

US Violent Cause Mortality: Global Pandemic, Firearm Access and Domestic Violence

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The United States has the highest rate of firearm violent cause mortality (VCM) in the developed world. Homicide, suicide and the combination of the two, have had a negative impact on individuals, families and communities. The pandemic seems to have made the problem worse. We utilize a number of sources, including Federal Bureau of Investigation (FBI) firearm background checks (NICS) and homicide data, Centers for Disease Control and Prevention (CDC) suicide statistics, Gun Violence Archive and our intimate partner homicide-suicide IPHS data. The COVID-19 years of 2020, 2021 and 2022, along with more recent years 2023-2025 were examined and compared to pre-pandemic 2018 and 2019. In 2020, lockdowns isolated vulnerable families in homes with an abuser. FBI NICS Data shows dramatic upswings in the requested background checks for firearm acquisitions over these years. The first year 2020 was termed the year of the 'murder surge' and domestic violence (DV) increased by an estimated 8 percent. Combined IPHS events were lower in 2020, but peaked in the following 2 years. The peak year 2021, had 45,000 Americans killed by gunfire. Familicides resulted in multiple family member victims of lethal violence. Mass shootings, with 4 or more victims, most often (68%), had a link to DV, with family shot and/or a history of domestic violence. Some indicators of violence have returned to pre-pandemic levels, while others have not. Despite high rates of VCM, U.S. firearm policies have largely remained the same since 2018. No ban on civilian held military style assault weapons has occurred, since the 1994 legislation was permitted to expire. We argue, more gun accessibility and a lack of restrictions, led to high VCM during the pandemic and to some extent in the years following, which was particularly acute in the area of DV. Implications are discussed, with an eye toward prevention.

Keywords: domestic violence; firearm policies; mass shootings; homicide; suicide; murder-suicide

Introduction

The global pandemic began in late 2019, and had become widespread by 2020. Initially, the public health response led to social distancing and lockdowns required people to remain home from work and school. For families with an abuser(s), it could mean prolonged time with that person, isolation and inaccessible prevention

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resources. Domestic violence (DV) is difficult to measure because it typically occurs behind closed doors. It is estimated that the pandemic led to an increase in DV by about 8% in the U.S. (Piquero et al, 2021). In this article, we are interested in describing violent cause mortality, especially as it provides a cultural context related to domestic violence fatalities.

The United States has the highest rate of private gun access in the world, with more than one (120) per 100 persons—with several Americans owning more than one firearm (Karp, 2018). There is also a corresponding U.S. highest violent cause mortality among countries in the developed world (Salari et al., 2020). Approximately 46% of American homes have at least one firearm and one in 5 households acquired a gun during the pandemic (Hopkins, 2024). The increase in purchases were among first-time buyers (young, women, non-white and Hispanic) and more modest increase among long-term gun owners who were mostly white men (Miller et al, 2026).

It is well known that households with a gun have a 5 times greater chance of having that firearm involved in a suicide, homicide or fatal accident among family members, than those with no firearm. In addition, the fear of home invasions is disproportionately larger than the actual risk, since there are fewer than 350 justifiable homicides on record per year (Violence Policy Center, 2023a). Compared to other high-income countries, due to widespread gun access, the vast majority of women killed by domestic violence are in the U.S. (Grinshteyn & Hemenway, 2019).

One form of violent cause mortality involves murder and non-negligent manslaughter, which does not include justifiable forms of homicide. Compared to other high-income countries, the U.S. has 25 times the mortality from homicide. Weapons used in the killing of another person can include hands (beatings, strangulation), sharps (knives, blades, ax), drowning, and the most often utilized method in the U.S. is firearms. While males are more likely murdered, these are most often perpetrated by other males, who are acquaintances or strangers. Females are more often killed in their own homes, by their husband, partner or other relative (Allen, Salari and Buckner, 2020).

Trends over time find those who die by suicide in the U.S. have increased 35% from 2000 to 2022. Suicide was the 11th leading cause of death in 2023 with fatalities about twice those from homicide. Males are four times more likely to die by suicide than their female counterparts, partly because they choose more violent means (National Institute of Mental Health 2026). Self-abuse victims utilize a variety of methods, such as sharps, asphyxiation, jumping, poisoning and again, the vast majority occur by firearm (Choi et al, 2022). The United States has 10 times the suicide rate of the other high income developed countries (Grinshteyn & Hemenway, 2019).

When homicide and suicide are linked in the same event, there are devastating outcomes, which result in many with injuries or multiple fatalities. Violence Policy Center (2026) reported 1052 fatalities in 2025 from murder-suicide. In families, there could be children or other victims involved, resulting in a familicide or what some call family annihilation (Sillito and Salari, 2011; Violence Policy Center, 2026). The vast majority of offenders of IPHS are men, revealing a pattern of femicide in this type of violent cause mortality (Salari and Sillito, 2016; VPC, 2026). Familicides with a link to an intimate partnership in 2025 were also male perpetrated. Murder-suicides and familicides are mostly (87%) perpetrated by use of a firearm, as this method provides the means to harm others without the opportunity for them to escape the attack (VPC, 2026).

Mass shootings are defined as events with a firearm with four (4+) or more victims. The perpetrators may use military style assault weapons, which cause the greatest damage in a very short amount of time. These events might seem random, but in 2/3rds of the cases (68%) there is a strong link to domestic violence. Either the offender killed family first or they have a history of known DV (Geller et al 2021). The perpetrators of this form of violence are most often white (54%), males (95%) and the average age of the offenders is 34 years old (Rockefeller Institute of Government, 2026).

There are some federal laws which restrict firearm possession among abusers with a protective order or DV conviction, but those may not be enforced by local police in pro-gun cultures. States vary in their restrictions for firearms, and the violent cause mortality corresponds in a negative direction to enactment of these policies (Siegel et al, 2019).

Data and Methods

We utilize multiple data sources measuring violent cause mortality comparing pre-pandemic (2018, 2019) with the years of COVID-19 pandemic (2020-2022) and the years immediately after the crisis (2023-2025). In order to determine the applications to purchase a firearm, we examine the Federal Bureau of Investigation's NICs background check data by year. Homicides were measured by FBI Uniform Crime Report data for 2018 and 2019. The years beginning with 2020 homicides were measured by the National Incident Based Reporting System NIBRS. The law enforcement reporting agencies increased from 10,000 to over 13,000. Suicide rates are reported by Center for Disease Control and Prevention, National Center for Health Statistics. Age-adjusted suicide rates consider that children under 10 are not typically among those who take their own lives, so they are omitted from the population count per 100,000. The linked homicide-suicides are measured using our intimate partner homicide-suicide IPHS news surveillance data, which has been content analyzed for the years 2018 to 2022. In addition, the Gun Violence Archive for murder-suicides is also utilized, since the vast majority of events are perpetrated using a firearm. The distinction is that GVA data includes homicide-suicides including some which are not among intimate partners. For example, a disgruntled neighbor might shoot during a dispute with the person next door. GVA would include that event, whereas our IPHS news surveillance study has just cases with a current or former history of a relationship. Violence Policy Center (2023b; 2026) estimate the majority (2/3) of murder suicides are among those who are or were partners. Mass shootings and total firearm deaths by year are both measured by the Gun Violence Archive as well.

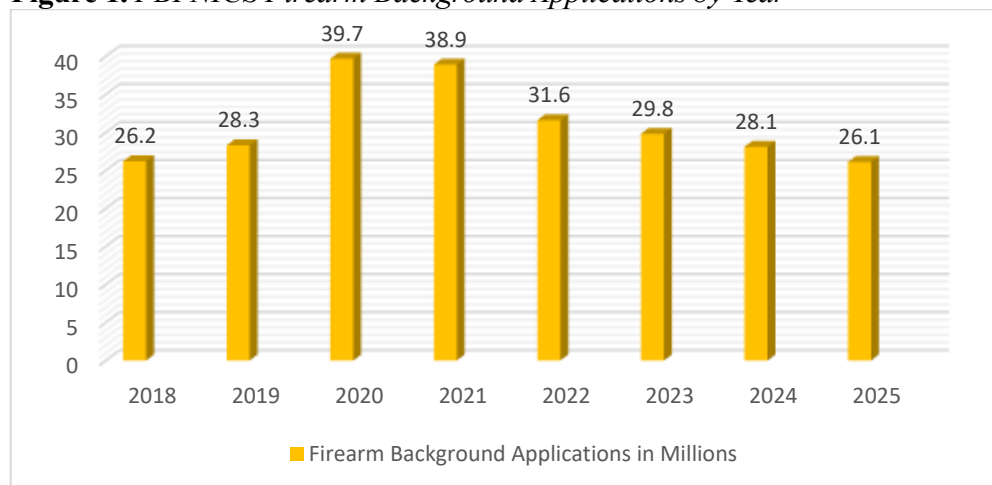
We acknowledge the use of these multiple data sets might represent a limitation. FBI NICS data only measures background checks for gun purchases, but not all who applied would obtain a firearm. In addition, there are some forms of violent cause mortality which are more difficult to measure. For years, homicides were recorded by police reports to the FBI and suicides separately by the CDC. Unfortunately, there was a problem counting linked murder-suicide events. For that reason, we only have data based upon media content analysis (Salari and Sillito, 2016; Violence Policy Center, 2023b; 2026) and the firearm method deaths recorded by the Gun Violence Archives.

Unfortunately, the VPC and GVA do not distinguish between family violence instances versus the murder-suicides among others (such as neighbors and co-workers). However, we do know that the majority are current or former intimate partners (VPC, 2026). Future murder-suicide events will be recorded by the more coordinated data collection of fatality reports in the National Violent Death Reporting System NVDRS, which now includes all 50 states.

Demand for Firearms

Firearm background checks were measured by the Federal Bureau of Investigation FBI NICS Data by year. During the pandemic, the applications for firearm purchases went up substantially. Figure 1 shows the FBI NICS Data applications by year, for the 8-year period.

Figure 1. *FBI NICS Firearm Background Applications by Year*



Source: FBI NICS (2026) Firearm Background Applications by Month Year

file:///C:/Users/u0028419/Downloads/NICS_Firearms_Checks_-_Month_Year-9.pdf

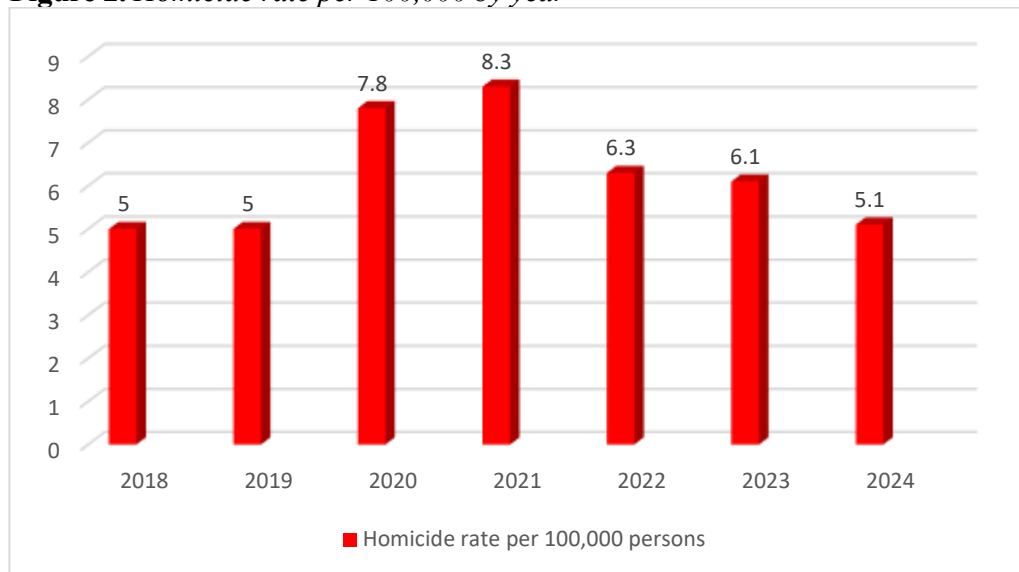
It does appear that the peak years for firearm purchases were in the midst of the crisis 2020-2021 and there is a decline since, eventually fully back to pre-pandemic levels by 2025. Clearly, the pandemic led to a rush in firearm acquisitions, which was an historical anomaly which took some time after the crisis to return to normal levels. Despite the eventual decline in numbers, these data indicate a saturation of guns in the United States.

Homicide

Homicide increased from the pre-pandemic (2018, 2019), when the nation was in the midst of the COVID-19 years (2020-2022). We will present the patterns in the years beyond the crisis as well (2023-2025). In 2018, the estimated number of murders in the nation was 16,214, which translated into 5.0 murders per 100,000

people that year (FBI 2018). The following year 2019, the estimated number of murders in the nation was 16,425, and the rate was also 5.0 (FBI 2019). Figure 2 illustrates the increase in homicide rate, especially during the early pandemic years.

Figure 2. *Homicide rate per 100,000 by year*



Source: FBI Homicide Statistics (2019; 2023) and U.S. Department of Justice (2026)

The onset of the pandemic led to stay at home orders, which required a large shift from the normal experiences of school and work. At the same time, Americans had a sharp increase in the background checks for firearm purchases. The first year of the pandemic was 2020, which was dubbed by many as the ‘murder surge.’ There were 7.8 homicides for every 100,000 people in the U.S. that year, up 30% from the year before (Gramlich, 2021). The following year of 2021 had consistent numbers for violent and property crimes, however, murders specifically increased 4.3% from just under 22,000 in 2020 to 22,900 in 2021. To give more perspective, the 2021 homicide rate of 8.2 deaths per 100,000 people was 55% higher than a decade prior in 2011 (National Center for Health Statistics, 2022). In addition, according to my calculations, there were 62.7 homicides or non-negligent manslaughter per day in the U.S. at the 2021 peak. In 2022, the murder rate had declined by 6%, with 6.3 per 100,000 victims of homicide (FBI National Press Office, 2023). Interestingly, there was a decline in homicide in 2023, however domestic violence homicides remained elevated, and even slightly increased (Council on Criminal Justice, 2023).

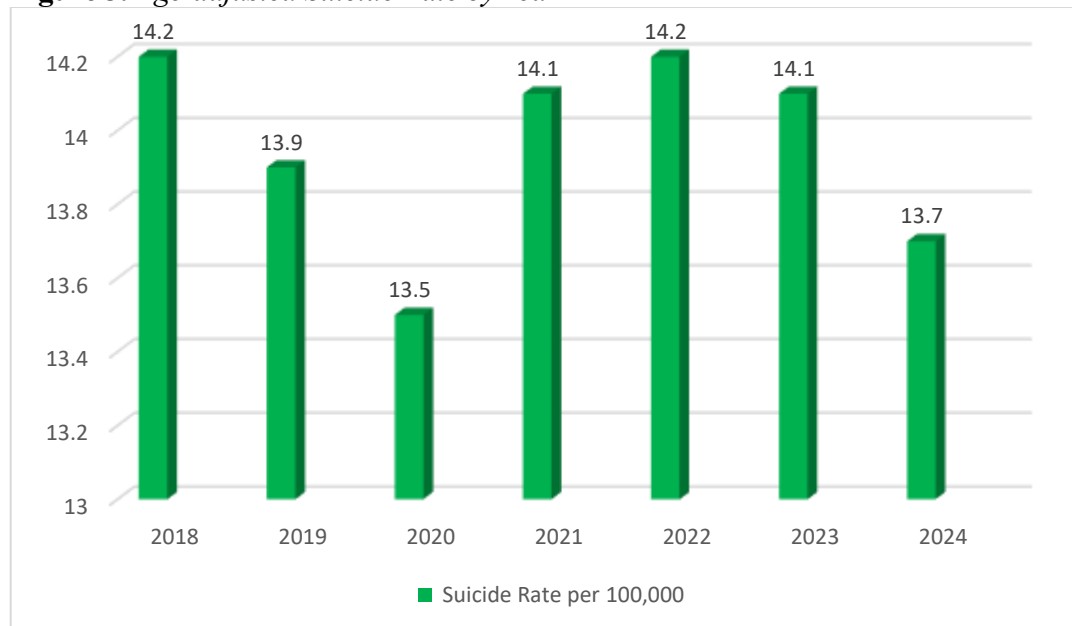
In the years since the pandemic, the homicide rate has declined back to previous levels, in 2023 there were 20,280 deaths (6.1 per 100,000) compared to 17,420 (5.1) in 2024 (U.S. Department of Justice 2026). The final statistics were not yet available for the year 2025. There are some clear distinctions among sub-populations. For example, in 2023, males (9.3 per 100,000) continued to have 3.5 times the homicide rate of females (2.6) (Bureau of Justice Statistics, 2025). We know from previous research that perpetrators of male murders are most often other men/boys who are strangers or acquaintances. In contrast, women and girls are most often killed in their

own homes by a current or former intimate partner or other relatives (Allen et al, 2020).

Suicide

Suicide is another form of violent cause mortality, which even surpasses the homicide rate in the U.S. The CDC reports from the National Center for Health Statistics rates of those who died by suicide per 100,000 are shown in Figure 3.

Figure 3. *Age-adjusted Suicide Rate by Year*

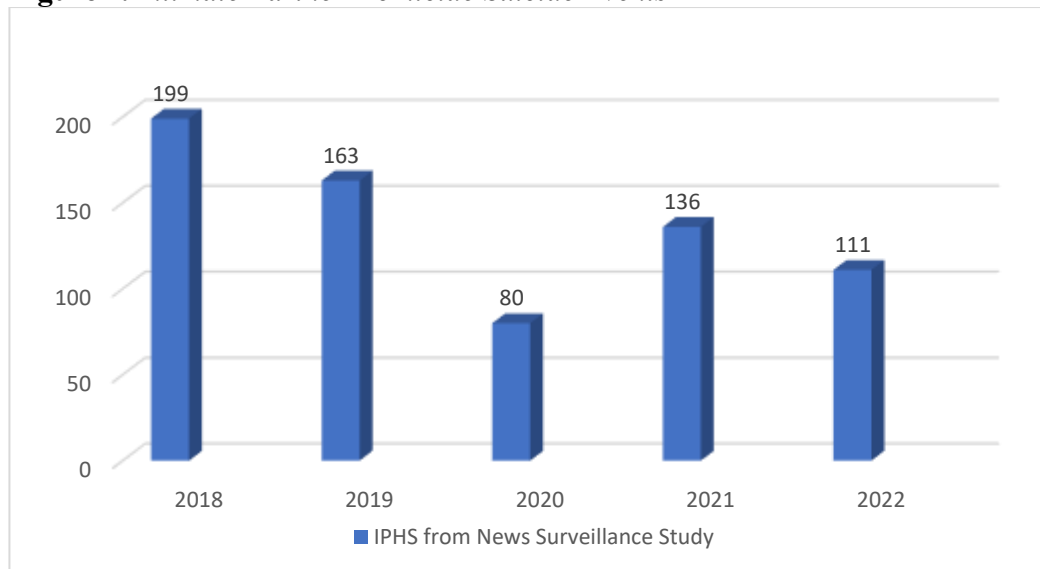


Source: National Institute of Mental Health (2026) Suicide <https://www.nimh.nih.gov/health/statistics/suicide> and CDC 2026 Suicide Data and Statistics <https://www.cdc.gov/suicide/data/index.html>

Interestingly, of the years available for the study, the suicide rate was lowest in the first year of the pandemic. We will cover this trend in the discussion. The corresponding raw numbers of death by suicide range from 45,979 (Ehlman et al., 2022) in 2020 to 49,500 in 2022 – which broke the record for single year (National Center for Health Statistics CDC, 2023) and 2024 declined slightly to 48,824 (CDC, 2026). At the time of this writing, 2025 suicide statistics were not yet available.

Homicide-suicide and Familicide

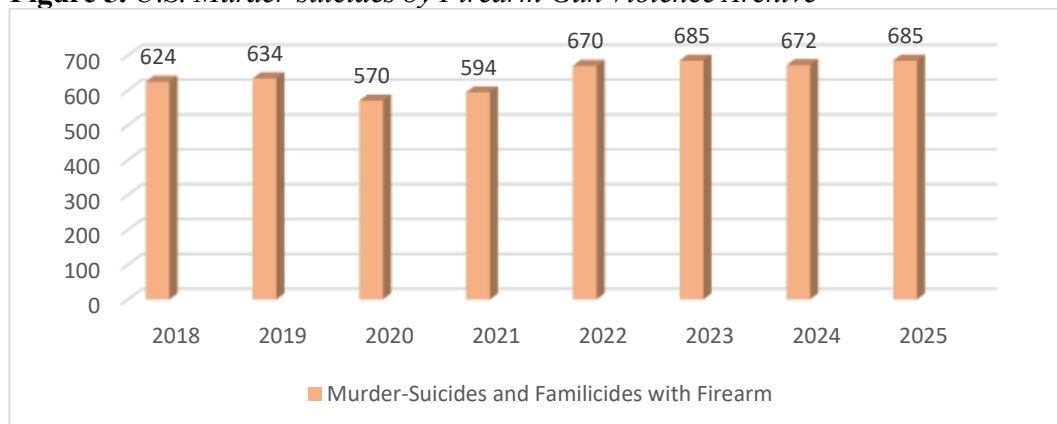
Figure 4 illustrates the results of our IPHS content analysis from news surveillance available for the years 2018-2022. These do not represent a full accounting for all IPHS events during the time period, but rather a sample.

Figure 4. *Intimate Partner Homicide Suicide Events*

Source: Our IPHS news surveillance study n=689 events.

The most IPHS cases were prior to the pandemic years, and 2020 values represented the lowest of the 5 years with 80 events documented that year. The following year jumped substantially to 136, but still below the pre-pandemic levels. This data is still in the process of collection, so there may be more in the most recent years post-pandemic.

In order to compare to another data set, we included the Gun Violence Archive murder suicides. Figure 5 illustrates murder-suicides by firearm documented by the Gun Violence Archive.

Figure 5. *U.S. Murder-suicides by Firearm Gun Violence Archive*

Source: Gun Violence Archives (2026) Gun Violence Archive Past Summary Ledgers, (accessed 6/23/26) <https://www.gunviolencearchive.org/past-tolls>

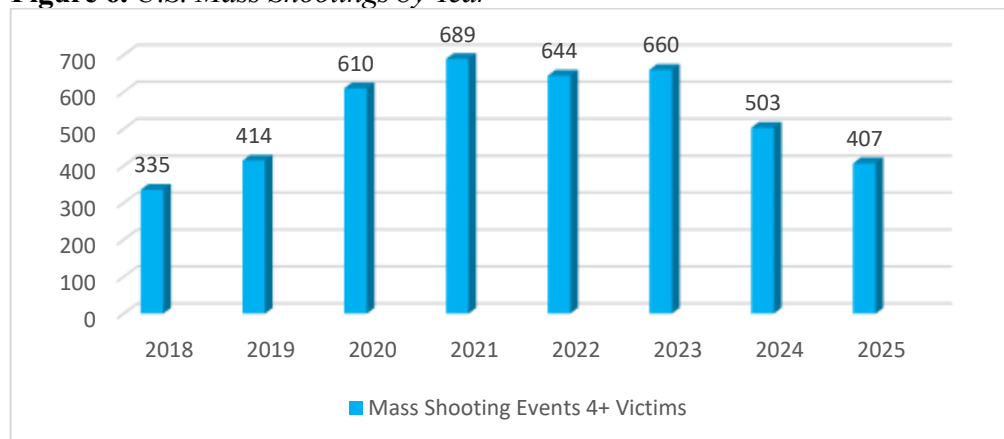
Gun Violence Archives (2026) found a similar reduction in murder-suicides during the two most active pandemic years 2020 and 2021. However, there appears to be an increase in these fatalities in the post-pandemic years 2022 through 2025. As a reminder, these may include other relationships between victim and perpetrator,

but the majority are current or former intimate partners (Violence Policy Center, 2023b; 2026). Figure 5 illustrates that linked murder-suicides continue to show high levels, without returning to pre-pandemic levels. Most of these represent domestic violence fatalities and might be a lasting effect of the firearm acquisitions during the pandemic.

Mass Shootings

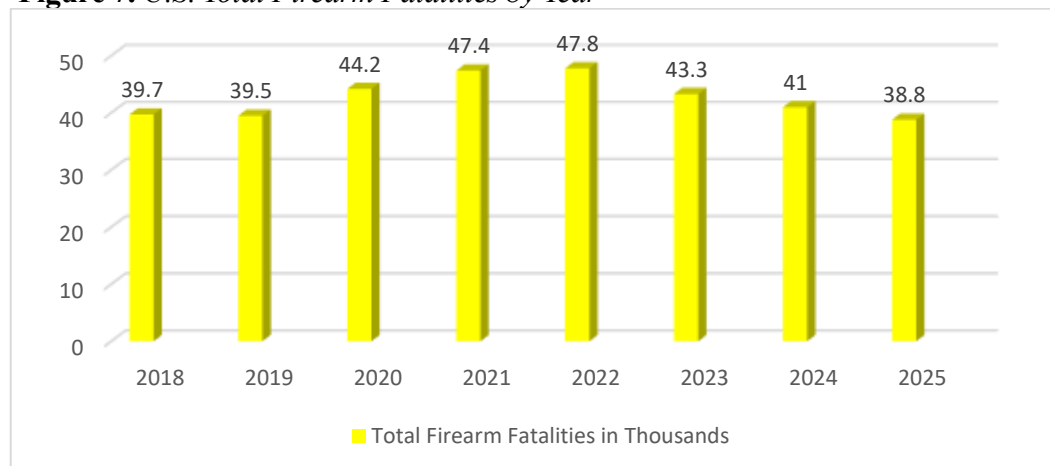
Figure 6 utilizes mass shooting data from the Gun Violence Archive by year.

Figure 6. *U.S. Mass Shootings by Year*



Source: Gun Violence Archives (2026) Gun Violence Archive Past Summary Ledgers, (accessed 6/23/26) <https://www.gunviolencearchive.org/past-tolls>

Figure 7. *U.S. Total Firearm Fatalities by Year*



Source: Gun Violence Archives (2026) Gun Violence Archive Past Summary Ledgers, (accessed 6/23/26) <https://www.gunviolencearchive.org/past-tolls>

The pandemic years brought an increase in mass shootings, which remained until 2023, before the decline back to pre-pandemic levels began to emerge in 2024 and 2025. These numbers, although declined, still represent a serious problem with violence in American society.

Total Americans killed by gunfire - all causes - over the years is illustrated in Figure 7, again using the Gun Violence Archives data. These include homicides, suicides, accidental and defensive firearm fatalities (Gun Violence Archives, 2026).

Policy

The 2nd Amendment of the U.S. Constitution states “A well-regulated Militia, being necessary to the security of a free State, the right of the people to keep and bear Arms, shall not be infringed (U.S. Constitution, 2026).” Many changes have occurred since 1791, including the saturation of firearms and the potential for lethality from the technology—particularly with regard to automatic and militaristic weaponry.

In 2024, during the Biden Administration, the Surgeon General Vivek Murthy declared firearms a public health crisis (CBS, 2024), but this effort has not translated into U.S. legislative action. Federal firearm policies in the United States have not kept pace with the increase in violence we saw in the pandemic years. There was one improvement, where Congress overturned the 1996 Dickey Amendment, which prohibited firearm research funding for over 20 years. The legislation now provides us with the ability to fund firearms research through the Centers for Disease Control and Prevention. Unfortunately, that funding has been influenced by the overall decline in federal funding for research since the second Trump administration took power.

Violence Against Women Act had a firearm ban for those who are the subject of a protective order or have a domestic violence conviction. Unfortunately, Salari and Sillito’s research has indicated that ‘pro-gun’ states are not likely to have many state firearm regulations in place, nor are they likely to enforce these federal policies.

Mass shootings are possible due to military style assault weapons. The U.S. once had a U.S Assault Weapons Ban on these automatic firearms with magazines, beginning in 1994. The legislation helped to reduce firearm deaths, but Congress permitted it to expire in 2004 and it has not been renewed, due to the pressures of the gun lobby (Salari 2021). It is important to recall, there are variations in violent cause mortality within the U.S., due to state gun law regulations (or lack thereof). States and regions with more restrictive firearm laws have lower homicide and suicide rates (Siegel et al 2019) and fewer IPHS events (Salari and Sillito, 2016).

Discussion

The pandemic and widespread gun access are both issues which affected public health in the 8 years studied. Homicide records showed a ‘murder surge’ once the COVID-19 crisis began and this may have been related to the conditions where mental health was affected or when partners and families were ordered to stay at home—possibly with an abuser. The first year of the pandemic 2020 was not always the most violent, with a decline in suicide and murder-suicides and IPHS. There may have been a concern for survival in that first year, which we consider a ‘crisis effect.’ However, the subsequent year(s) of the public health crisis and new firearm purchases may have led to the increases in fatalities, seen particularly in 2021. Some of the violent cause

mortality declined in the post-pandemic years, but preliminary results indicate murder-suicides have dipped and then registered a sustained increase. This may reflect potential evidence indicating that while overall violent crime declined, domestic violence fatalities continue to be elevated. Perhaps families are the most affected long-term.

Much of the lethality in the United States is due to access to guns. Firearms were sought in record numbers during the pandemic. While many in the older generation already had access to numerous firearms (some of which were inherited), the younger generation was the major purchaser of these new guns during the public health crisis (Roess et al., 2023). Why the rush to own weapons? For many, there was a fear that modern civilization may yield to a violent fight for basic resources. Other items were also hoarded, such as toilet paper and non-perishable groceries. The ‘fend for yourself’ belief may be more intense in the U.S. individualist culture, than other locations around the world. In addition to firearm access, there is also a struggle with mental health in the USA, but that may not be different from other developed countries. Mental health outcomes are different when guns are so accessible. We are concerned that the stockpile of firearms acquired during the pandemic will continue to affect families for decades to come. Other countries have done something to curb the lethality of firearms – such as Switzerland’s voluntary firearm buy back along with the storage of bullets in a separate location (Salari et al, 2020). This has led to favorable outcomes with the reduction of violent cause mortality, particularly homicide, suicide and homicide suicide events. Mass shootings increased during the pandemic years of the study, which may be associated with the more widespread gun access. This trend is concerning, and many believe a renewal of the assault weapons ban would be beneficial. Clearly, policy responses have not kept up with the increase in firearm access and violence which came with the pandemic, but there has been some level of normalization of trends among some of these forms of violent cause mortality.

If we take a long-term, international perspective, we can conclude the US VCM levels are far above all other developed countries and United States rates and fatalities have increased over our own history in the past quarter century. Increased saturation of firearms during the pandemic, with little regulation or enforcement does not bode well for the future of public health in the USA.

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