Can Mass Shootings Be Stopped?

To Address the Problem, We Must Better Understand the Phenomenon

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SYNOPSIS

The mass shooting at Columbine High School in Littleton, Colorado, happened over two decades ago, yet it remains etched in the national consciousness. To this day, communities still are struggling to find solutions to the complex and multifaceted nature of mass shootings. Understanding the unique context of the mass public shootings phenomenon is necessary for policymakers, practitioners, and other vested stakeholders to work to reduce these incidents and their impacts. This brief provides updated analyses from the last two years (2021–22), building on previous work by the Regional Gun Violence Research Consortium to identify trends and broader considerations related to mass public shootings.

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CAN MASS SHOOTINGS BE STOPPED?
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An Updated Look at Mass Public Shootings in America

Over the last two years, there have been a number of high-profile mass public shootings in the United States that have dominated the headlines and captured the attention of the public and policymakers alike—from Buffalo, New York (May 14, 2022; 10 dead) to Uvalde, Texas (May 24, 2022; 21 dead), Highland Park, Illinois (July 4, 2022; 7 dead), Monterrey Park, California (January 21, 2023; 11 dead), and Louisville, Kentucky (April 10, 2023; 5 dead). Although mass public shootings rarely made headlines during the height of the pandemic, the frequency of events has since rebounded to pre-COVID levels. Consequently, these and other mass public shootings have reinforced the need to do more to prevent these tragedies from occurring and to mitigate the harms to individuals and communities if and when they happen. To achieve these goals, it is important to understand the trends associated with the phenomenon of mass public shootings.

The Regional Gun Violence Research Consortium (the Consortium) first published a report in 2018 analyzing 51 years (1966–2016) of mass public shootings data.[1] In order to better understand the phenomenon of mass shootings, the report presented information on the location of shootings, weapons used, and demographics of the perpetrators. A follow-up report released in 2021 integrated an additional four years of data (2017–20).[2] These reports were based on a comprehensive database of US mass public shootings from researchers Jaclyn Schildkraut and H. Jaymi Elsass.[3]

As the United States continues to face record rates of gun violence,[4] with mass public shootings also increasing in frequency, the need for evidence-based policies is all the more important. A starting point, however, is understanding the different contexts and characteristics of various forms of firearm violence. Mass public shootings, although among the rarest forms of gun violence, require different strategies for prevention and response from other incidents. These shootings often involve considerable planning, which can provide important opportunities for identification, intervention, and de-escalation of the threat before it is carried out, unlike other forms of more spontaneous gun violence.[5] Additionally, mass public shootings often are random in nature and occur in large, open public spaces, which present different challenges—including preventative security measures and law enforcement responses—from targeted incidents and those that occur in private locations.

Taken together, understanding the unique context of the mass public shootings phenomenon is necessary for policymakers, practitioners, and other vested stakeholders to work to reduce these incidents and their impacts. This updated report includes two additional years of data and identifies changes in trends related to mass shootings, particularly as Americans resumed activities like work and school outside of the home amid the rollout of the COVID vaccine. Specifically, this brief presents analyses of a total of 57 years of mass shootings data (1966–2022). The analyses include the frequency of events, fatalities and injuries, distribution of location types, patterns of weapon usage, and perpetrators' demographic characteristics. The appendix reports the findings for only the two most recent years of data and compares them to the patterns for the previous 55 years.

Introduction

The mass shooting at Columbine High School in Littleton, Colorado, happened over two decades ago, yet it remains etched in the national consciousness. Columbine spurred a national debate—from personal safety to the security of schools, workplaces, and other locations, and to broader considerations of guns and mental illness. To this day, communities are struggling to find solutions to the complex and multifaceted nature of mass shootings.

Exacerbating this already complex issue is the prevalence of social media and never-ending wall-to-wall media coverage. Mass shootings, and those that are particularly lethal, are amplified by the news cycle, making them appear more commonplace when they are, in fact, statistically rare. Despite their episodic and highly sensational nature, however, not all mass shootings garner the same attention by the media.[6] Those shootings that are the most lethal typically receive more coverage, while those events that are perceived as more "routine" by the media may not even be covered at all.

As a result of the intense and often unbalanced media coverage of mass shootings, members of the public may hold disproportionate attitudes about the events themselves. Certain shootings, for example, may be perceived as indicators of a broader social problem, while others are considered to be isolated events.[7] Still, the collective phenomenon of mass shootings has been found to produce a host of outcomes for the public, including fear of crime, a potential moral panic, and the general belief that these events are more prevalent than their actual occurrence.[8]

Like the public, policymakers have also struggled with how to respond to mass shootings. Most policies center on either further restricting or expanding rights related to gun ownership and carrying, with a lesser emphasis on mental health protocols,

regulating violent media, or policies related to security practices. More often than not, in the immediate aftermath of a mass shooting, a flurry of bills are introduced, but few, if any, are ever enacted into legislation.[9] Further compounding the issue is that the new laws that are passed, or even those that have been on the books for decades, often are not enforced, leading them to be ineffective at preventing the next mass shooting.[10]

Problems Defining Mass Shootings

A central challenge in developing public policy solutions to mass shootings in America is the absence of a precise and generally accepted definition.[11] Without this, the result is a distorted understanding of the actual context of the problem of mass and school shootings. Put plainly, we cannot solve a problem we do not fully understand.

There is wide variation on how the term "mass shootings" is defined. Various government organizations (e.g., Congressional Research Service, the Centers for Disease Control and Prevention, US Department of Education) and other entities (e.g., Gun Violence Archive [GVA], Mass Shootings Tracker, media outlets) offer data that are based on their own descriptions that vary based on the number of victims (either killed or total shot), location, and the like. As a result, these definitions are inconsistent, overly broad, and ultimately lead to inflated statistics.[12] Depending on the data source, annual estimates of the number of mass shootings in the United States range, on average, from one or more per day to one per month.[13]

After the May 24, 2022, attack at Robb Elementary School in Uvalde, Texas, for example, news outlets around the nation reported that it was the 214th mass shooting of the year.[14] This figure was drawn from the GVA's data, which defines a mass shooting as "FOUR or more shot and/or killed in a single event [incident], at the same general time and location not including the shooter."[15] Although this data source captures a large universe of events by relying solely on a victim count, it fails to account for important contextual differences between cases that have important implications for prevention and response strategies. In addition to events like Uvalde, the GVA data also includes events that are targeted rather than random (e.g., gang shootings, family annihilations), those that erupt spontaneously from arguments, and those that occur during a felony. When the GVA cases are culled to identify mass shootings in the more "traditional" sense (using Columbine as a template for "mass *public* shootings"), the number of cases is reduced from 214 to five.

Other data sources for "mass shootings" use a narrower definition than the GVA, instead requiring that four or more people be *killed*.[16] As our previous reports have found, however, individuals are more likely to be injured than killed during mass public shootings, and whether someone dies in the attack can be sensitive to a number of factors, including the type of weapon and caliber of ammunition used, where on their person they were shot, how quickly initial medical assistance is rendered, and distance to the hospital. By utilizing a threshold of four or more fatalities, the corresponding

data then are skewed toward the most lethal cases while omitting incidents where many people are injured but few are killed.[17] The 1998 shooting at Thurston High School in Springfield, Oregon, highlights this issue. The 15-year-old perpetrator killed two students and wounded 25 others. Despite 27 total victims, this case would be excluded from a number of existing databases. Other recent incidents would similarly be excluded from most existing datasets, including but not limited to those at the STEM School in Highlands Ranch, Colorado (2019: 1 killed, 8 injured), a synagogue in Poway, California (2019: 1 dead, 3 injured); a garlic festival in Gilroy, California (2019: 3 killed, 12 injured), a workplace in Collierville, Tennessee (2021: 1 killed, 13 injured), and a subway in New York City, New York (2022: 0 killed, 10 injured).

An Updated Analysis of Mass Public Shootings

In one of the most comprehensive studies of mass shootings in the United States to date, researchers Jaclyn Schildkraut and H. Jaymi Elsass evaluated existing definitions of mass shootings from a number of sources, identifying the benefits and deficiencies of each.[18] In doing so, they crafted their own definition aimed at overcoming the limitations of these previous descriptors, which serves as the basis for this report:

> A mass shooting is an incident of targeted violence carried out by one or more shooters at one or more public or populated locations. Multiple victims (both injuries and fatalities) are associated with the attack, and both the victims and location(s) are chosen either at random or for their symbolic value. The event occurs within a single 24-hour period, though most attacks typically last only a few minutes. The motivation of the shooting must not correlate with gang violence or targeted militant or terroristic activity.[19]

In addition to definitional issues of school and mass shootings, the absence of a single national database of mass shooting events makes it difficult to properly understand and address the problem. Using the above criteria, Schildkraut and Elsass created a comprehensive dataset of mass shootings in the United States. Identifying potential events through media accounts, existing databases, and web searches, they cross-referenced each shooting through at least three sources to ensure that it aligned with the definition.

Between August 1, 1966 and December 31, 2022, a total of 441 mass public shooting events occurred across the United States using the definition crafted by Schildkraut and Elsass, 37 of which took place in the two most recent years analyzed. These events accounted for 1,569 fatalities and a total of 3,923 victims (injuries and deaths). Of these, 7.5 percent of fatalities (n = 118) and 8.4 percent of all victims were impacted between 2021 and 2022 (n = 329).

Across all mass public shootings, the number of deaths ranged from zero to 58, with the total number of victims varying between two and 471.[20] The median number of deaths and median number of total victims were two and five, respectively, and these figures have remained unchanged since the original data (1966–2016) were published.

TABLE 1. **Mass Shootings with 10 or More Fatalities, 1966–2022**

Date	Location	Killed	Injured
10/1/2017	Las Vegas, NV	58	413
6/12/2016	Orlando, FL	49	53
4/16/2007	Blacksburg, VA	32	23
12/14/2012	Newtown, CT	26	1
11/5/2017	Sutherland Springs, TX	26	20
10/16/1991	Killeen, TX	23	20
8/3/2019	El Paso, TX	22	26
5/24/2022	**Uvalde, TX**	**21**	**17**
7/18/1984	San Ysidro, CA	21	19
2/14/2018	Parkland, FL	17	17
8/1/1966	Austin, TX	16	32
8/20/1986	Edmond, OK	14	7
12/2/2015	San Bernardino, CA	14	19
9/25/1982	Wilkes-Barre, PA	13	1
4/20/1999	Littleton, CO	13	24
4/3/2009	Binghamton, NY	13	4
11/5/2009	Fort Hood, TX(a)	13	32
7/29/1999	Atlanta, GA	12	13
7/20/2012	Aurora, CO	12	58
9/16/2013	Washington, DC	12	8
11/7/2018	Thousand Oaks, CA	12	22
5/31/2019	Virginia Beach, VA	12	4
10/27/2018	Pittsburgh, PA	11	7
3/22/2021	**Boulder, CO**	**10**	**1**
5/14/2022	**Buffalo, NY**	**10**	**3**
3/10/2009	Samson/Geneva, AL	10	6
10/2/2015	Roseburg, OR	10	9
5/18/2018	Santa Fe, TX	10	13

NOTE: The three cases listed in bold/orange occurred during the focal years of this policy brief.

a) In May 2023, Fort Hood was renamed to Fort Cavazos.

SOURCE: US Mass Public Shootings Database.

Of the 28 mass public shootings with 10 or more fatalities (Table 1), three occurred in 2021 and 2022. These included the shootings at Robb Elementary School in Uvalde, TX (21 killed), the King Soopers supermarket in Boulder, CO (10 killed), and the Tops supermarket in Buffalo, NY (10 killed). Importantly, this list does not include events that may have had fewer fatalities but high total victim counts, such as the shootings at the July 4th parade in Highland Park, IL (seven fatalities, 56 total casualties) and at an LGBTQ+ nightclub in Colorado Springs, CO (five fatalities, 24 total casualties).

Location Selection

Across both the full data period (1966–2022) and within the most recent two years, workplaces remain the most likely places for mass public shootings to occur, followed by schools (Table 2). Together, these locations accounted more than 53 percent of incidents occurring since 1966 and over 43 percent of shootings in 2021 and 2022. Other locations that were sites of mass public shootings included (but were not limited to) airports, hospitals, supermarkets, car washes, yoga studios, public libraries, nursing homes, and on different types of transit (e.g., bus, train).

*TABLE 2*. **Mass Shootings by Location Type, 1966-2022**

LOCATION TYPE	EVENTS	
Workplace	128	29.0%
School	107	24.3%
Multiple Locations	37	8.4%
Restaurant / Nightlife	31	7.0%
Shopping / Entertainment	25	5.7%
Government / Military	19	4.3%
Place of Worship	18	4.1%
Other	76	17.2%

SOURCE: US Mass Public Shootings Database.

Weapons Selection in Mass Public Shootings

Consistent with our previous analyses, mass public shootings were most commonly carried out with a single firearm (67.3 percent of incidents). Multiple weapons were present in nearly one-third of cases between 1966 and 2022 (Figure 1), though this occurred slightly more often (35.1 percent) in shootings that took place in 2021 and 2022.

FIGURE 1. Weapons Usage in Mass Shootings, 1966–2022
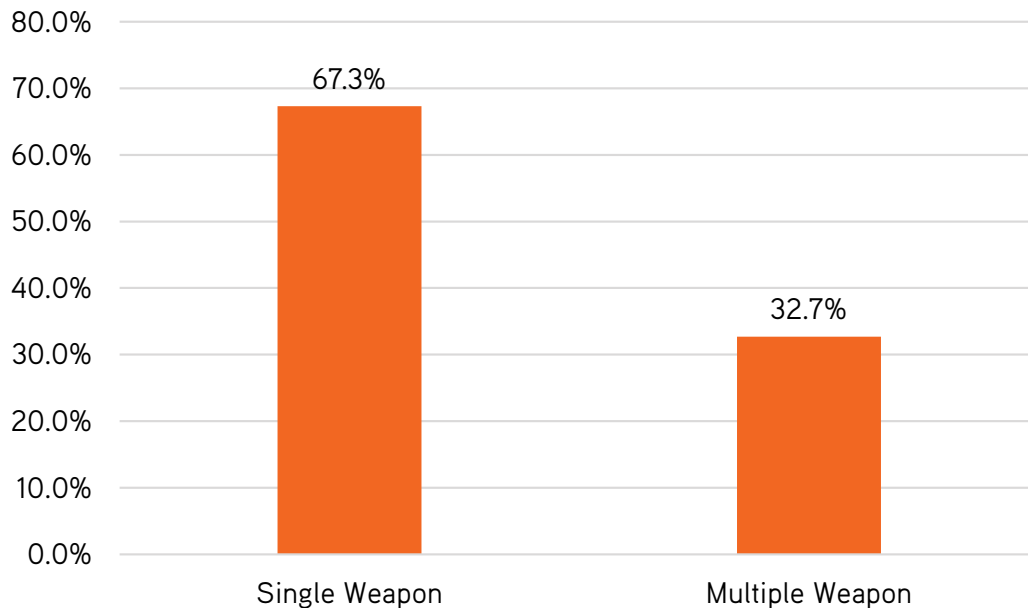
SOURCE: US Mass Public Shootings Database.

Handguns remain the preferred weapons of mass shooters and are used more than twice as often as rifles and five times more frequently than shotguns (Figure 2). While handgun use was consistent over the full period, changes were observed in the use of shotguns (decreased) and rifles (increased) in the most recent two years (see Appendix). Further, in single-weapon situations, handguns also are more commonly used (69.4 percent) than any other firearm type.[21]

FIGURE 2. Types of Weapons Used in Mass Shootings, 1966–2022
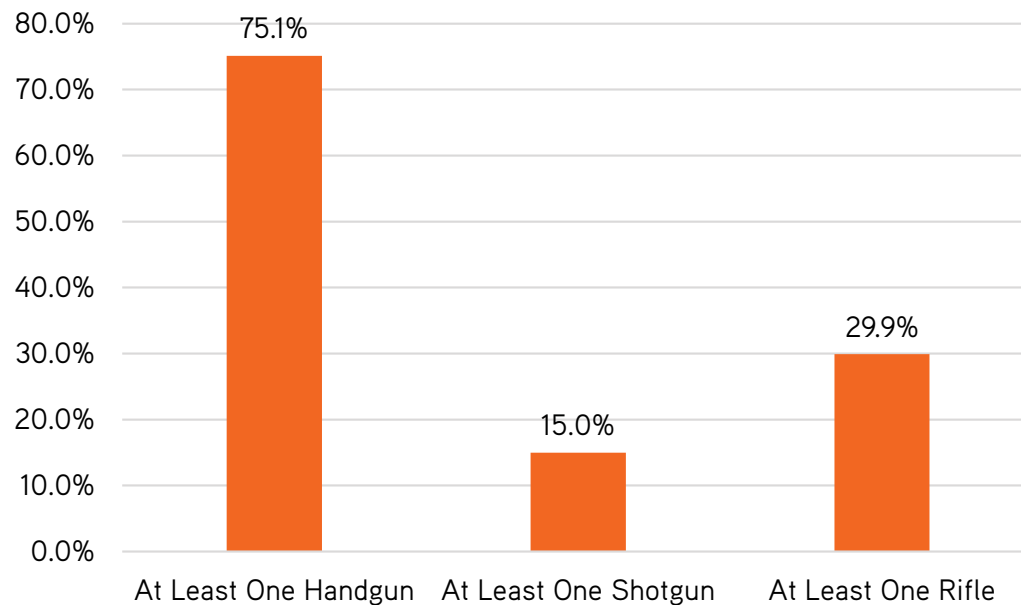
SOURCE: US Mass Public Shootings Database.

Notably, between 1966 and 2020, nearly 74 percent of the 119 rifles used by mass public shooters were semiautomatic or "assault-style" rifles. In the two most recent years, this figure rose to 92.3 percent (see Appendix). Semiautomatic rifles autoload a new cartridge into the chamber after a firearm is discharged so that the shooter only has to pull the trigger to fire the gun. This technology, which is not solely limited to rifles (as semiautomatic firing mechanisms Also are available for handguns), speeds up the rapidness of the shooting by eliminating additional steps between rounds. Other firing mechanisms, such as bolt-, lever-, or pump-action, require the user to perform some type of action to release the spent cartridge and move a new cartridge into the chamber before the weapon can be fired again.

The Perpetrators

Across the 441 mass public shootings identified, there were 454 perpetrators. The majority (95.7 percent) were male, most of whom acted alone (Figure 3).[22] By comparison, 78.9 percent of the 19 female perpetrators committed solo acts. In 10 (2.3 percent) of the 441 incidents, multiple offenders were present.

FIGURE 3. Sex of Mass Shooters by Event Circumstances, 1966–2022

Legend: Solo Male, Solo Female, Male-Female Pair, Two or More Males

3.4%   1.1%   1.1%   94.3%
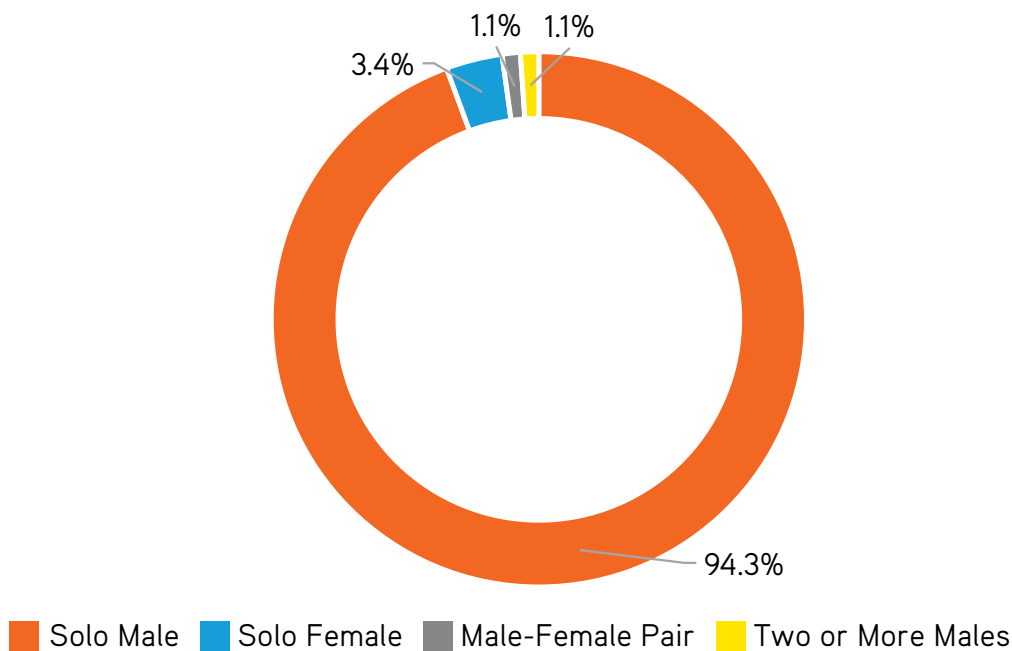
SOURCE: US Mass Public Shootings Database.

The distribution of ages for the 454 perpetrators is presented in Figure 4. The average age of a mass public shooter is 33.4 years (median age = 31 years). The youngest perpetrator in the analysis period was 11 years of age, while the oldest was 80. Approximately 47 percent of offenders were under the age of 30, with nearly 14 percent classified as juveniles (under the age of 18) at the time of their attack. In the most recent two years of assessment, more shooters were ages 20–39 (54.0 percent) than in the 55 years prior (46.0 percent).

FIGURE 4. Distribution of Ages of Mass Shooters, 1966–2022
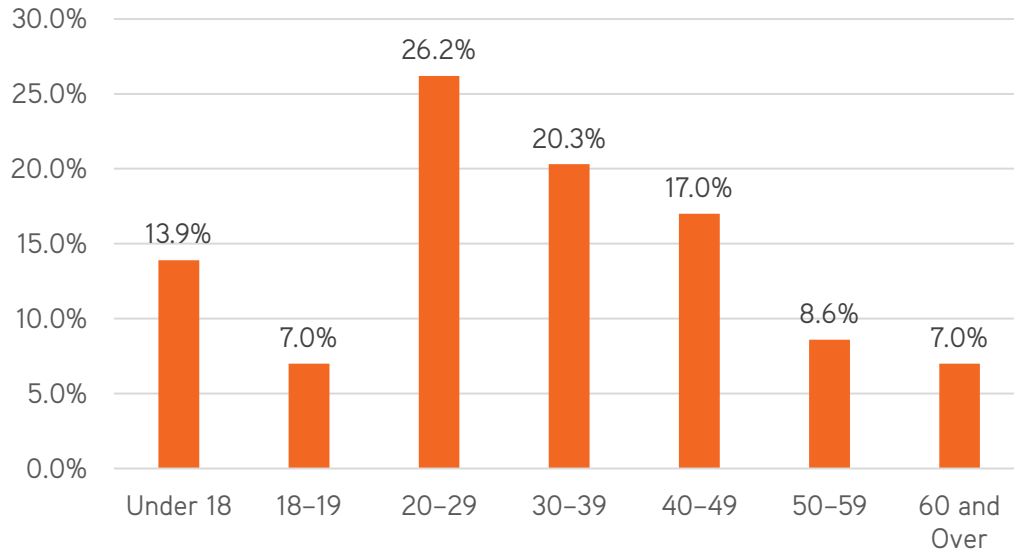
Race/ethnicity was identifiable for 403 (88.8 percent) of the perpetrators between 1966 and 2022. The distribution of racial/ethnic identification is presented in Figure 5 and has remained consistent with the previous versions of this policy brief. The findings indicate that the majority (54.1 percent) of mass public shooters are white. Just over one out of every four perpetrators are Black, while 10.4 percent are Hispanic. Fewer than 5 percent of mass public shooters are Asian, Native American, or other races or ethnicities. Most perpetrators who were categorized as "other" races/ethnicities were of Middle Eastern descent.

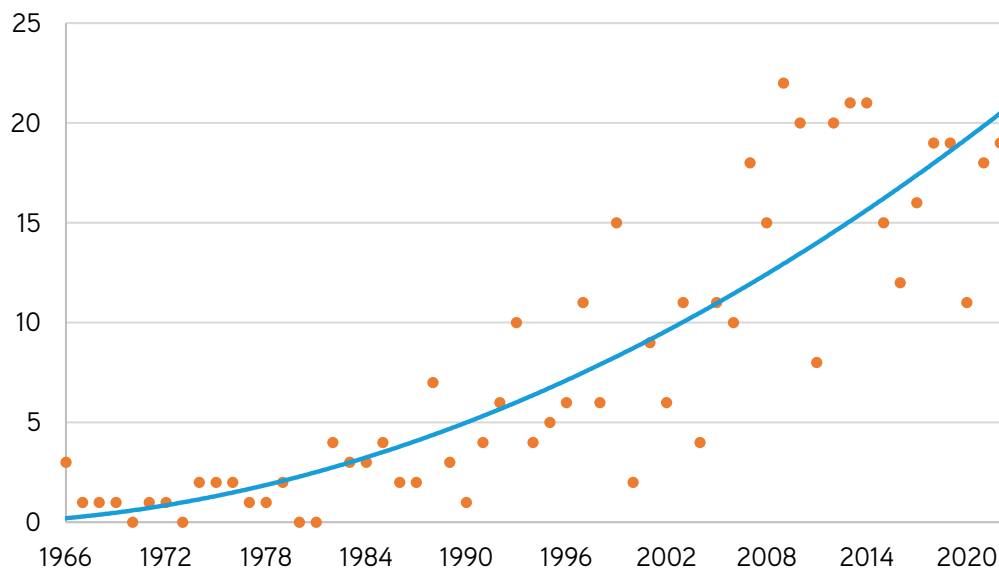FIGURE 5. Race/Ethnicity of Mass Shooters, 1966–2022
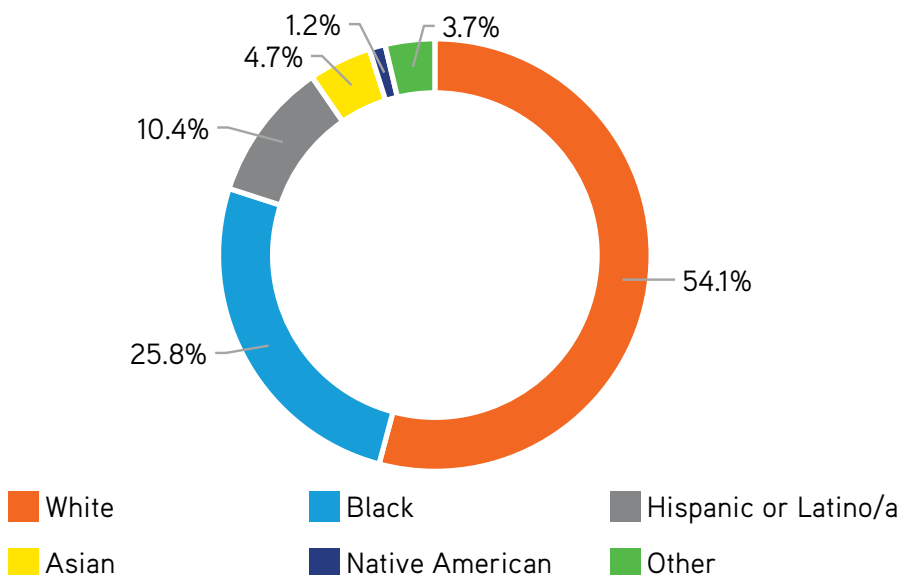
Mass Shootings Trends Over Time

On average, fewer than 20 mass public shootings occur annually, and the last two years of the analysis followed the same trajectory. As shown in Figure 6, there were 18 incidents in 2021 and 19 in 2022.

*FIGURE 6.* Mass Shootings by Year, 1966–2022

SOURCE: US Mass Public Shootings Database.

Notably, the number of incidents in both years is on par with the 10 years prior to the COVID-19 pandemic (2010–19). In 2020, the US experienced the lowest number of mass public shootings in the decade, due in large part to the national emergency declaration on March 13, 2020, and corresponding lockdowns. This led to both education and employment shifting online, which served to remove the opportunity for mass shootings to occur in these public spaces. With lifting orders in 2021 amid the rollout of the COVID-19 vaccine, leading to people resuming their regular activities and spending more time in public spaces, the number of mass public shootings also returned to pre-pandemic levels. Given, however, the short time since this occurred, data for future years will be needed to evaluate whether the steady increase in the number of incidents each year (as evidenced by the trendline in Figure 6) persists.

As illustrated in Figure 7, the risk of becoming the victim of a mass shooting remains statistically low, though this has been steadily increasing from 1966 through to the present. For the period of 2016 through 2022, which includes the most recent two years of analysis, the average annual incidence rate for victimization (fatalities plus injuries) was 0.07 per 100,000 individuals in the population. Importantly, however, this figure is higher—more than twice that of any of the previous five decades—due to the disproportionately high number of injuries in the Las Vegas shooting. When omitted, the average annual rate is 0.05 per 100,000, which is an increase consistent with the trend identified in the prior decades.[23] Moreover, the trend continues whereby individuals victimized by mass shootings are more likely to be injured rather than killed both with and without the Las Vegas attack included.

FIGURE 7. Average Annual Incidence Rates of Victimization Due to Mass Shootings, 1966–2022
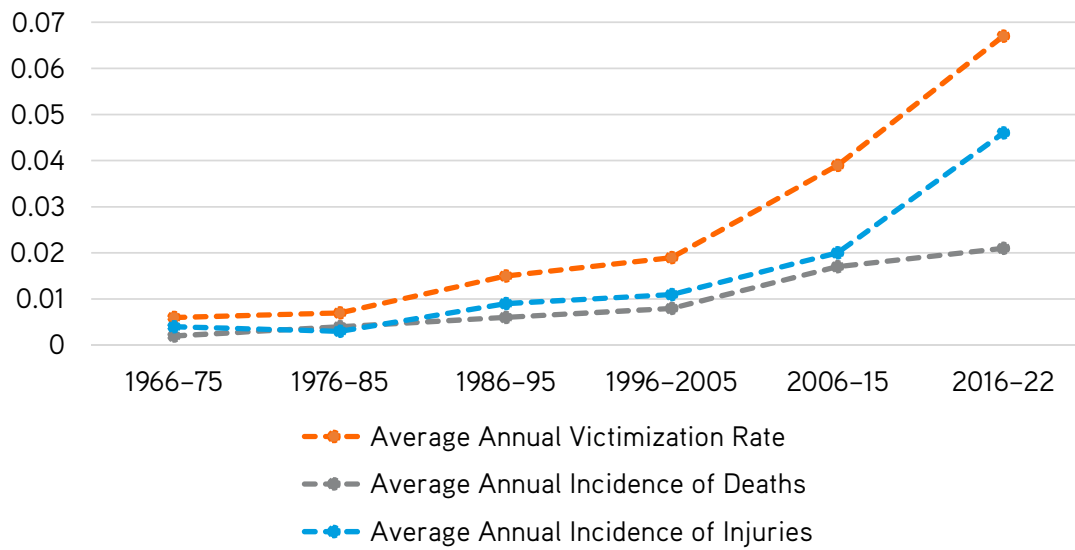
SOURCE: US Mass Public Shootings Database.

Finally, as has been illustrated in our previous analyses[24] and reflected in Figure 8, the employment of semiautomatic rifles by mass public shooters has led to higher casualty counts (both injuries and fatalities). In the 100 shootings between 1966 and 2022 where an assault-style rifle was used, there were 588 deaths and 1,227 injuries. This translates to an average of 5.9 fatalities and 12.3 injuries per shooting. Comparatively, in the 341 shootings where one was not employed, there were 981 deaths and 1,112 injuries; this equates to an average of 2.9 fatalities and 3.3 injuries per incident. Further, of the incidents with 10 or more fatalities listed above, 57.1 percent were carried out using assault-style rifles.

FIGURE 8. Average Mass Shooting Deaths and Injuries by Type of Weapon, 1966–2022
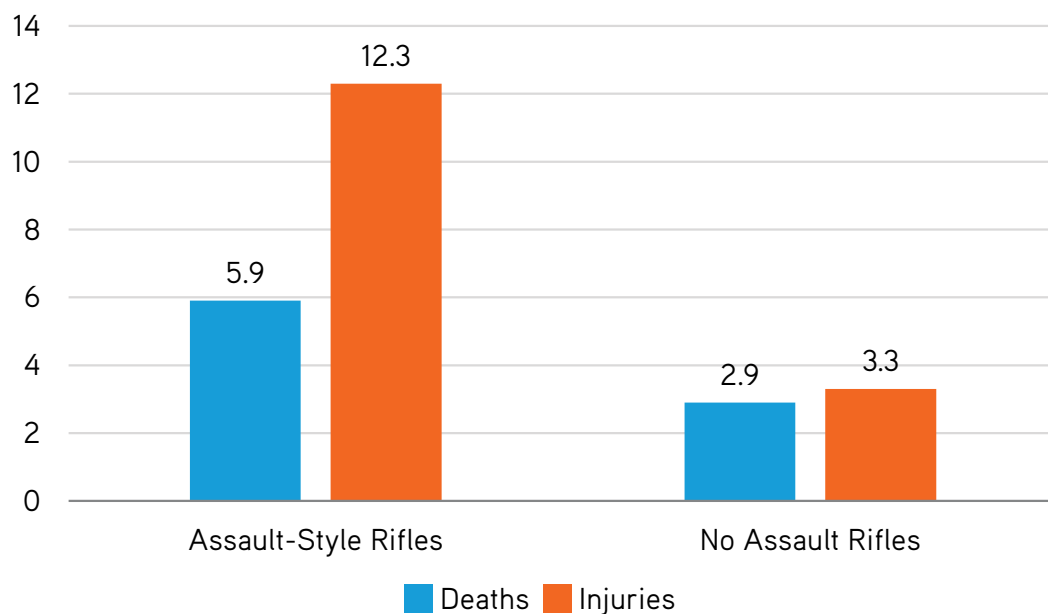
SOURCE: US Mass Public Shootings Database.

A Roadmap for Policymakers

Mass public shootings over the last two years continue to highlight missed opportunities to prevent these tragedies from occurring. As noted, perpetrators of these events often plan and prepare for their attacks well in advance and, in doing so, many share important information about their intentions ahead of time.[25] Research has found that nearly all mass public shooters communicate their plans to others through a process known as "leakage,"[26] with at least one—but often more than one—other person having knowledge about the impending attack, most of whom fail to come forward.[27] Even in cases where the threats have been reported to the authorities, such as in the case of the Buffalo perpetrator who leaked his plans both in a school assignment[28] and in online communications,[29] limitations or the absence of policies in place have hindered prevention efforts.

Following the Buffalo and Uvalde shootings, Congress passed and President Biden signed into law the Bipartisan Safer Communities Act.[30] Among the provisions of the law was funding for states to implement extreme risk protection orders (ERPOs), also known as "red flag laws," which have been enacted in 21 states and the District of Columbia as of June 2023.[31] Preliminary results have shown these laws aid in preventing mass public shootings,[32] as well as other forms of gun violence,[33] but more research is needed, particularly in light of the expanded access to funding and increased implementation. Additionally, in the absence of federal regulations on assault-style firearms following the expiration of the ban in 2004, states have sought to implement new regulations or enhance existing laws pertaining to these weapons, though the constitutionality of the legislation has been challenged in recent months following the historic Supreme Court decision in *New York State Rifle and Pistol Association v. Bruen*.[34] Yet as this analysis shows, such weapons are not only being used more frequently by perpetrators of mass public shootings but correspond to higher casualty outcomes and, as other research highlights, restrictions on assault-style firearms also help to counteract the impact of these events.[35]

Importantly, as policymakers work to address the issue of mass public shootings in the United States, such efforts must take a layered approach. There is not a "one-size-fits-all" solution given the variability in who perpetrates these incidents and where and how they occur. While every effort should be made to prevent these tragedies from occurring, it is critical to also strive to mitigate potential harms and plan to respond if they do happen. Equally as important is identifying gaps or loopholes in policies at both the federal and state levels and working to close them using validated, empirically supported approaches. Future work by the Consortium will aid policymakers in achieving these goals.

"President Joe Biden and First Lady Jill Biden pay their respects at a memorial to the victims of the May 14 shooting at Tops Supermarket, Tuesday, May 17, 2022, in Buffalo, New York" by Adam Schultz, official White House photo.

APPENDIX

Analysis of Mass Public Shootings, 2021–22

The following analyses highlight trends in mass public shootings for the latest two years of the dataset (2021–22), during which time, 37 events took place. These findings then are compared against our previous report analyzing mass public shootings between 1966 and 2020.

Location Selection

Mass public shootings were most likely to be perpetrated at workplaces, followed by schools and, to a lesser extent, places of worship (see Table A1).

TABLE A1. **Mass Shootings by Location Type, 2021–22**

Location Type	Events	
Workplace	10	27.0%
School	6	16.2%
Multiple Locations	1	2.7%
Restaurant / Nightlife	1	2.7%
Shopping / Entertainment	1	2.7%
Place of Worship	2	5.4%
Government / Military	0	0.0%
Other	16	43.2%

SOURCE: US Mass Public Shootings Database.

Compared to Previous Data Period: The proportions of shootings occurring at workplaces and places of worship remained on par with the previous analysis (1966–2020). For the other location categories (schools, restaurant/nightlife, shopping/entertainment, government/military, and across multiple locations), however, the proportion of incidents decreased, with the largest decline (-8.9 percent) exhibited at schools. This is likely due to the considerable increase (+28.5 percent) in locations classified as other. Between 2021 and 2022, mass public shootings occurred at an array of different location types, including supermarkets, medical facilities, hotels, public transportation (buses and a subway), and at a gas station.

Weapons Selection

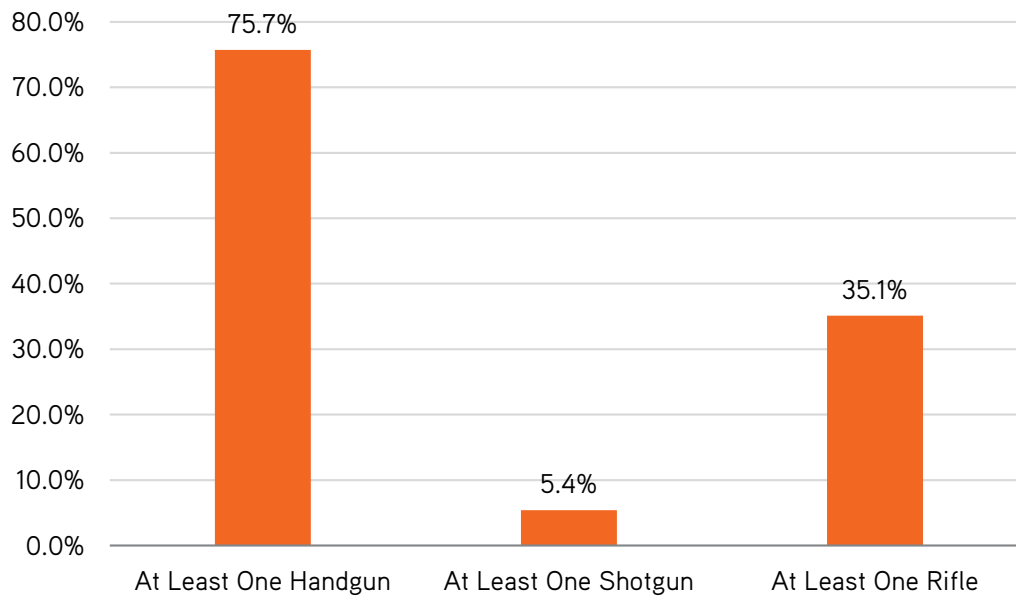FIGURE A1. Weapons Usage in Mass Shootings, 2021–22
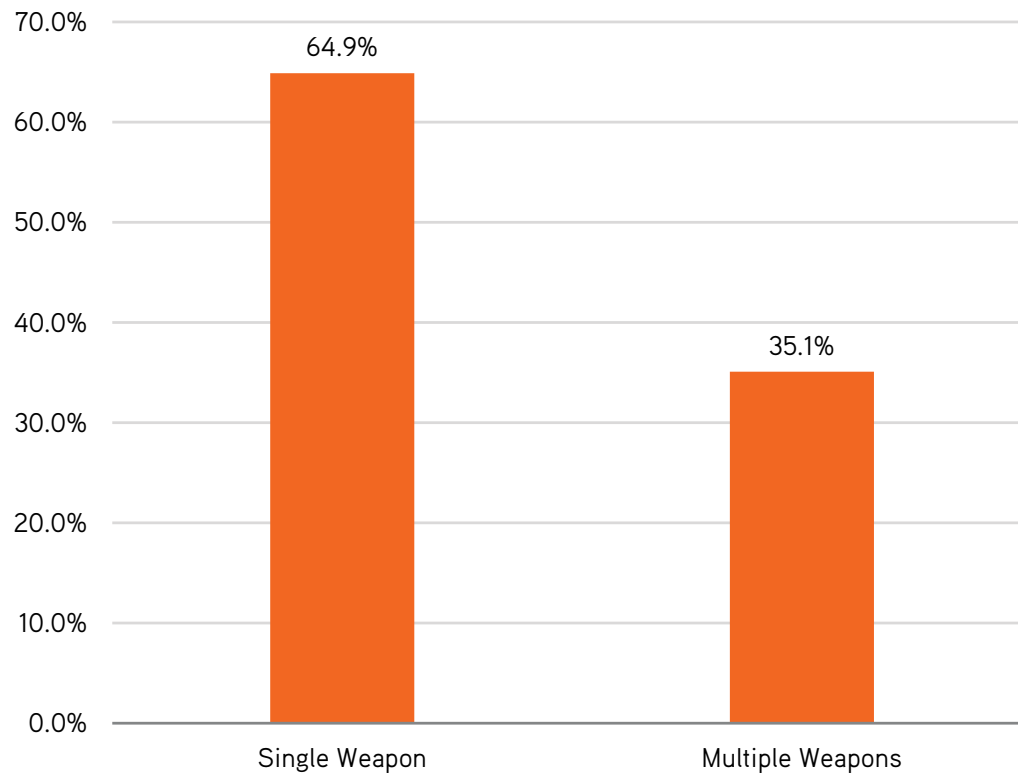
SOURCE: US Mass Public Shootings Database.

The majority of mass public shootings occurring in 2021 and 2022 involved the use of a single weapon (Figure A1), though multiple weapons were used, on average, in more than one out of every three attacks.

Compared to Previous Data Period: The distribution of weapons use (single vs. multiple) was consistent between the most recent years analyzed and the 55 years prior, though there were slight differences in each. Specifically, single weapon use was lower and multiple firearm use higher in the most recent two years assessed.

Handguns continued to be the preferred weapon of choice among mass public shooters, used in more than three out of every four attacks, on average. More than one-third of shootings employed at least one rifle, with all but one incorporating a semiautomatic firing mechanism; this increases the speed of shooting by expediting cartridge release and reload.[36] Just a fraction of cases involved a shotgun.

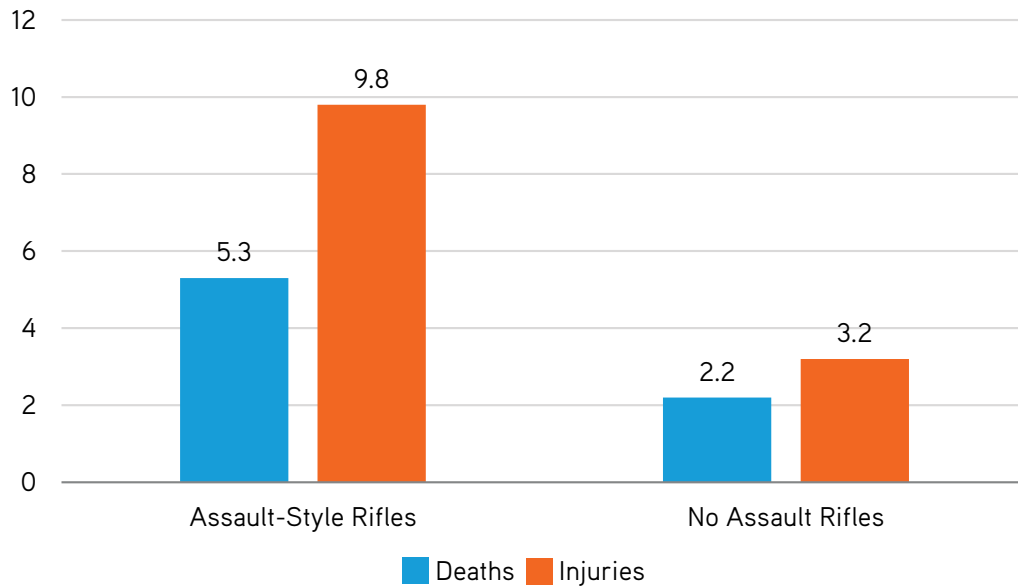SOURCE: US Mass Public Shootings Database.

Compared to Previous Data Period: Usage of handguns by mass public shooters remained consistent between the two periods. The proportion of shotguns employed in the latest two years was one-third as many as the previous analysis, while the usage of rifles increased by more than 5 percentage points. Additionally, while 92.3 percent of rifles utilized a semiautomatic firing mechanism in the most recent two years, just 73.9 percent did in the previous review, suggesting a shift in preference toward semiautomatic or "assault-style" rifles, which also have been found to correlate with more lethal attacks.

In the 12 mass public shootings between 2021 and 2022 where semiautomatic rifles were used, there were 63 fatalities and 118 injuries. This translates to an average of 5.3 deaths and 9.8 injuries per incident (Figure A3). Comparatively, when other types of firearms were used, there were 55 fatalities and 80 injuries across 25 incidents; on average, this equates to 2.2 deaths and 3.2 injuries per incident.

Compared to Previous Data Period: Between 1966 and 2020, there were 525 fatalities and 1,109 injuries across 88 mass public shootings where a semiautomatic rifle was used, averaging 6.0 deaths and 12.6 injuries per incident. When assault-style weapons were not used (316 incidents), there were 926 deaths and 1,032 injuries, averaging 2.9 and 3.3, respectively, per incident. As such, while the victimization rates for semiautomatic rifle deaths and other weapons fatalities and injuries have remained consistent, there has been a decrease of nearly three injuries per incident, on average, in the last two years, when semiautomatic rifles were used by the perpetrator. This change, however, must be interpreted with caution as the previous period (1966–2020) includes an extreme outlier with the 2017 shooting at the Route 91 Harvest Festival concert in Las Vegas, which had 413 firearm-related injuries, more than seven

times larger than the incident with the next highest injury count (the 2012 shooting at the Aurora, CO movie theater with 58). When the Las Vegas shooting is omitted from the analysis from 1966 to 2020, there were an average of eight injuries per shooting, which is lower than the two most recent years.[37]

FIGURE A3. Average Mass Shooting Deaths and Injuries by Type of Weapon, 2021–22

SOURCE: US Mass Public Shootings Database.

FIGURE A4. Sex of Mass Shooters by Event Circumstance, 2021–22
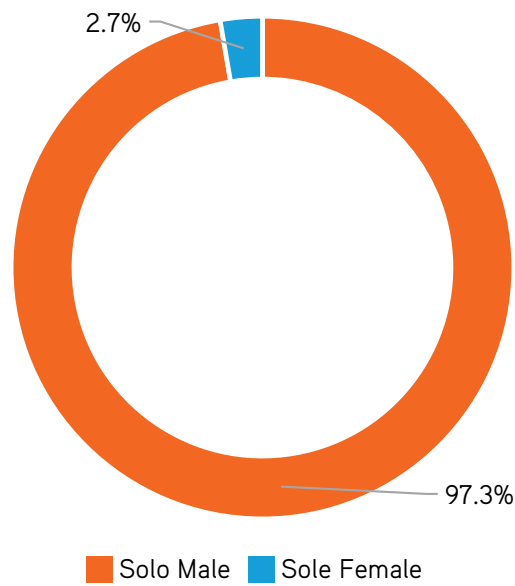
SOURCE: US Mass Public Shootings Database.

The Perpetrators

There were 37 perpetrators across the mass public shootings identified between 2021 and 2022. Nearly all perpetrators (97.3 percent) were males (see Figure A4). All perpetrators acted alone during their respective attacks.

Compared to Previous Data Period: Mass public shootings continue to be a male-dominated phenomenon (see Figure A3). Compared to our previous analysis, however, there were no co-offending situations in the current years.

Between 2021 and 2022, the average age of mass public shooters was 32.4 years. The youngest perpetrator in the analysis period was 12 years of age, while the oldest was 70. As depicted in Figure A5, approximately 8 percent of perpetrators were classified as juveniles at the time of their attack, with nearly 60 percent of offenders being under the age of 30.

Compared to Previous Data Period: The average age of mass public shooters has remained stable over the last 57 years of analysis. In the most recent period, there were approximately 45 percent fewer juvenile shooters than in the 55 years prior. Conversely, the proportion of shooters ages 60 and over more than doubled in the latest two years (13.5 percent compared to 6.3 percent between 1966 and 2020). The proportion of perpetrators ages 20 to 29 increased while the percentage ages 30 to 39 decreased; collectively, these two categories comprised 54.0 percent of perpetrators between 2021 and 2022, compared to 46.0 percent between 1966 and 2020.

FIGURE A5. Distribution of Ages of Mass Shooters, 2021–22
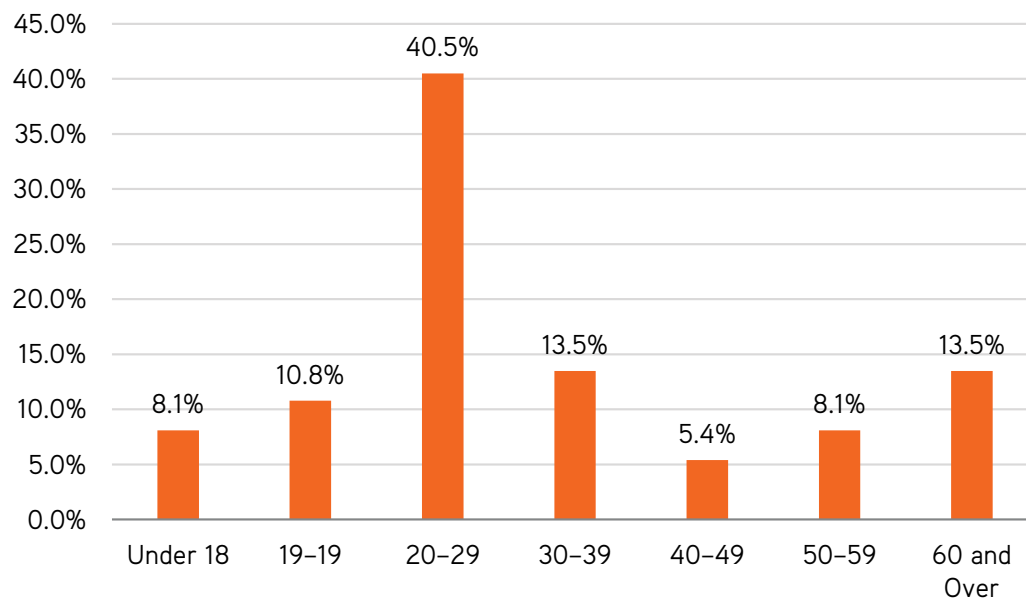
SOURCE: US Mass Public Shootings Database.

Race/ethnicity was identifiable for all but one (a juvenile whose identity was withheld) mass public shooters over the last two years of analysis. The distribution of this attribute is presented in Figure A6. Half of the perpetrators were White and approximately three out of every ten were classified as Black. The share of perpetrators who were of Hispanic and Asian descent each were 8.3 percent. Just one perpetrator was classified as other race/ethnicity and this individual was of Middle Eastern descent. There were no perpetrators identifying as Native American between 2021 and 2022.

FIGURE A6. Race/Ethnicity of Mass Shooters, 2021–22

Legend: ■ White ■ Black ■ Hispanic or Latino/a ■ Asian ■ Other
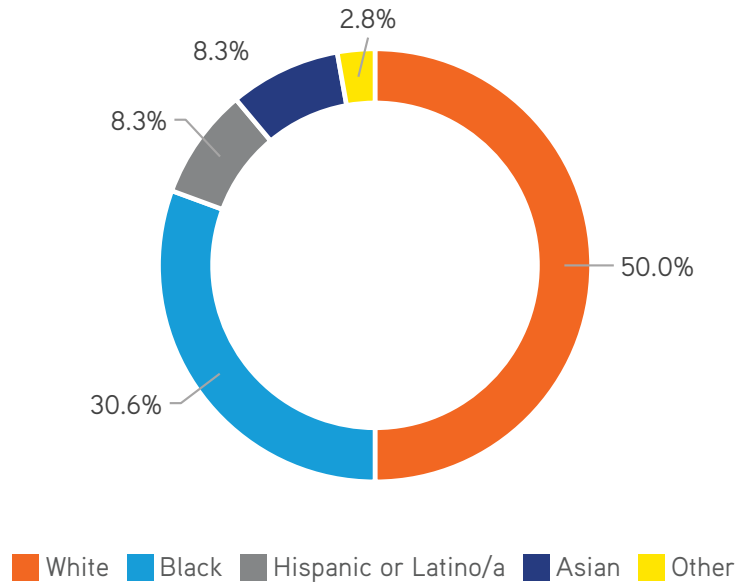
SOURCE: US Mass Public Shootings Database.

Compared to Previous Data Period: The finding that a majority, though not a disproportionate one, of mass public shooters are White is consistent with our previous analysis (54.8 percent). In the most recent two years of analysis, however, there was a greater proportion of Black and Asian perpetrators than the previous 55 years, though it is important to interpret any changes with caution due to the low number of identified perpetrators (36 between 2021 and 2022 compared to 367 between 1966 and 2020) that may lead to a more pronounced shift.

ENDNOTES

1   Jaclyn Schildkraut, Margaret K. Formica, and Jim Malatras, *Can Mass Shootings Be Stopped? To Address the Problem, We Must Better Understand the Phenomenon* (Albany, NY: Rockefeller Institute of Government, Regional Gun Violence Research Consortium, 2018), https://rockinst.org/wp-content/uploads/2018/05/5-22-18-Mass-Shootings-Brief.pdf.

2   Jaclyn Schildkraut, *Can Mass Shootings Be Stopped? To Address the Problem, We Must Better Understand the Phenomenon* (Albany, NY: Rockefeller Institute of Government, Regional Gun Violence Research Consortium, 2021), https://rockinst.org/wp-content/uploads/2021/07/Public-Mass-Shootings-Brief.pdf.

3   Jaclyn Schildkrautand H. Jaymi Elsass, *Mass Shootings: Media, Myths, and Realities* (Santa Barbara, CA: Praeger, 2016).

4   Jaclyn Schildkraut, *Updated Insights from the Gun Violence Data Dashboard* (Albany, NY: Rockefeller Institute of Government, Regional Gun Violence Research Consortium, 2023), https://rockinst.org/blog/updated-insights-from-the-gun-violence-data-dashboard/.

5   Frederick S. Calhoun and Stephen W. Weston, *Contemporary Threat Management: A Practical Guide for Identifying, Assessing, and Managing Individuals of Violent Intent* (San Diego, CA: Specialized Training Services, 2003).

6   Jaclyn Schildkraut, H. Jaymi Elsass, and Kimberly Meredith, "Mass shootings and the media: why all events are not created equal," *Journal of Crime and Justice* 41, 3 (February 5, 2017): 223–43, https://doi.org/10.1080/0735648X.2017.1284689.

7   For example, the 2012 shooting at Sandy Hook Elementary School was identified as reflective of broader societal problems, while those events in Tucson, Arizona (2011), and Aurora, Colorado (2012), were perceived to be isolated events. See "Washington Post-ABC News Poll," *Washington Post*, accessed March 29, 2018, https://www.washingtonpost.com/wp-srv/politics/polls/postabcpoll_20121216.html.

8   See, for example, Robert J. Kaminski, et al., "The impacts of the Virginia Tech and Northern Illinois University shootings on fear of crime on campus," *Journal of Criminal Justice* 38, 1 (2010): 88–98, https://doi.org/10.1016/j.jcrimjus.2009.11.011; Ronald Burns and Charles Crawford, "School Shootings, the Media, and Public Fear: Ingredients for a Moral Panic," *Crime, Law and Social Change* 32, 2 (1999): 147–68, https://www.ojp.gov/ncjrs/virtual-library/abstracts/school-shootings-media-and-public-fear-ingredients-moral-panic; and Jaclyn Schildkraut, H. Jaymi Elsass, and Mark C. Stafford, "Could it happen here? Moral panic, school shootings, and fear of crime among college students," *Crime, Law and Social Change* 63, 1-2 (2015): 91–110, http://dx.doi.org/10.1007/s10611-015-9552-z.

9   Jaclyn Schildkraut and Tiffany Cox Hernandez, "Laws That Bit the Bullet: A Review of Legislative Responses to School Shootings," *American Journal of Criminal Justice* 39, 2 (2014): 358–74, http://dx.doi.org/10.1007/s12103-013-9214-6. There are, however, exceptions to this. After the Columbine shooting, the state of Colorado was successful in passing several gun control measures, including a reinstatement of background checks and prohibitions on "straw purchase" (the buying of a gun on someone else's behalf). Similarly, after the Sandy Hook event, New York State enacted comprehensive antigun violence laws called the SAFE Act.

10   When the investigation after the 2007 shooting at Virginia Tech revealed a loophole that prevented the shooter's involuntary detention for mental health concerns from being reported into the National Instant Criminal Background Check System (NICS)—which, as required by the Gun Control Act of 1968, would have disqualified him from legally purchasing his firearms—new legislation was passed aimed at addressing the issue. By the time of the 2012 shooting at Sandy Hook Elementary School, it still was estimated that millions of records were missing from the system. In 2017, after a gunman killed 26 at a church in Sutherland Springs, Texas, it was revealed that his domestic violence conviction (another disqualifying factor) also had not been reported to the NICS by the US Air Force. He too had legally purchased the gun used in the shooting. Similarly, in the aftermath of many high-profile mass shootings, gun control proponents often call for a renewed assault weapons ban, even though one was in effect when the Columbine shooting happened and that one of the guns used in the attack (the IntraTec TEC-DC) was on the list of prohibited weapons.

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12   Al Jazeera Staff, "How many mass shootings took place in the US in 2022?," *Al Jazeera*, accessed July 19, 2023, https://www.aljazeera.com/news/2022/5/31/infographic-how-many-mass-shootings-has-the-us-had-in-2022.

13   Marisa Booty, et al., "Describing a 'mass shooting': The role of databases in understanding burden," *Injury Epidemiology* 6, 1 (2019): 47, http://dx.doi.org/10.1186/s40621-019-0226-7.

14   Alexander Nazaryan, "Days after Uvalde massacre, Trump rejects gun reforms at NRA event," *Yahoo! News*, May 27, 2022, https://news.yahoo.com/trump-sticks-to-his-guns-at-nra-annual-meeting-3-days-after-uvalde-massacre-004129091.html.

15   "Methodology," Gun Violence Archive, accessed July 19, 2023, https://www.gunviolencearchive.org/methodology.

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

17   Jaclyn Schildkraut and Lisa B. Geller, "Mass shootings in the United States: Prevalence, policy, and a way forward," *The ANNALS of the American Academy of Political and Social Science* 704, 1 (2023): 181–203, https://doi.org/10.1177/00027162231164484.

18   Schildkraut and Elsass, *Mass Shootings: Media, Myths, and Realities.*

19   Importantly, Schildkraut and Elsass later clarified the element of "terroristic activity" in their definition as incidents like the shootings in San Bernardino, CA (2015) and Orlando, FL (2016) revealed that the perpetrators drew inspiration from or pledged allegiance to the Islamic State in Iraq and Syria (ISIS). Thus, the definition excludes group-sponsored killings but does not omit shootings perpetrated by ideologically motivated lone actor perpetrators.

20   It is important to note that the 2017 shooting at the Route 91 Harvest Festival concert in Las Vegas, NV is an outlier within the data, with 471 total casualties (counting gunshot victims only; an additional 360 victims sustained injuries other than from gunshots and shrapnel, while 96 people sustained injuries of unconfirmed types). See Joseph Lombardo, *LVMPD Criminal investigation Report of the 1 October Mass Casualty Shooting* (Las Vegas, NV: Las Vegas Metropolitan Police Department, 2018), https://www.lvmpd.com/en-us/Documents/1-October-FIT-Criminal-Investigative-Report-FINAL_080318.pdf. After Las Vegas, the 2019 shooting at the El Paso, TX Walmart had the most total victims with 48.

21   Based on author computations. This calculation is not included in the figures presented.

22   For the purposes of data collection and analysis, sex was coded based on sex at birth and that which was recognized by the criminal justice system. At least two perpetrators (Highlands Ranch, CO [2019]; Nashville, TN [2023]) identified as transgender, which was coded as a separate variable and not included in the present analysis.

23   Based on author computations. This calculation is not included in the figure presented.

24   Jaclyn Schildkraut, *Assault Weapons, Mass Shootings, and Options for Lawmakers* (Albany, NY: Rockefeller Institute of Government, Regional Gun Violence Research Consortium, 2019), https://rockinst.org/issue-area/assault-weapons-mass-shootings-and-options-for-lawmakers/.

25   Schildkraut, Formica, and Malatras, *Can Mass Shootings Be Stopped? To Address the Problem, We Must Better Understand the Phenomenon.*

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com/2022/05/15/nyregion/gunman-buffalo-shooting-suspect.html.

29   Aya Elamroussi, Artemis Moshtaghian, and Rob Frehse. "Buffalo Suspect's Posts about Attack Plans Could Be Seen Online 30 Minutes before Mass Shooting," *CNN*, May 19, 2022, https://www.cnn.com/2022/05/18/us/buffalo-supermarket-shooting-wednesday/index.html.

30   See Pub. Law. 117-159, https://www.govinfo.gov/content/pkg/PLAW-117publ159/pdf/PLAW-117publ159.pdf.

31   Lisa Geller and Spencer Cantrell, *A Critical Opportunity for Extreme Risk Protection Order Implementation* (Albany, NY: Rockefeller Institute of Government, Regional Gun Violence Research Consortium, 2023), https://rockinst.org/blog/a-critical-opportunity-for-extreme-risk-protection-order-implementation/. Although some states, including New York, had ERPO laws in effect prior to the passage of the Bipartisan Safer Communities Act, these tools had limitations, including who could petition the court for firearm removal that impacted their effectiveness. See Eleonara Francica, "Red Flag Laws: Cases Soared in New York, but Constitutionality Questioned," *Politico*, May 18, 2023, https://www.politico.com/news/2023/05/18/red-flag-law-cases-soar-new-york-00097405.

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33   "Firearm Removal Laws," Johns Hopkins Bloomberg School of Public Health, accessed June 23, 2023, https://publichealth.jhu.edu/departments/health-policy-and-management/research-and-practice/center-for-gun-violence-solutions/solutions/firearm-removal-laws.

34   Jacob Charles, *Assault Weapons Regulations: New Legal Considerations in Light of Bruen* (Albany, NY: Rockefeller Institute of Government, Regional Gun Violence Research Consortium, 2023), https://rockinst.org/blog/assault-weapon-regulations-new-legal-considerations-in-light-of-bruen/.

35   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): 147-170, https://doi.org/10.1111/1745-9133.12485.

36   Ibid.

37   When the Las Vegas shooting is omitted, the average number of fatalities is virtually the same for the two periods (5.3 for 2021–22 compared to 5.4 for 1966–2020)

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