (2008) and *New York State Rifle & Pistol Association, Inc. v. Bruen* (2022) have expanded the Second Amendment's scope, and consequentially, many states have relaxed gun purchase norms.

After the Sandy Hook Elementary School tragedy in 2012, New York initiated a mandate for mental health professionals to flag high-risk patients to law enforcement. The New York Secure Ammunition and Firearms Enforcement (SAFE) Act of 2013 allowed a cross-reference

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with handgun permit registries and, if applicable, revocation of said permits. Laws like these have courted controversy, especially in a post-*Heller* context. Yet, extreme risk protection order (ERPO) laws (also called red-flag laws) have gained traction. These laws allow family members or law enforcement to petition a court to temporarily restrict a person's access to firearms if that person is deemed to pose a threat to themselves or others (Zeoli et al. 2022). Such measures provide a mechanism to act upon concerns before a potential tragedy occurs. As of 2023, 19 states have adopted ERPO laws, some of which also provision for emergency cases via ex parte ERPOs. Empirical evidence suggests that these laws contribute to decreased rates of suicides and homicides involving firearms (Gius 2020; Kivisto & Phalen 2018; Swanson et al. 2017, 2019).

However, as Gostin & Record (2011, p. 2108) contend, the focus should pivot from "dangerous people" to "dangerous weapons." The RAND Corporation's Gun Policy in America initiative (Smart et al. 2023) examined more than 200 combinations of firearms policies and outcomes, such as firearm deaths, violent crime, suicides, and defensive gun use and found that few have been rigorously evaluated. However, evidence supports the conclusion that child-access prevention and safe storage laws, which require gun owners to secure their firearms (especially when not in use) to prevent unauthorized access, reduce self-inflicted firearm injuries among youth as well as homicides. Prohibiting gun ownership among individuals subject to domestic violence restraining orders decreases total and firearm-related intimate partner homicides. Background check requirements, waiting periods between the purchase and possession of a firearm, and laws that set a more restrictive minimum age of purchase also reduce firearm suicides and homicides. Waiting periods prevent impulsive acts of violence by providing a cooling-off period for those who might be in crisis. Raising the minimum age to purchase firearms reduces the risk of shootings in schools and other venues frequented by young people. By contrast, stand-your-ground laws and "shall-issue" concealed-carry laws are associated with increases in firearm homicides and total homicides (Smart et al. 2023).

CONCLUSION

Mass shootings have become an alarming public health crisis, necessitating a comprehensive understanding of their epidemiology. This review highlights that mass shootings are not isolated events but often emerge as a result of a confluence of factors. While mental illness plays a role in some cases, it is crucial to remember that the vast majority of individuals with mental health conditions are not prone to violence. Other factors, such as a history of (domestic) violence, social isolation, access to firearms, and ideological extremism, also significantly contribute to the risk.

Our review underscores the significance of social determinants, including the influence of (social) media, personal crises, and the availability of firearms. The spectrum of motives is also wide-ranging and complex; perpetrators may be influenced by factors such as revenge, perceived injustice, or a desire for notoriety. Recognizing these motivations can aid in the early identification of individuals who may pose a threat, enabling timely intervention and support. Likewise, creating stronger support systems that reduce social isolation and promote inclusivity can play a pivotal role in mitigating the risk of mass shootings.

While this review provides valuable insights, we acknowledge the need for further research to deepen our understanding of mass shootings. Longitudinal studies that focus on individual pathways to violence, comprehensive evaluations of prevention programs, and rigorous analyses of international perspectives can enhance our knowledge base and inform evidence-based policies. Collaborative efforts among forensic psychologists, practitioners, policy makers, and communities are crucial for building resilience, fostering empathy, and ultimately preventing future acts of mass violence. Let this review article serve as a call to action, reminding us of the importance of our collective responsibility to protect and heal our communities.

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SUMMARY POINTS

1. Mass shootings are variably defined but typically involve multiple fatalities from firearms in public locations, and the United States stands out globally for its high frequency of such events. Mass shootings have become more frequent and deadly over recent decades and have lasting effects on survivors, families, and society.
2. Mass shooting contagion, spurred by extensive media and online coverage, can inspire individuals, especially those with extremist beliefs or in crisis, to replicate violent acts.
3. While mass shootings are sometimes linked to untreated mental illness, studies show a varied relationship: A majority of shooters show signs or history of mental health issues, but psychosis, characterized by symptoms like delusions, is a primary driver in only about 10% of cases. Such findings underscore the multifaceted motives behind such acts.
4. Mass shootings amplify societal fear and anxiety, altering perceptions about mental illness and safety, and while interventions like active shooter drills aim to prepare communities, they can also have psychological impacts and potentially normalize violence.
5. Mass shooting prevention requires multifaceted approaches that target complex perpetrator pathways, emphasizing mental health accessibility, suicidality intervention, social media reforms, threat assessment and crisis intervention, and nuanced firearms policies.

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