Gun Violence in Arizona

Data to Inform Prevention Policies

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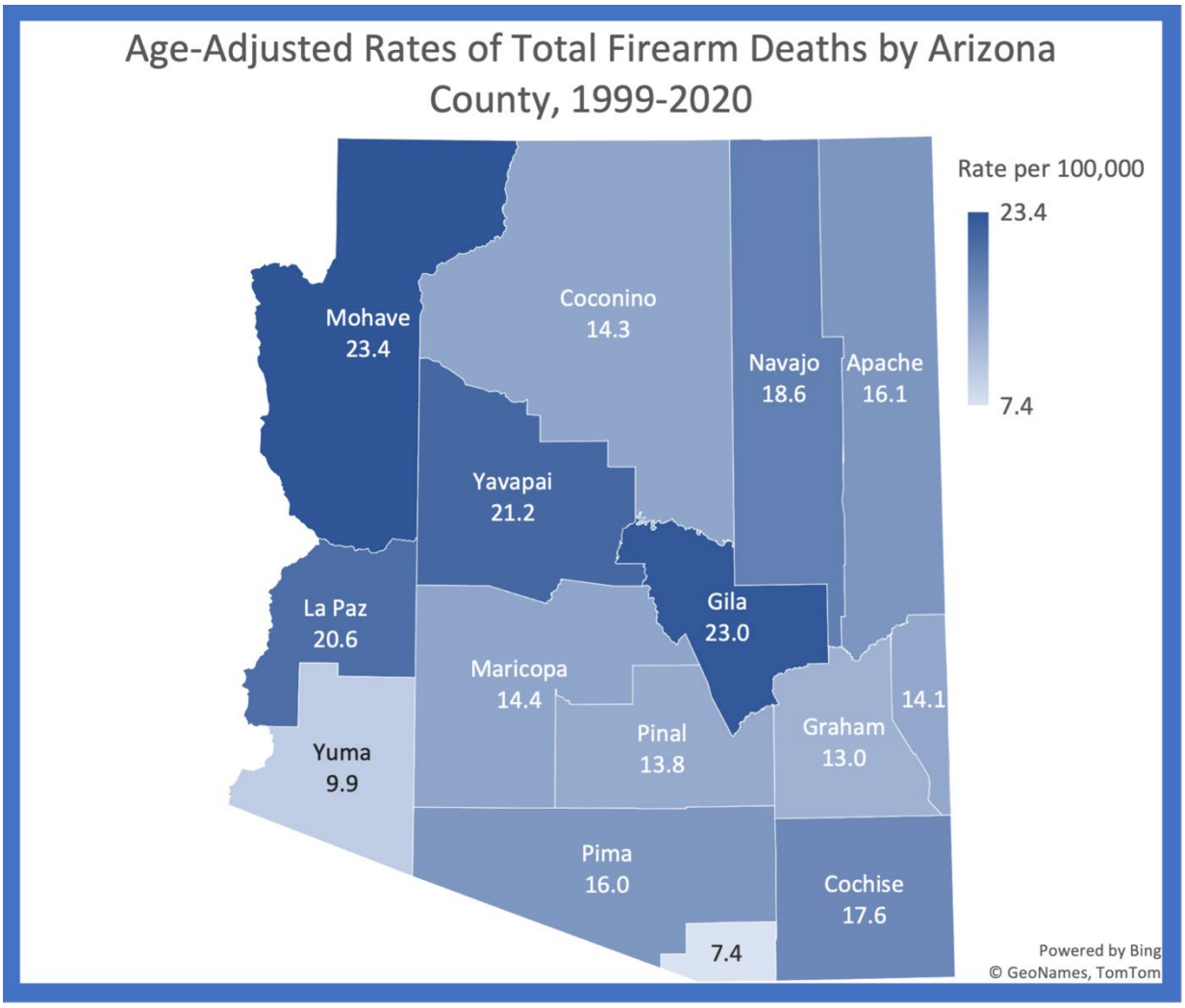
Age-Adjusted Rates of Total Firearm Deaths by Arizona County, 1999-2020
Rate per 100,000
23.4
7.4
Mohave
23.4
Coconino
14.3
Navajo
18.6
Apache
16.1
Yavapai
21.2
La Paz
20.6
Gila
23.0
Maricopa
14.4
Pinal
13.8
Graham
13.0
14.1
Yuma
9.9
Pima
16.0
Cochise
17.6
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EXECUTIVE SUMMARY

Background

This report was requested and supported via a student epidemiology internship by the Arizona Public Health Association (AZPHA). The objectives of this report included (but were not limited to) the following:

- Identify and review the relevant literature on gun violence
- Identify and utilize available key data sources for gun violence
- Define the human and financial toll of gun violence in Arizona
- Characterize the different forms of gun violence including suicide, homicide, police shootings, and unintentional shootings
- Characterize the demographics of gun violence by age, gender, race/ethnicity, and urbanicity
- Compare gun violence rates in Arizona to rates in other states and the U.S.
- Identify gun laws and policies that have been shown to reduce gun violence
- Show where Arizona stands with respect to key gun laws

Work on the report was initiated on June 1, 2022, following the approval of an AZPHA-funded internship for Firearm Safety Epidemiology and selection of a public health graduate student intern and a volunteer epidemiologist mentor/collaborator.

Methods

A descriptive epidemiology approach was taken to characterize the rates, trends, and demographics of the various forms of gun violence in Arizona and the U.S. The effectiveness and impacts of gun laws was examined. Multiple and diverse publicly available data sources were identified and utilized to examine fatal gun-related suicides, homicides, police shootings, accidental shootings, school and mass shootings, and non-fatal shootings. The economic burden of gun violence was assessed using multiple sources. Standard epidemiologic methods included age-adjusted rates, confidence intervals, tests of statistical significance, and joinpoint trend analyses. Excel and JASP (R-based) applications were used for statistical analyses. Multiple sources were used to determine how Arizona compares to other states with respect to key gun laws. PubMed was used to identify relevant scientific literature. A bibliographic database of 680 information sources was developed consisting of published research articles, government and private reports, online data sources, and selected media articles.

Key Findings

Total Firearm

- Firearm violence remains a pervasive and unrelenting problem. In 2020 alone there was an average of 7 nonfatal firearm injuries and 3.5 fatal firearm injuries per day in Arizona,

representing over 39,000 years of potential life lost before age 75 and a CDC-estimated cost of $13.1 billion.
- In the U.S. in 2020, there were 117,000 nonfatal firearm injuries and 45,222 firearm deaths or 124 deaths per day or 5 deaths per hour, representing 1,532,000 years of potential life lost before age 75 at a cost of $484 billion.
- Arizona's firearm mortality rate was 42% higher than the U.S. rate during 1999-2020.
- Male rates were nearly 6-fold higher than female rates.
- Blacks had the highest rate of any racial or ethnic group.
- Rates peaked at ages 20-24 & ≥80.
- Rates have risen by 2.9% per year since 2014.
- The lifetime risk of death by a firearm in Arizona was 1 out of 81 residents.
- The average years of life lost due for a person killed by a firearm was lowest for Whites (25.0) and highest for Blacks (43.0) and Hispanics (44.2).
- Nonfatal firearm injuries greatly outnumbered fatal injuries both in Arizona (1.7-fold) and the U.S. (2.4-fold) since 2006.
- In 2020 in Arizona, firearm-related mortality was the third leading cause of death among children and adolescents 1-19 years of age.

Firearm Suicides

- Firearm suicide was the largest contributor to overall firearm mortality in Arizona (64.7% of firearm deaths) and in the United States (58.8%).
- Firearms were involved in 58% of all suicides in Arizona from 1999-2020.
- Firearm suicide rates were 6.1-fold higher among males than females (17.1 vs 2.8 per 100,000)
- Rates were over two-fold higher among Whites than any other racial/ethnic category.
- White males age 85+ had the highest rate of firearm suicide at 61.5 deaths per 100,000, a rate 23.7-fold higher than the female rate for the same age group.
- Firearm suicide rates were higher in small metro and nonmetro regions than in the large metro areas.
- Firearm suicide rates were significantly higher for every category of race, gender, urbanicity in states with a Giffords "F" rating (including Arizona) for their weak guns laws compared to "A" rated states with the strongest gun laws.
- In a 50-state analysis, firearm suicides rates were highly correlated with household gun ownership ($r = 0.887$, $p < 0.0001$).

Firearm Homicides

- Over two-thirds of overall homicide deaths were due to firearms in both Arizona and the U.S.
- Firearm homicides were the second-largest contributor to firearm mortality in Arizona (31.3% of firearm deaths) and in the U.S. (37.4%).
- Age-adjusted firearm homicide rates in Arizona were significantly higher than in the U.S. (4.9 vs 4.1 per 100,000).
- Male rates exceeded female rates by almost 5-fold (8.0 vs 1.7).
- Rates among non-Hispanic Black males were over 6-fold higher than among non-Hispanic White males and over double the rate compared to every other racial category.
- Rates for males and females peaked for the 20–24-year age category.

- In contrast to firearm suicides, rates were higher in large and medium metro areas.
- Firearm homicide rates were significantly higher for every category of race (except Blacks), gender, and urbanicity in states with a Giffords “F” rating for weak firearm laws (including Arizona) compared to “A” rated states with the strongest laws.

Police Shootings

- Although police shootings represent a very small percent of firearm deaths, they raise significant public concerns about the appropriate use of force and contribute to worsening relations between law enforcement and the communities they serve.
- Police shootings are undercounted in vital statistics (death certificate data); during 2015-2019, Arizona vital statistics reported only one-third of the fatal police shootings reported in other more complete data sources (75 vs 222).
- Most (90%) shootings involved an armed suspect.
- 94% of police shooting deaths were males.
- The peak age category was 25-29.
- Blacks and American Indians are overrepresented in police shootings, while Whites and Hispanics are underrepresented.
- Arizona rates have been increasing by 4.0% per year.
- The Phoenix Police Dept. had the highest rate of police shootings per 1,000 officers among the ten largest U.S. cities during 2015-2021, although rates were similar to Tucson and Mesa.
- Black males in the U.S. have a 1 in 1,000 lifetime risk of being killed by police.

Unintentional Firearm Deaths

- Unintentional (accidental) firearm deaths represent only about 1.1% of overall firearm deaths but are mostly avoidable.
- Over 200 Arizonans died from unintentional firearm shootings from 1999-2020.
- Unintentional firearm deaths are inaccurately and incompletely reported in vital statistics data.
- Consistent with national data, males between ages 15 and 24 appear to have the highest rate of dying from unintentional firearm shootings.
- The largest share of deaths occurred because someone unintentionally pulled the trigger and while someone was playing with a gun.
- Predictably, there is an extremely high correlation between household gun ownership and unintentional firearm mortality rates among 47 states with reliable data ($r = 0.726$, $p < 0.0001$).

Firearm Deaths of Undetermined Intent

- Over 300 Arizonans have died from firearm shootings of undetermined intent from 1999-2020.
- Arizona has the fifth highest rate of undetermined firearm deaths among U.S. states.
- The mortality rate among males is quadruple the rate among females.
- Teens and young adults in the age range of 15-24 are at the highest risk of undetermined firearm deaths.

Firearm Ownership

- The US leads the world in civilian-owned guns per capita (120.5 guns/100 residents).
- The proportion of households with a gun has declined in most states since the early 1980’s.

- Approximately 36% of AZ households owned a gun in 2016, down from 62% in 1989.
- A 2021 national survey indicated that 32% of Arizona adults owned a gun and 29% of those gun owners have ever owned an AR-15 style assault rifle.
- Gun sales increased by 5% per year until 2019. In 2020, gun sales increased by 64% in the U.S. and by 104% in AZ over 2019 sales.
- One-third of 2020 buyers reported reacting to pandemic lockdowns, fears of government, Covid, or the 2020 election.

School Shootings

- Between 1970 and November 2022, there have been 20 school shootings in Arizona, six of which have occurred in the last three years.
- Four of these instances were accidental, four were escalations of disputes, and other circumstances include hostage situations and suicide, among other circumstances.
- School shooting incidents in the U.S. have been increasing by 30% per year since 2011.
- Despite receiving the most media attention, indiscriminate shootings only accounted for 4.8% of school shootings nationwide.

Mass Shootings

- There were 691 mass shootings in the United States in 2021 (with four or more people injured or killed), amounting to approximately 13 per week.
- Between 2014 and 2022, there were 47 mass shootings in Arizona, causing 78 deaths and 182 injuries.
- 67% of mass shootings occur in private homes, and many are linked to domestic violence.
- 2022 was one of the deadliest years on record for mass shootings in the U.S., with 647 events, 676 deaths, and 2,698 injuries.

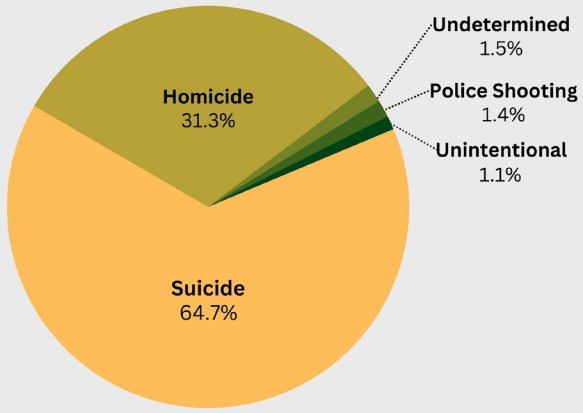
Gun Violence Prevention Laws

- States differ dramatically in the number and strength of their gun laws and multiple independent organizations have evaluated and categorized each state's gun laws.
- Giffords Law Center ranks every state on the strength of their gun laws, assigning grades from "A" (strongest laws, 8 states) to "F" (weakest laws, 24 states). Arizona received an F grade.
- Everytown Research & Policy develops a composite score for each state based on 50 key gun safety measures. Scores range from 3 (Mississippi) to 86.5 (California). States are then grouped into five categories from "National Leaders" (8 states) to "National Failures" (14 states). Arizona, with a score of 8.5 is in the "National Failures" group.
- The Boston University School of Public Health developed a comprehensive State Firearms Laws database based on 133 potential gun law provisions in 14 categories for each state for each year from 1991 to 2020. In 2020 the number of state laws varied from 1 (Idaho) to 111 (California). Arizona had eight gun law provisions, down from 13 during 2000-2009.
- An examination of firearm mortality rates among states with the strongest gun laws versus the weakest gun laws show dramatic and significant differences.
- According to Everytown Research & Policy, Arizona has implemented only seven of the 50 Foundational gun laws as of 2023.

Policy Recommendations

- Research on prevention of gun violence was limited for several decades due in part to the 1996 federal omnibus spending bill (Dickey Amendment) supported by the NRA which mandated that "none of the funds made available for injury prevention and control at the CDC may be used to advocate or promote gun control." Not until a compromise in 2018 was it possible for CDC and NIH to fund research on the causes of gun violence but not advocate or promote gun control. The FY2020 federal spending bill included $25 million for CDC and NIH for research on preventing firearm deaths, the first such funding since 1996.
- However, there is a limited body of research examining the effectiveness of various gun laws on various firearm mortality outcomes.
- The RAND Synthesis of Research Evidence on the Effects of Gun Policies in the United States provides an annual comprehensive review of the evidence about firearm legislation. The report highlights several key policies that have a strong evidence base to demonstrate their efficacy in reducing gun violence. Based on the conclusions in that report, as well as the five foundational policies recommended by Everytown, the following legislation should be considered as likely effective means to reduce firearm mortality in Arizona:
    - **Pass Child Access Prevention (CAP) and safe storage laws.**
        - These laws are effective at reducing deliberate and unintentional self-inflicted firearm injuries (fatal and non-fatal).
        - Arizona does not currently have CAP or safe storage laws.
    - **Repeal stand-your-ground ("shoot first") laws.**
        - These laws give individuals the ability to obtain immunity after shooting another person because they feared for their safety, even if they instigated the conflict and they could reasonably walk away from the situation.
        - These laws have been shown to increase firearm homicide.
        - Arizona does have a stand-your-ground law (AZ Rev. Stat. § 13-411).
    - **Pass requirements for a background check and/or permit to purchase a firearm.**
        - A RAND review of background check policies on firearm violence found that there is evidence that suggests that background checks reduce firearm homicide rates. Several individual studies have also estimated significant declines in homicide, suicide, and gun trafficking.
        - Arizona does not require background checks or a permit to purchase a firearm from a private firearm dealer.
    - **Pass permit requirements for anybody carrying a concealed firearm in public.**
        - Permitting for concealed carry of a weapon for adult citizens was repealed in Arizona in 2010, allowing gun owners to carry a firearm without a previously-required permit or training course (see this deregulation in the 2010 SB-1108).
        - Arizona currently allows concealed carry (AZ Rev. Stat. §13-3112).
    - **Pass an Extreme Risk (Red Flag) law.**
        - Extreme Risk Laws allow immediate family members and law enforcement to contact local authorities to petition a civil court for an extreme risk protection order (ERPO) to temporarily restrict access to guns for someone who is seriously at-risk of harming themselves or others.
        - Arizona does not currently have any extreme risk laws.

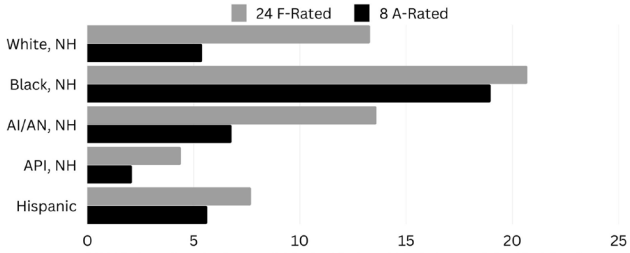
Firearm Mortality in Arizona, 1999-2020



Arizona's firearm mortality rate was 42% higher than the U.S. rate during 1999-2020.

Current Policy in Arizona

Firearm Mortality Rates Among 24 States with F-Grades for Gun Laws vs 8 States with A-Grades, by Gender, 1999-2020



AI/AN: American Indian and Alaska Native; API: Asian and Pacific Islander; NH: non-Hispanic

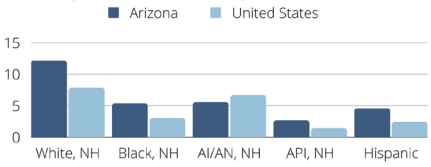
In 2023, Arizona ranked 42nd out of 50 states for gun law strength. (Source: Everytown Research)

Total Firearm Mortality Rates by Giffords Law Center Rating of State Gun Laws, 1999-2020

Age-Adjusted Firearm Mortality Rate per 100,000

Firearm Suicide in Arizona

Firearm Suicide Rates per 100,00 by Race/Ethnicity, 1999-2020

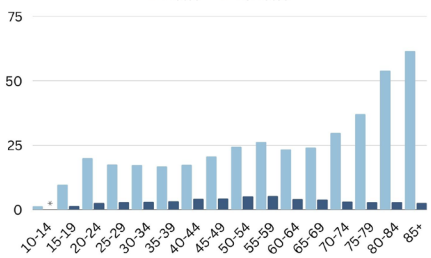


AI/AN: American Indian and Alaska Native; API: Asian and Pacific Islander; NH: non-Hispanic

24x When compared to females, males ≥85 years of age had a 24-fold increased risk of death (61.5 vs. 2.6 deaths per 100,000 persons).

80+ Non-Hispanic White males over 80 years of age had the greatest risk of firearm suicide among all demographic groups.

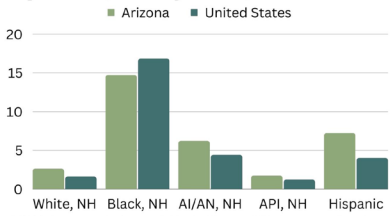
Firearm Suicide Rates per 100,000, by Age and Sex 1999-2020



* Rate not available due to data suppression (<10 deaths)

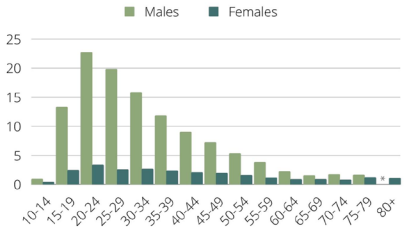
Firearm Homicide in Arizona

Firearm Homicide Mortality Rates per 100,000 by Race, 1999-2020



AI/AN: American Indian and Alaska Native; API: Asian and Pacific Islander; NH: non-Hispanic

Firearm Homicide Rate per 100,000 by Age and Sex in Arizona, 1999-2020



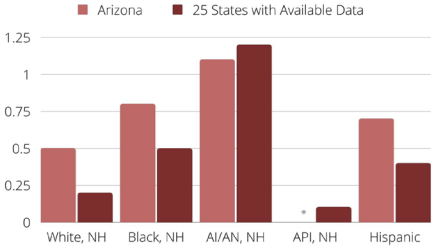
* Rate not available due to data suppression (<10 deaths)

9x When compared to all Arizonans, non-Hispanic Blacks had an 8.6-fold increased risk of firearm homicide (14.7 vs. 4.9 deaths per 100,000 persons).

80% Hispanic Arizonans are 80% more likely to be murdered than Hispanic Americans. Hispanic Arizonans are at the highest risk of being murdered by a firearm than Hispanics living in any other state.

Fatal Police Shootings in Arizona

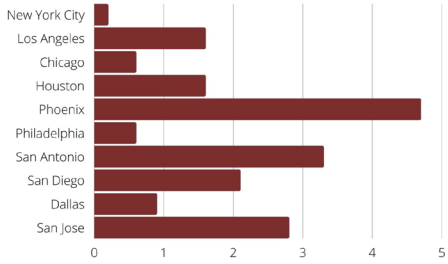
Fatal Police Shooting Rates per 100,000 by Race and Ethnicity, 25-States vs. AZ, 2015-2019



* Rate not available due to data suppression (<10 deaths)
AI/AN: American Indian and Alaska Native; API: Asian and Pacific Islander
NH: non-Hispanic

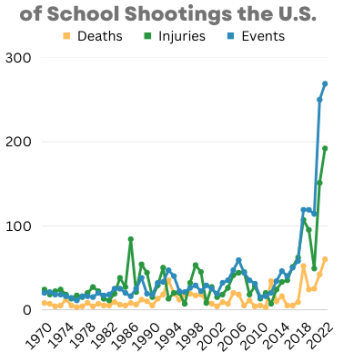
White Arizonans were underrepresented in police shootings (45% of police shooting victims but 74% of the general population), while Blacks were overrepresented (10% vs 4.5%).

Rates of Fatal Police Shootings per 1,000 Officers for the 10 Largest U.S. Cities, 2015-2021



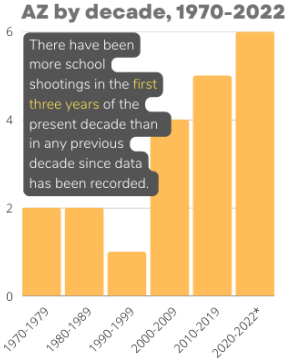
School Shootings in Arizona

Deaths, Injuries, and Incidence of School Shootings the U.S.



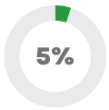
Data source: Riedman School Shooting Database (updated to reflect data from 1970-11/2022).

School Shooting Events in AZ by decade, 1970-2022



* Partial decade (only the first three years of the present decade)

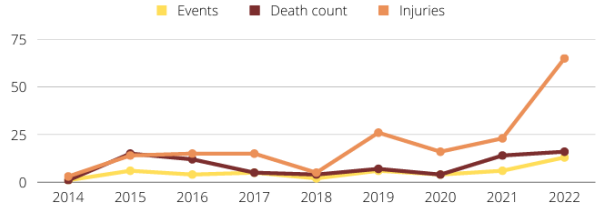
34.5% of national school shootings were the result of an escalation of a dispute. Accidental shootings (9.9%) were the next most common circumstance, followed by undetermined (9.2%), drive-by (7.1%), and suicide/attempted suicide (6.8%).



Despite receiving the most media attention, indiscriminate shootings only accounted for 4.8% of school shootings nationwide.

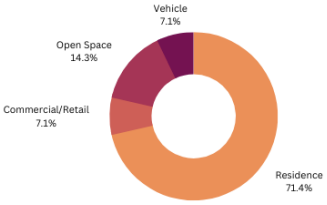
Mass Shootings in Arizona

Mass Shooting Events, Deaths, and Injuries in Arizona from 2014 - 2022 (Gun Violence Archive)



Gun Violence Archive defines a mass shooting as an incident where four or more people are shot and/or killed.

In AZ, 71% of mass shootings were in private residences.

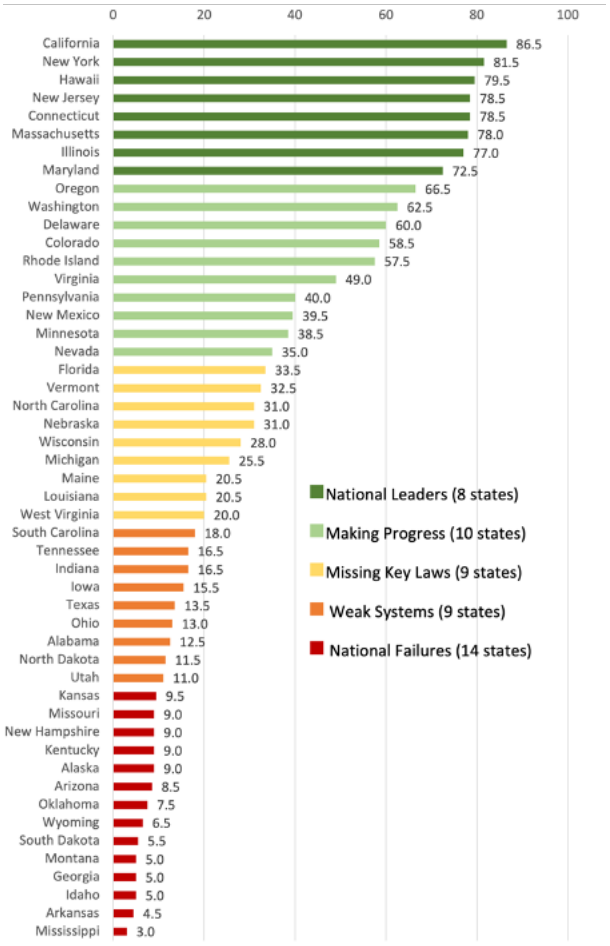


A glimpse into mass shootings in the U.S.:

79% of mass killings from 2006 to November 2022 were shootings. Stabbing, smoke inhalation/burns, and blunt force deaths were also common.

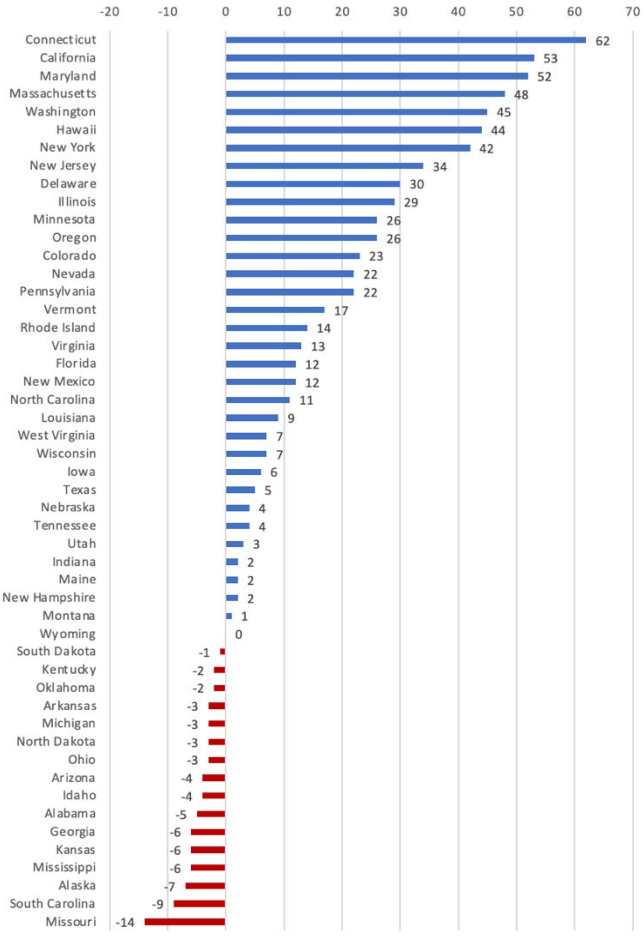
Data was collected from the Associated Press/USATODAY/Northeastern University Database from 2006 and 2022. A mass shooting is an isolated firearm homicide incident with four or more victims other than the offender within a 24-hour period.

Everytown State Gun Law Rating Scores Based on 50 Key Gun Policies



Source: Everytown Research

Change in the Number of State Firearm Laws From 1991 to 2020



Source: StateFirearmsLaws.org

Current Policy in Arizona

Arizona is ranked 42nd out of 50 states for gun law strength.

Foundational Laws

- Background Check and/or Purchase Permit ✗
- Concealed Carry Permit Required ✗
- Extreme Risk Law ✗
- No Shoot First Law ✗
- Secure Storage Required ✗

Gun Industry and Product Safety

- Assault Weapons Prohibited ✗
- Consumer Safety ✗
- Ghost Guns Regulated ✗
- High Capacity Magazines Prohibited ✗
- Microstamping for New Handguns ✗
- No Special Immunity for Gun Industry ✗

Policing and Civil Rights

- Funding for Services for Victims of Gun Violence ✗
- Local Gun Laws Allowed ✗
- No Law Enforcement Officers Bill of Rights ✗
- Office of Violence Intervention ✗
- Violence Intervention Program Funding ✗
- Qualified Immunity Limited ✗
- Police Use of Force Incident Data Collection and Reporting ✓
- Police Use of Deady Force Standard ✗

Sales and Permits

- Authority to Deny Public Carry for Public Safety ✗
- Charleston Loophole Closed or Limited ✗
- Dealer License Required ✗
- Mental Health Record Reporting ✓
- Lost and Stolen Reporting ✗
- Notification of Failed Background Checks ✗
- Sales Records Sent to Law Enforcement ✗
- Training Required to Purchase Guns ✗
- Waiting Periods ✗

Keeping Guns Out of the Wrong Hands

- Emergency Restraining Order Prohibitor ✗
- Felony Prohibitor ✓
- Fugitive from Justice Prohibitor ✗
- Gun Removal Program ✗
- Hate Crime Prohibitor ✗
- Mental Health Prohibitor ✓
- Relinquishment for Convicted Domestic Abusers ✗
- Relinquishment for Domestic Abusers Under Restraining Orders ✗
- Prohibition for Domestic Abusers Under Restraining Orders ✗
- No Gun Purchases After Violent Offense ✗
- Prohibition for Conficted Domestic Abusers ✗
- School Threat Assessment Teams ✗
- Stalker Prohibitor ✓
- Minimum Age to Purchase ✗

Guns in Public

- Open Carry Regulated ✗
- Crime Gun Tracing ✗
- No Carry After Violent Offense ✗
- No Guns Mandate on College Campuses ✓
- No Guns at State Capitols and/or Demonstrations ✗
- No Guns in Bars ✗
- No Guns in K-12 Schools ✓
- Strong Concealed Carry Authority ✗

Source: Everytown Gun Law Rankings, Last updated January 12, 2023

METHODS AND DATA SOURCES

Identifying Firearm-related Deaths

Firearm-related deaths were identified from vital statistics using the International Classification of Diseases (ICD) codes. As shown in Table 1, ICD-10 codes were utilized for deaths occurring in 1999 and later, while ICD-9 codes were used for deaths occurring 1979-1998.

Table 1. ICD Codes for Firearm-Related Deaths

Category	**ICD-10 Codes (1999-2021)**
Total Firearm	W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0, *U01.4
Firearm Suicides	X72-X74
Firearm Homicides	X93-X95, *U01.4
Firearm Legal Intervention	Y35.0
Firearm Unintentional	W32-W34
Firearm Undetermined	Y22-Y24
Non-Firearm Suicides	X60-X71, X75-X84
Total Suicides (all means)	X60-X84, Y87.0,*U03
Total Homicides (all means)	X85-Y09, Y87.1,*U01-*U02
Category	***ICD-9 Codes (1979-1998)***
Total Firearm	E922, E955.0-.4, E965.0-.4, E985.0-.4, E970
Firearm Suicides	E955.0-.4
Firearm Homicides	E965.0-.4

Multiple sources of data on firearm violence are publicly available and were utilized in this report. The primary data sources included the following.

Vital Statistics (Death Certificate) Data

- CDC WONDER (Wide-ranging ONline Data for Epidemiologic Research): This is one of the most widely-used data sources for mortality data in the U.S. The Multiple Cause of Death data available on CDC WONDER are state and county-level national mortality and population data. Data are based on death certificates for U.S. residents submitted by each state. Each death certificate contains a single underlying cause of death, up to twenty additional multiple (contributing) causes, and demographic data. The number of deaths, crude death rates, age-adjusted death rates, standard errors of rates, and 95% confidence intervals can be obtained by place of residence (United States national, state, and county), age, race, Hispanic ethnicity, gender, year and month of death, weekday of death, place of death, autopsy status, and underlying and multiple cause of death (4-digit ICD-10 codes, 113 selected causes of death, 130 selected causes of death for infants, injury causes, or drug/alcohol induced causes of death). At the time of this report, finalized ICD-10 data were available for the years 1999-2020, and ICD-9 data for the years 1979-1998. (Final 2021 data became available in 2023 following the completion of the report; see Addendum, p.113.)
- CDC WISQARS (Web-based Injury Statistics Query and Reporting System): WISQARS provides data on fatal and nonfatal injury, violent deaths, cost of injuries, and the leading causes of death, including the Years of Potential Life Lost (YPLL). While query options

are more limited than in WONDER and standard errors and confidence intervals are not provided, the user interface is slightly more user-friendly in WISQARS. While counts of firearm-related deaths are identical between WISQARS and WONDER, the systems utilize slightly different population estimates and therefore the rates can differ by a small margin. At the time of this report, finalized injury data were available for the years 1999-2020 (ICD-10) and also for the years 1981-1998 (ICD-9).

Vital Statistics with Multiple Supplementary Data Sources

- CDC NVDRS (National Violent Death Reporting System): NVDRS collects information about violent deaths, including homicides, suicides, and deaths where individuals are killed by law enforcement acting in the line of duty. NVDRS also gathers information about unintentional firearm-related deaths, and deaths where the intent cannot be determined, that might have been due to violence. However, in contrast to the death certificate-only WONDER and WISQARS systems, NVDRS collects data from death certificates, but also from coroner/medical examiner reports, law enforcement reports, and toxicology reports, providing a more complete profile of violent deaths. It also includes data on multiple deaths that occurred during the same event, such as homicides followed by the suicide of the perpetrator. As of 2019, 43 states were participating in NVDRS, with states joining the program at different times between 2003 and 2019. Arizona began participating in 2015. The Arizona program is administered by the Arizona State University Center for Violence Prevention and Community Safety. (2020 data for 49 funded areas become available in 2023 after completion of this report.)

Although vital statistics provide reasonably complete data for overall firearm violence and for firearm-related homicides and suicides, vital statistics data seriously undercount police shootings for many states.[1] Cases are missed when the death certificate does not explicitly indicate that the shooting involved law enforcement, in which case those deaths are classified as civilian homicides. The undercount varies greatly by state and was particularly extreme for Arizona.

Table 2 shows a comparison of NVDRS data and vital statistics data for six categories (“Intents”) of firearm-related deaths for Arizona, 2015-2019. While rates differed between the two data sources for several categories, the most striking difference involved police shootings: 75 fatal police shootings were reported from vital statistics compared to the 222 shootings reported by NVDRS. In other words, vital statistics captured only one-third (33.8%) of the police shooting deaths identified by NVDRS in Arizona. In addition, only 60% of unintentional firearm deaths were reported by vital statistics data for Arizona.

Table 2. Comparison of Firearm Deaths and Rates by Intent: CDC Vital Statistics (VS) vs the National Violent Death Reporting System (NVDRS), Arizona, 2015-2019*

Intent	Data Source	Deaths	Ratio of Deaths VS/NVDRS	Rate†	95% Conf. Int.	Rates Differ?
Total	NVDRS	5,366	1.02	14.71	14.32 – 15.10	No
	VS	5,481		15.05	14.64 – 15.46	
Homicide	NVDRS	1,221	1.16	3.62	3.42 – 3.82	Yes
	VS	1,421		4.24	4.02 – 4.46	
Suicide	NVDRS	3,685	1.05	9.75	9.44 – 10.06	No
	VS	3,865		10.27	9.94 – 10.61	
Police Shooting	NVDRS	222	0.34	0.66	0.57 – 0.75	Yes
	VS	75		0.22	0.17 – 0.27	
Unintentional	NVDRS	73	0.60	0.21	0.16 – 0.26	Yes
	VS	44		0.11	0.08 – 0.15	
Undetermined	NVDRS	62	1.23	0.18	0.14 – 0.22	No
	VS	76		0.20	0.16 – 0.26	

*Time period for which public NVDRS data were available for Arizona at the time of this report.
†Age-Adjusted Rates of Firearm Deaths per 100,000

Due to the underreporting by vital statistics, rates and trends of police shootings are based on NVDRS data and other widely-used publicly-accessible databases, as described below. Further details are included in the Police Shootings section of this report. Unintentional deaths are also based on NVDRS data.

Media and Crowd-Sourced Data on Police Shootings

- *The Washington Post* "Fatal Force" database is a widely-cited database with detailed data on all police shootings throughout the U.S. from 2015 to present. As of 10/07/22, the database contained 7,802 records of fatal police shootings. The database can be downloaded.

- Fatal Encounters is a crowd-sourced database of fatal police encounters throughout the U.S. from 2000 to present. The database describes itself as "an impartial, comprehensive and searchable national database of people killed during interactions with police." As of 10/07/22, the database included 31,497 records of fatal police encounters, 71% of which involved a shooting. The database can be searched and downloaded.

- Mapping Police Violence is another highly-detailed crowd-sourced database of fatal police encounters throughout the U.S. from 2013 to present. This site provides a very detailed description of their data sources and methods. As of 10/07/22, the database included 10,418 records of fatal police encounters, 92% of which involved a fatal shooting. The database has easy-to-use data query tools and can be downloaded.

School and Mass Shootings

School shootings and other mass shootings draw considerable media attention and public concern. Several useful online sources track these occurrences.

- Center for Homeland Defense and Security K-12 School Shooting Database: This database compiles data from 25 different sources to document every instance in which a firearm or a shooting involves a K-12 school. As of 10/07/22, the dataset covers the period from January 1970 to June 2022. In July 2022, the K-12SSDB became an independent, nonpartisan research project that is not affiliated with any institution or agency. Development of the project will be continued by David Riedman.[2]

- Everytown Gunfire on School Grounds in the United States: This up-to-date database of incidents of gunfire on school grounds from 2013 to 2022 can be downloaded.

- The Violence Project Mass Shooter Database: Founded by Jillian Peterson, PhD and James Densley, PhD, this database includes over 50 years of data and 150 variables on 187 mass shootings involving 1,346 deaths as of February 9, 2023.

Survey and Other Data on Gun Ownership

- GALLUP (link to gun data): National survey data available on gun ownership and public opinion regarding firearm laws.

- General Social Survey (GSS) Data Explorer: GSS is an ongoing national survey conducted by the University of Chicago since 1972. The source includes the question, "Does respondent have gun in home."

- PEW Research Center: Conducts public opinion polling, demographic research, content analysis, and other social science research. They track data on gun policy.

- RAND Corporation, State-Level Estimates of Household Firearm Ownership Database (Schell, 2020): RAND researchers developed annual, state-level estimates of household firearm ownership by combining data from surveys and administrative sources.[3] First, they used a small-area estimation technique to create state-level ownership estimates for each of 51 nationally representative surveys assessing household firearm ownership rates. They then used structural equation modeling to combine these survey-based estimates with administrative data on firearm suicides, hunting licenses, subscriptions to *Guns & Ammo* magazine, and background checks into the final measure of household firearm ownership. The resulting measure represents the proportion of adults living in a household with a firearm for each state in each year between 1980 and 2016.

- National Firearms Survey, Updated Analysis Including Types of Firearms Owned: This is a 2022 report summarizing findings of a national survey of firearm ownership and use conducted between Feb. 17th and March 23rd, 2021. [4]

State-Based Summaries and Ratings on Gun Policies and Regulations

- Everytown Research & Policy: 2022 Gun Law Rankings and State-based rankings of the strengths of gun laws based on 50 policy measures.

- Giffords Law Center to Prevent Gun Violence: Attorneys track and analyze gun legislation in all 50 states and assign point values to laws and policies. States are then given a letter grade. Rankings have been available since 2010. Summaries are available for every state showing existing gun laws as well as missing gun laws. (Note: ratings in this report were used with permission from Giffords Law Center.)

- RAND Corporation, Development of the RAND State Firearm Law Database and Supporting Materials (Cherney, 2022): Research on the effectiveness of gun laws is often cross-sectional, looking at gun violence in a specific year across states with different gun laws. More powerful but less frequent longitudinal studies examine the gun violence outcomes following changes in gun laws in specific locations, but those changes in gun laws over time are difficult to construct. The RAND database provides those data on gun laws in a downloadable Excel spreadsheet for every state. The Arizona data contains 52 rows and 25 columns of information.[5]

- RAND Corporation, Smart, 2023: The Science of Gun Policy: A Critical Synthesis of Research Evidence on the Effects of Gun Policies in the United States, Third Edition: This report analyzes the current literature regarding the effects of gun legislation.[6]

- State Firearm Laws, Boston University School of Public Health: This is perhaps the most extensive database of state firearm laws, documenting the presence or absence of 133 different firearm law provisions in 14 categories for each state for each year during the 30-year period 1991-2020.[7] The entire database and codebook can be downloaded.

Other Sources of Information on Firearm Violence

- EZASHR (Easy Access to the FBI's Supplementary Homicide Reports: 1980-2020): This data analysis application was prepared by the National Center for Juvenile Justice. It provides a query system for accessing FBI homicide data by year, age, sex, race, victim-offender relationship, and type of weapon used.

- FBI Crime Data Explorer (CDE): The CDE provides estimated national and state data provided voluntarily by participating local, county, state, tribal, and federal law enforcement agencies.

- Gun Violence Archive (GVA). The Gun Violence Archive is an online archive of gun violence incidents collected daily from over 7,500 law enforcement, media, government, and commercial sources in an effort to provide near-real time data about the results of gun violence. GVA is an independent data collection and research group with no affiliation with any advocacy organization.

- Violence Prevention Center (VPC): Founded in 1988, VPC is an organization that works to prevent gun violence through research, education, advocacy, and collaboration and by applying long-established public health injury prevention and consumer product safety regulation to the gun industry and its products.

Rates

Crude rates are the number of deaths divided by the population size and multiplied by 100,000. Age-specific rates are crude rates applied to specific age categories (e.g., ages 0-4, 5-9, 10-14, etc.). Age-adjusted rates (sometimes referred to as age-standardized rates) represent a weighted average of age-specific rates, with weighting factors based on the 2000 U.S. population for each age category. Age-adjusted rates allow comparisons of rates among populations that differ in their age distributions. Unless otherwise indicated, age-adjusted rates are average annual rates per 100,000 persons during the time period specified (age-adjusted to the 2000 U.S. population).

For confidentiality purposes, the numbers of deaths and corresponding rates are suppressed in vital statistics data (WONDER, NVDRS) when fewer than 10 deaths occurred. Data queries involving 10 to 19 deaths in WONDER are considered statistically unreliable and neither crude nor age-standardized rates are shown. In WISQARS, rates are shown when 10 or more deaths occurred, although rates based on ≤ 20 deaths are flagged as unstable. For police shootings, unintentional, and undetermined intent categories of firearm deaths in Arizona, virtually all years had unreliable or suppressed data in vital statistics. Therefore, to examine trends and compare Arizona rates to national data based on vital statistics, rates were aggregated into two-year intervals (1999-2000, 2001-2002, etc.) for both Arizona and the U.S.

Age-adjusted mortality rates (R), standard errors (SEs) of rates, and 95% confidence intervals (CIs) of death rates were obtained from the CDC WONDER online data queries. In the few situations where SEs and CIs for rates were not available (e.g., selected death data from the NVDRS and other data sources), those measures were estimated as follows. Crude and age-adjusted death rates (R) were very similar for almost all firearm categories of intent (often the same or differing by a single decimal). While various methods were evaluated for estimating confidence intervals (such as Excel's inverse gamma function), age-adjusted SEs from WONDER were found to be very similar to, and often identical to, the SEs based on a Poisson distribution of deaths (D), and were estimated as:

$$SE(R) = \frac{R}{\sqrt{D}}$$

The 95% CI was then estimated as:

$$95\%\ CI = R \pm 1.96\ x\ SE(R)$$

Differences in death rates were considered statistically significant at the p = 0.05 level if the 95% confidence intervals did not overlap. In cases where a slight overlap in the 95% confidence intervals occurred and the number of deaths for each rate was ≥100, a normal approximation was used to compare the rates. The difference in rates was considered statistically significant at the p = 0.05 level if |Z| ≥ 1.96.

$$Z = \frac{R1 - R2}{\sqrt{SE(R1)^2 + SE(R2)^2}}$$

Statistical Software

For statistical analysis of trends, the widely-utilized Joinpoint Regression Program (V4.9.1.0) by the National Cancer Institute was employed. The software identifies significant trends in rates (average annual percent changes in rates) and changes in trends that occurred before and after specific years ("joinpoints'). The program starts with 0 joinpoints (a straight line) and tests whether more joinpoints are statistically significant and must be added to the model. Inputs to the program included years of death, age-adjusted mortality rates, and standard errors of the rates. Trends can also be analyzed where only "counts" of cases or deaths are available. The user can specify many aspects of the analysis (such as a maximum number of joinpoints) and even determine whether two trend lines are statistically parallel. The model selection method was the (default) permutation test involving 4,500 random permutations of the data. Significance testing was based on $p < 0.05$. Technical details on the methodology used to evaluate trends can be found at Kim, 2000[8] and at the National Cancer Institute, 2022.

Regression and correlation analyses were conducted using Excel 365 and JASP v0.17 (JASP Team 2023, University of Amsterdam), which provides a graphical user interface to run R code.

TOTAL FIREARM VIOLENCE: AN OVERVIEW

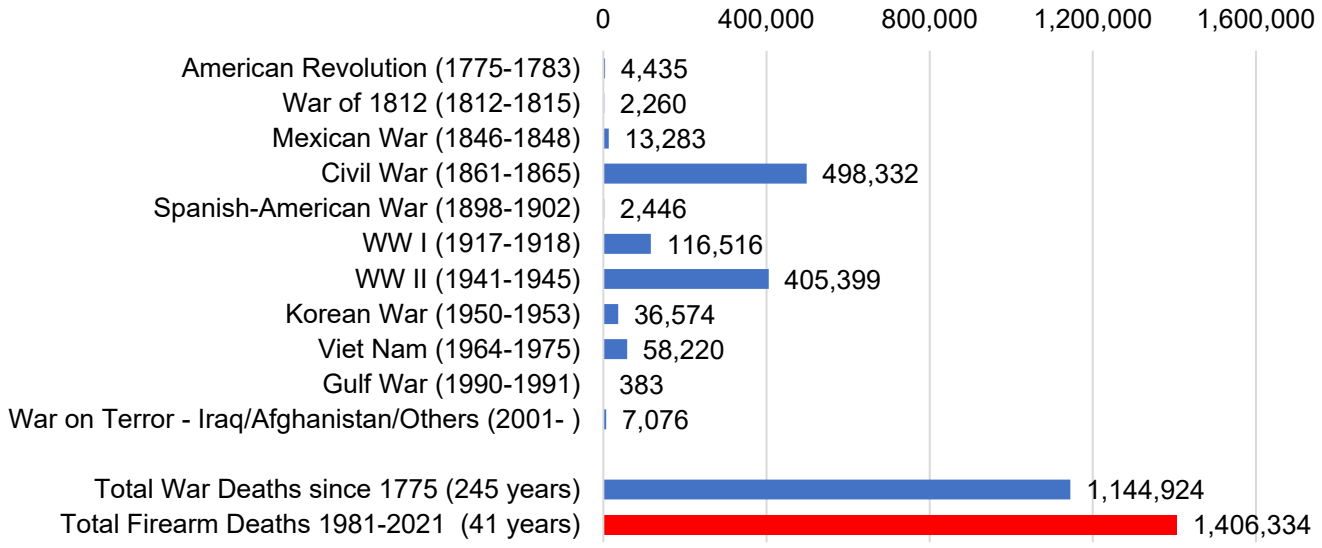
During the past four decades (1981-2021), there have been 36,000 published research articles that contained the word “firearm” and/or “gun” in their titles, including 3,000 in both 2021 and 2022. Unfortunately, the Dickey amendment to a federal spending bill in 1996 effectively banned CDC funding for research on prevention of firearm violence for some 20 years. This means that critical data on the effectiveness of gun laws has been limited while over 1,406,328 U.S. residents and 35,204 Arizona residents were killed by firearms over those four decades.[9] Those U.S. firearm deaths over the past 41 years exceed all U.S. war deaths over the past 245 years (Fig. 1).

KEY POINTS

- Arizona’s firearm mortality rate was 42% higher than the U.S. rate during 1999-2020.
- Male rates were nearly 6-fold higher than female rates.
- Blacks had the highest rate of any racial/ethnic group.
- Rates peaked at ages 20-24 & ≥80.
- Rates have risen by 2.9% per year since 2014.
- The lifetime risk of death by a firearm in Arizona was 1 out of 81 residents.
- Nonfatal firearm injuries greatly outnumbered fatal injuries both in Arizona (1.7-fold) and the U.S. (2.4-fold) since 2006.

Firearm violence remains a pervasive and unrelenting problem. In 2020 alone there was an average of 7 nonfatal firearm injuries and 3.5 fatal firearm injuries per day in Arizona, representing nearly 39,000 years of potential life lost before age 75 and a CDC-estimated cost of $13.1 billion. In the U.S. in 2020, there were 117,000 nonfatal firearm injuries and 45,222 firearm deaths or 124 deaths per day or 5 deaths per hour, representing 1,532,000 years of potential life lost before age 75 at a cost of $484 billion.

Figure 1. US War Deaths Over the Past 245 Years vs US Firearm Deaths Over the Past 41 Years (Sources: CDC; www.va.gov; www.defense.gov)



Firearm deaths have exceeded motor vehicle deaths in Arizona every year since 2009 (Fig. 2) and had exceeded opioid overdose deaths every year until 2019.

Figure 2. Annual Deaths from Firearms, Motor Vehicle Accidents, and Opioid Overdoses, 1999-2020, Arizona

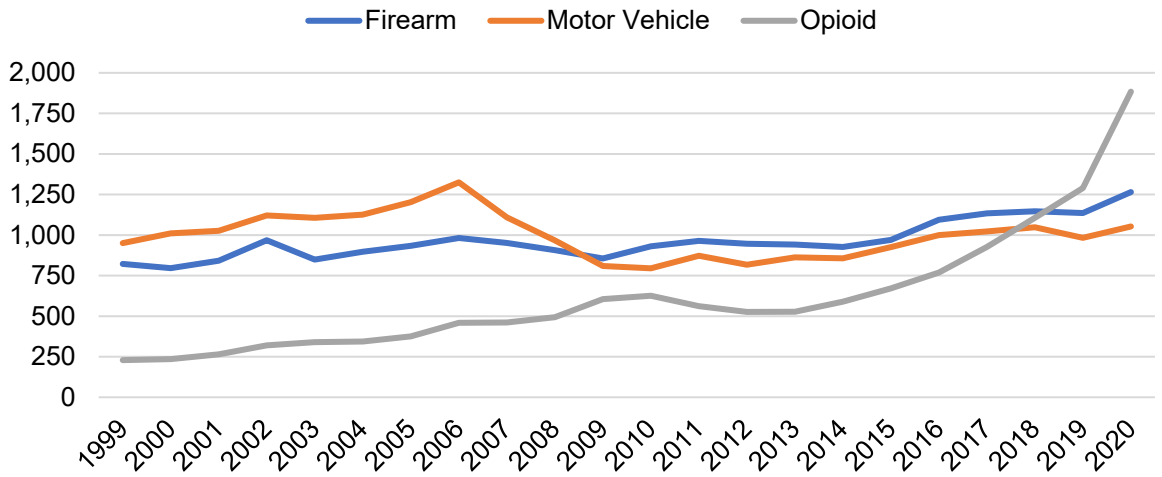


Table 3 shows the annual number and rates of firearm deaths for Arizona and the U.S. for the period 1999-2020. For every year, the age-adjusted rate for Arizona was significantly higher than the U.S. rate ($p < 0.05$), although that excess declined from 58% in 1999 to 22% in 2020. For the 1999-2020 period, the average annual age-adjusted rate of firearm deaths in Arizona was 15.3 per 100,000, a rate significantly higher (by 42%) than the U.S. rate of 10.8.

Table 3. Numbers and Age-Adjusted Rates of Total Firearm Deaths per 100,00 by Year, Arizona and U.S.

	Arizona			***United States***			***Rate Ratio***
Year	*Deaths*	*Rate*	*95% CI*	*Deaths*	*Rate*	*95% CI*	*AZ/US*
1999	822	16.3	15.2 - 17.5	28,874	10.3	10.2 - 10.4	1.58
2000	796	15.6	14.5 - 16.7	28,663	10.2	10.0 - 10.3	1.53
2001	842	16.0	14.9 - 17.1	29,573	10.3	10.2 - 10.4	1.55
2002	968	18.0	16.8 - 19.1	30,242	10.5	10.3 - 10.6	1.72
2003	849	15.4	14.3 - 16.4	30,136	10.3	10.2 - 10.4	1.49
2004	897	15.9	14.9 – 17.0	29,569	10.0	9.9 - 10.1	1.59
2005	934	16.1	15.0 - 17.1	30,694	10.3	10.2 - 10.4	1.56
2006	982	16.3	15.2 - 17.3	30,896	10.3	10.2 - 10.4	1.58
2007	951	15.4	14.4 - 16.4	31,224	10.3	10.2 - 10.4	1.50
2008	907	14.4	13.5 - 15.4	31,593	10.3	10.1 -10.4	1.40
2009	856	13.5	12.6 - 14.4	31,347	10.1	10.0 - 10.2	1.34
2010	931	14.6	13.6 - 15.5	31,672	10.1	10.0 - 10.2	1.44
2011	964	14.7	13.8 - 15.7	32,351	10.2	10.1 - 10.3	1.44

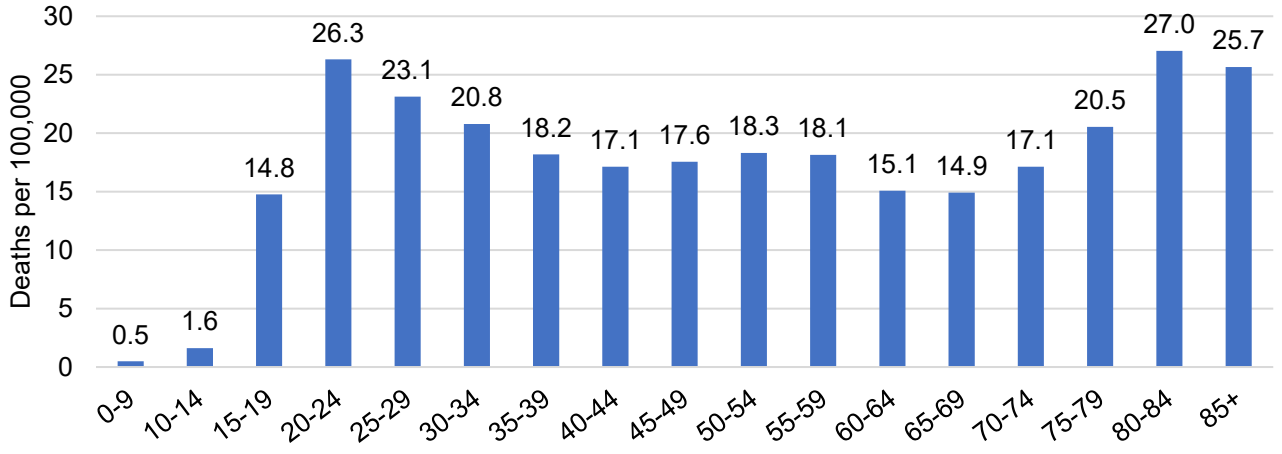
	Arizona			United States			Rate Ratio
Year	Deaths	Rate	95% CI	Deaths	Rate	95% CI	AZ/US
2012	946	14.1	13.2 - 15.1	33,563	10.5	10.4 - 10.6	1.35
2013	941	14.1	13.2 - 15.0	33,636	10.4	10.3 - 10.5	1.35
2014	927	13.5	12.6 - 14.4	33,594	10.3	10.2 - 10.4	1.31
2015	970	13.8	12.9 - 14.7	36,252	11.1	10.9 - 11.2	1.25
2016	1,094	15.2	14.3 - 16.1	38,658	11.8	11.7 - 11.9	1.29
2017	1,134	15.8	14.8 - 16.7	39,773	12.0	11.9 - 12.1	1.31
2018	1,147	15.3	14.4 – 16.2	39,740	11.9	11.8 - 12.0	1.29
2019	1,136	15.1	14.2 - 16.0	39,707	11.9	11.7 - 12.0	1.27
2020	1,265	16.7	15.7 - 17.6	45,222	13.6	13.5 - 13.7	1.22
Total	21,259	15.3	15.1 - 15.5	736,979	10.8	10.8 - 10.8	1.42

Sex, Age, and Race/Ethnicity

Overall firearm mortality rates also vary by sex, age, race, ethnicity, and location. Male age-adjusted rates in Arizona were 5.7-fold higher than female rates (26.2 vs 4.6), similar to the 6.3-fold difference in the U.S.

Rates of firearm deaths vary significantly by age with a bimodal distribution. Peak rates occur in the 20-24 age category and then again among those over age 80 (Fig. 3).

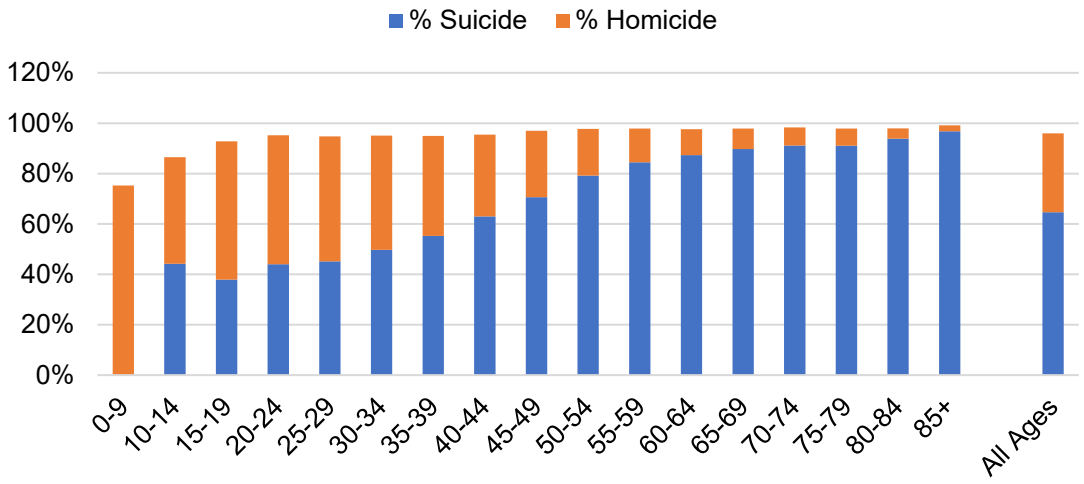
Figure 3. Age-Specific Rates of Total Firearm Deaths by Age Category, Arizona, 1999-2020



However, these two peaks differ in terms of the two leading contributors to firearm deaths: suicides and homicides. Just over 50% of total firearm deaths in both the 15-19 and 20-24 age groups were due to homicides, while over 95% of firearm deaths among those over age 80 were due to suicides (Fig. 4). For all ages combined, almost two-thirds (65%) of firearm deaths were

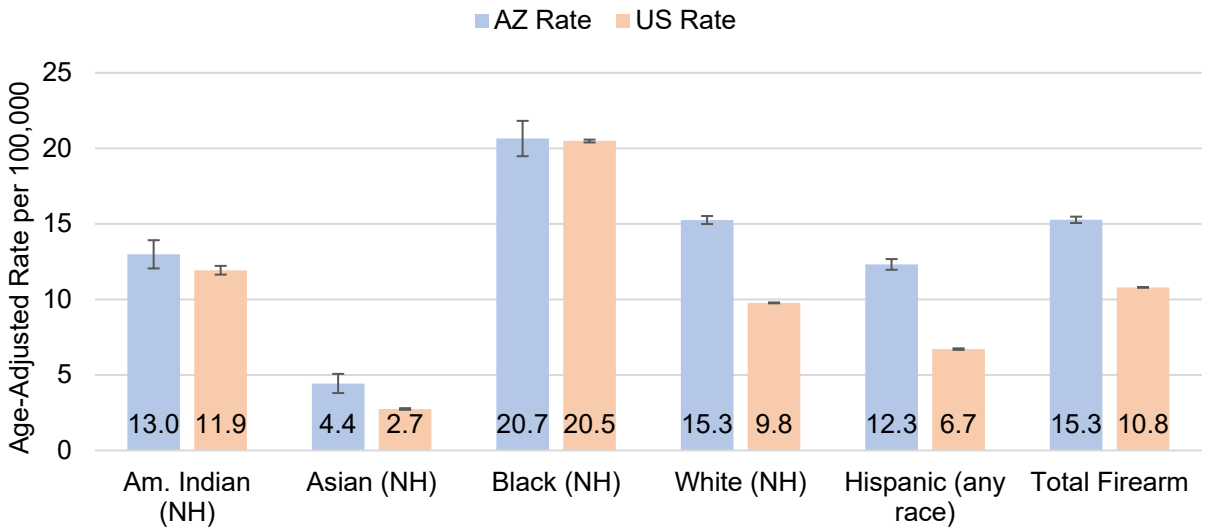
due to suicide and 31% due to homicide. The estimated median age at death was 41.7 for Arizona and 39.7 for the U.S.

Figure 4. Percent of Total Firearm Deaths Due to Suicides and Homicides by Age, Arizona, 1999-2020



Significant differences in rates were clearly evident by race and ethnicity in both Arizona and the U.S. (Fig. 5). In Arizona, non-Hispanic Blacks had the highest rate (20.7) while non-Hispanic Asians and Pacific Islanders had the lowest rate (4.4). Arizona rates were significantly higher than U.S. rates for non-Hispanic Whites, non-Hispanic Asians, Hispanics, and for total firearm deaths.

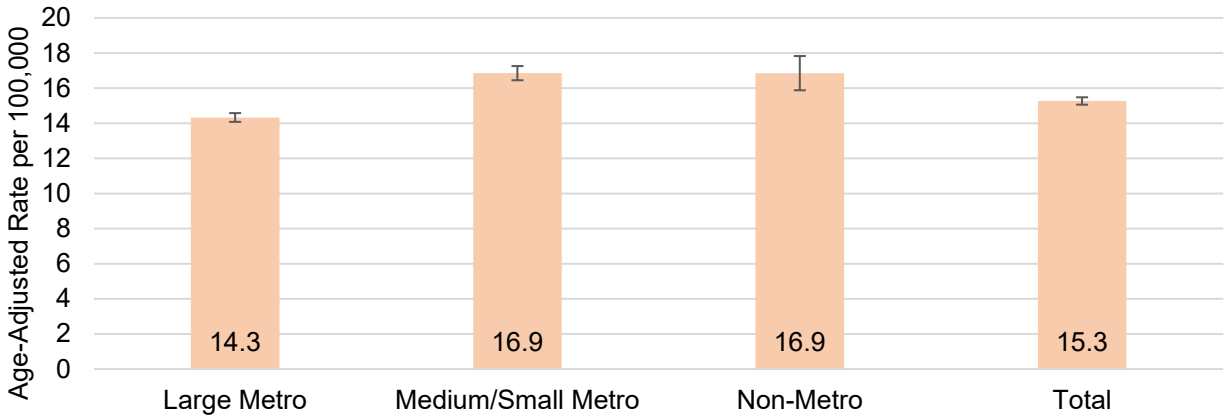
Figure 5. Rates of Firearm Deaths by Race/Ethnicity, Arizona vs US, 1999-2020



Location

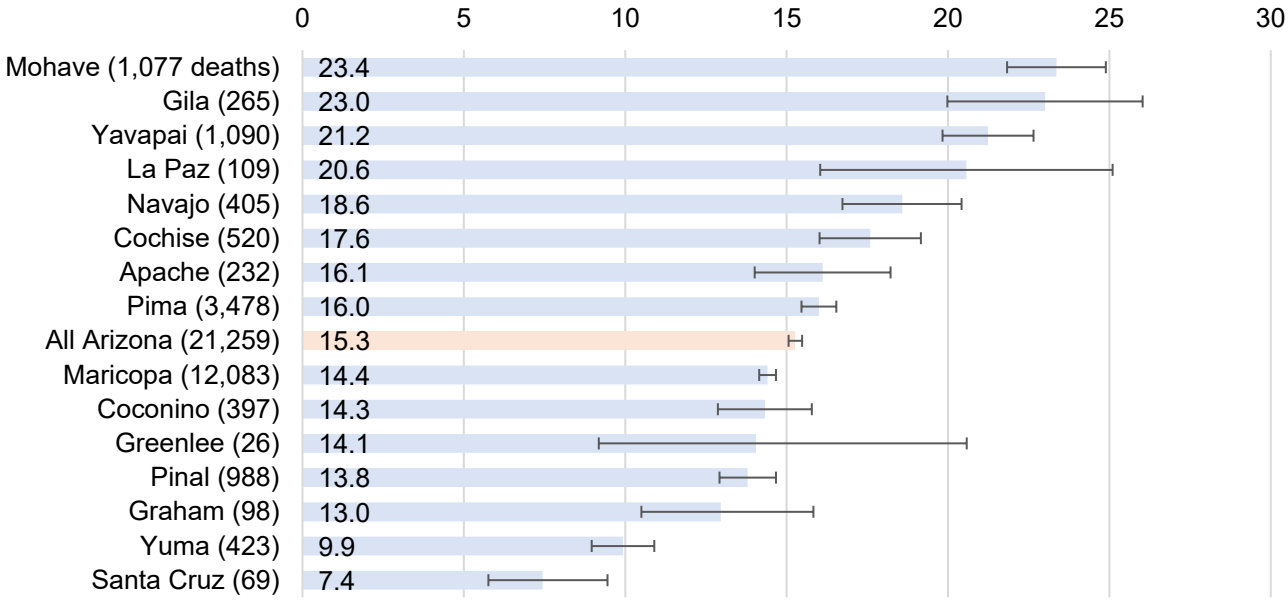
Perhaps surprisingly, overall firearm mortality rates are significantly lower in the Large Metro areas in Arizona compared to Medium/Small Metro regions and non-Metro regions (Fig. 6).

Figure 6. Rates of Total Firearm Deaths by Urbanization Category, Arizona, 1999-2020



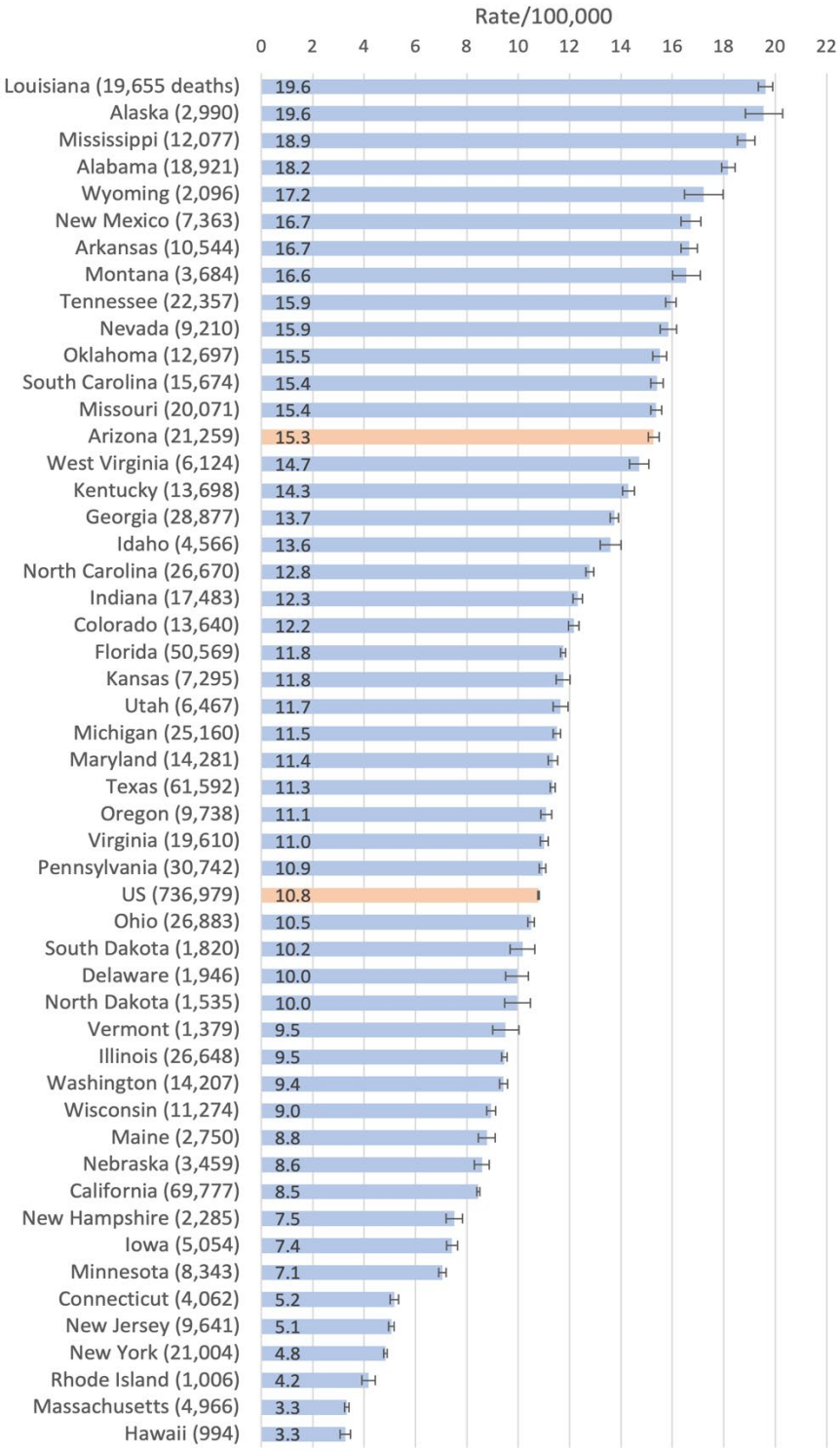
Consistent with firearm mortality rates by urbanization status, rates varied widely by county in Arizona, with over a three-fold range between the highest and lowest counties (Fig. 7). The highest rates were in Mohave and Gila counties while the lowest rate was in Santa Cruz County.

Figure 7. Numbers and Age-Adjusted Rates per 100,000 of Total Firearm Deaths by Arizona County, 1999-2020



Overall age-adjusted firearm mortality rates also varied nearly 6-fold among the states (Fig. 8), with Louisiana and Alaska at 19.6 and Massachusetts and Hawaii at 3.3.

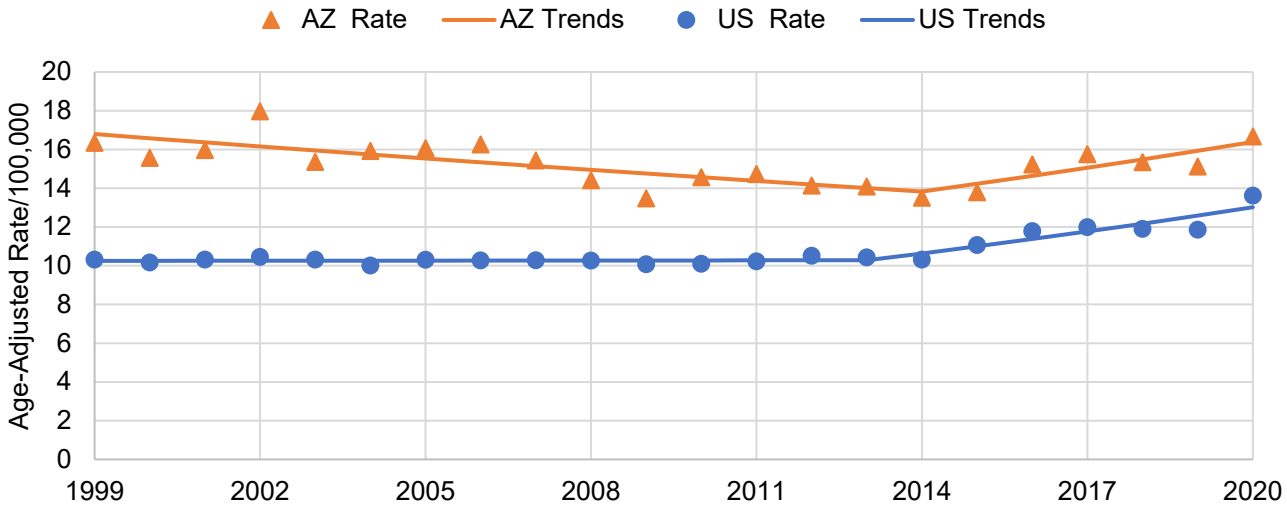
Figure 8. Age-Adjusted Rates, Deaths, and 95% Confidence Intervals of Total Firearm Deaths, by State, 1999-2020



Trends

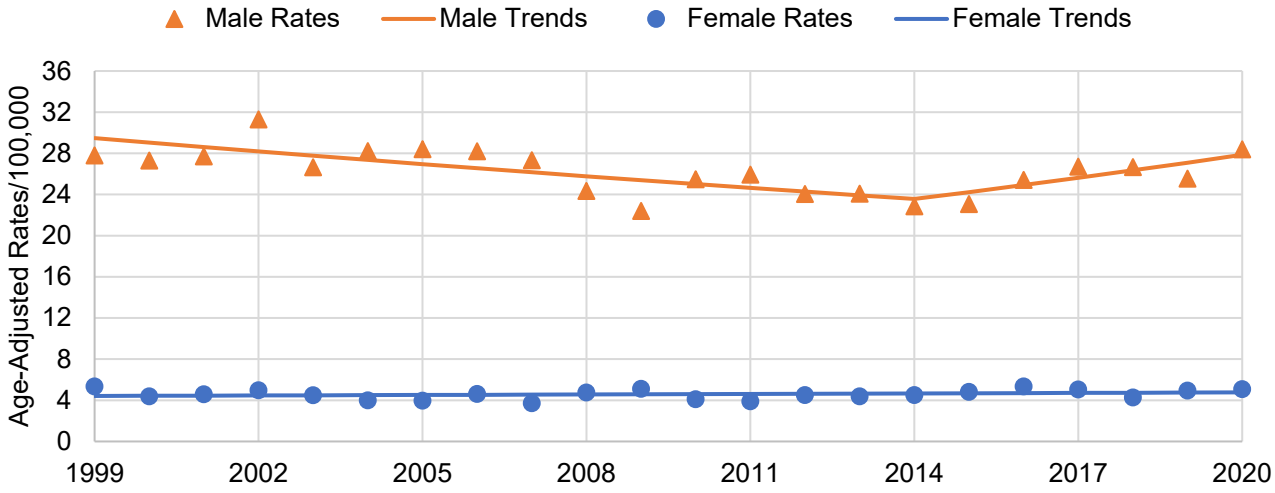
Rates of firearm deaths declined by 1.3% per year (p <0.001) in Arizona between 1999 and 2014, and then began significantly increasing by an average of 2.9% per year thereafter (p=0.019). Nationally, rates remained stable from 1999 to 2013, and then increased by 3.4% per year afterward (Fig. 9).

Figure 9. Rates and Statistical Trends of Total Firearm Deaths, Arizona vs US, 1999-2020



The increasing firearm mortality rate in Arizona since 2014 was entirely due to the increasing rates among males. Rates among males increased significantly by an average of 2.8% per year, while there was no significant change in female rates during 1999-2020 (Fig. 10).

Figure 10. Rates and Statistical Trends of Firearm Deaths by Gender, Arizona 1999-2020

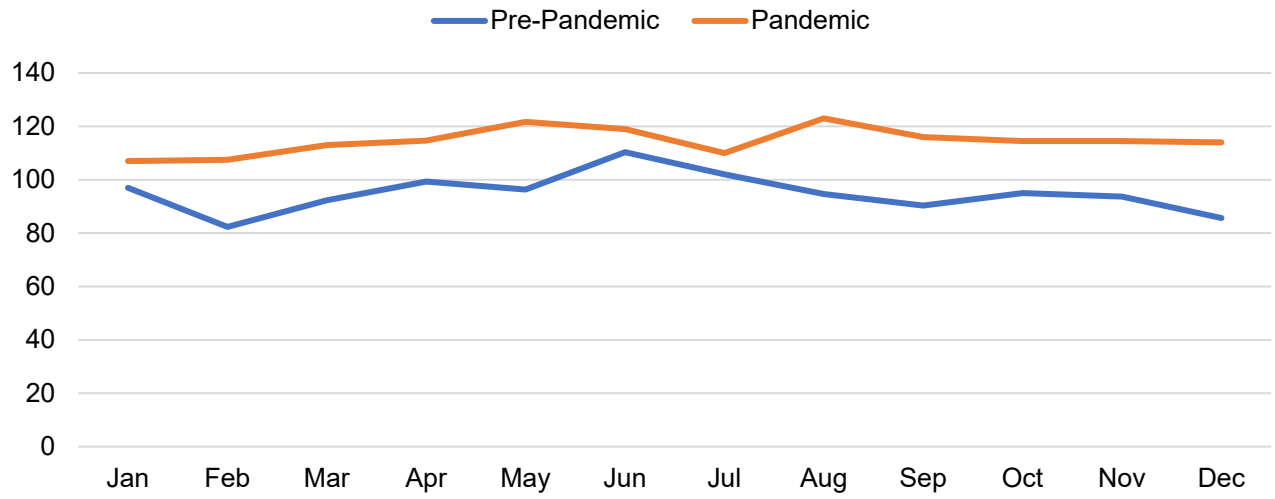


Trend analysis indicated that non-Metro rates increased significantly by 1.9% per year during 1999-2020, while Metro area rates declined by 1.4% per year until 2014, then increased by 2.7% per year.

Excess Firearm Deaths during the Covid Pandemic

Arizona experienced the highest percentage of excess deaths of any state in both 2020 and 2021 due both to COVID-19 and increased deaths from other causes. Excess firearm deaths also occurred in Arizona during the first 28 months of the pandemic (March 2020-June 2022) compared to pre-pandemic rates (2017-2019). The excess firearm deaths varied by month, ranging from 7.8% in July to an excess of 33.1% in December (Fig. 11). Overall, there was a 20.7% excess of total firearm deaths in Arizona during the pandemic, comparable to the 20.4% overall excess in the U.S. during that same 28-month period. The excess pandemic-related firearm homicide deaths in Arizona reached 46.3% and the excess firearm suicide deaths was 10.6%.

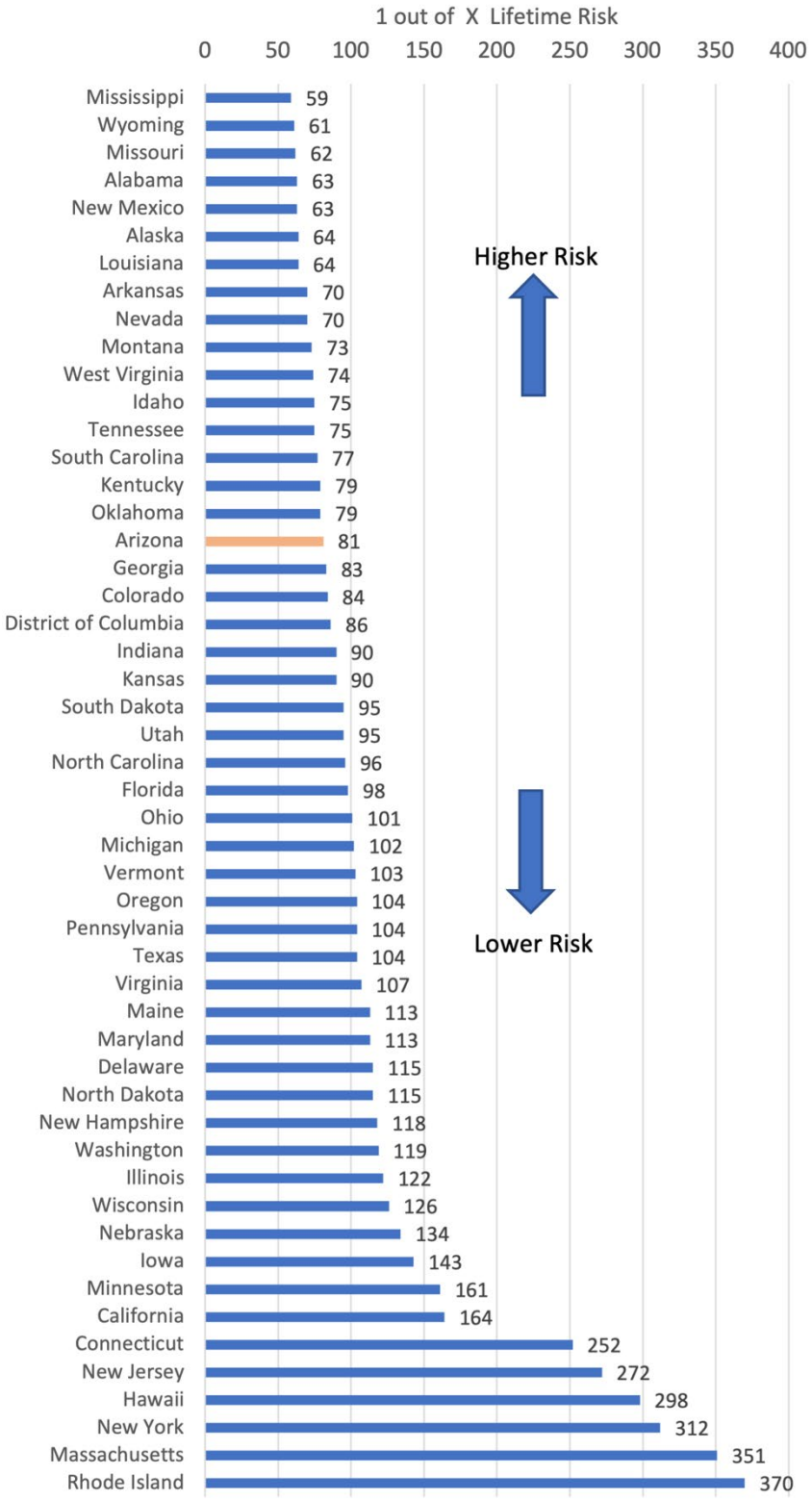
Figure 11. Average Monthly Total Firearm Deaths During the COVID-19 Pandemic (03/2020-06/2022) vs Pre-Pandemic (2017-2019), Arizona



Lifetime Risks of Death by a Firearm

The lifetime risk of dying by a firearm was estimated based on a lifetable analysis of 2018 data.[10] As with all lifetable analyses, projections assume that current mortality rates will continue into the future. In Arizona, it was estimated that 1 out of 81 individuals would die by a firearm given 2018 rates. For the U.S., it was estimated that 1 out of 108 individuals would be expected to die from a firearm. That risk varied greatly by gender and race, with the highest risk among Black males at 1 out of 38. Figure 12 shows the overall firearm lifetime risk of death by state. The state with the highest lifetime risk was Mississippi at 1 out of 59, while the lowest risk was in Rhode Island at 1 out of 370.

Figure 12. Estimated Lifetime Risk of Death by Firearm
Based on 2018 Mortality Rates (Sehgal, 2020)



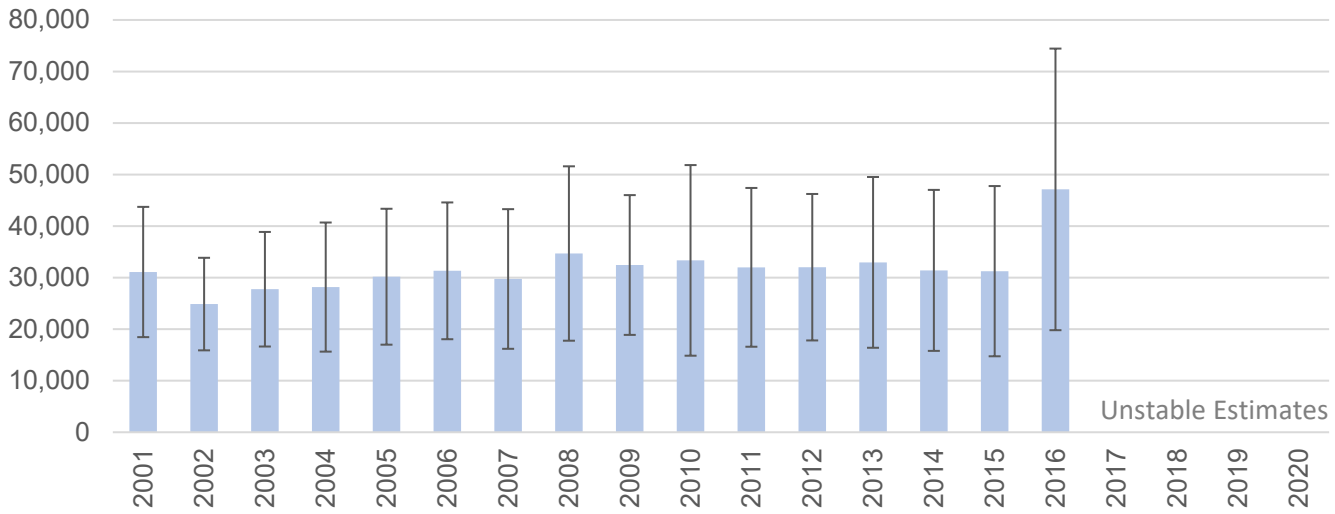
Nonfatal Firearm Injuries

While this report focuses on firearm mortality, over two-thirds of firearm injuries are nonfatal injuries treated and released at Emergency Departments or requiring hospitalization.[11-13] These nonfatal firearm injuries also represent a significant public health problem with significant medical costs.[14,15] In contrast to the readily available systematic data sources for fatal firearm injuries (WONDER, NVDRS), there is no comprehensive, publicly accessible (without cost) data source for nonfatal firearm injuries.[16-18] The two most-widely used nonfatal firearm data sources are briefly described below.

The National Electronic Injury Surveillance System – All Injury Program (NEISS-AIP) is an expanded version of the Consumer Product Safety Commission's original NEISS system developed to monitor consumer product injuries. That system ostensibly collects data from a nationally representative sample of 100 hospital emergency departments (EDs), but only 66 of these hospitals report the additional injury data that includes firearm injuries. There are over 6,000 hospitals in the U.S., so NEISS-API represents a very small sample. In addition to the small sample size and large degree of uncertainty in numbers and rates of firearm injuries, participating hospitals have changed over time and the system may or may not remain nationally representative, particularly if there is a significant change in the number of firearm injuries seen at a substituted ED.[19,20]

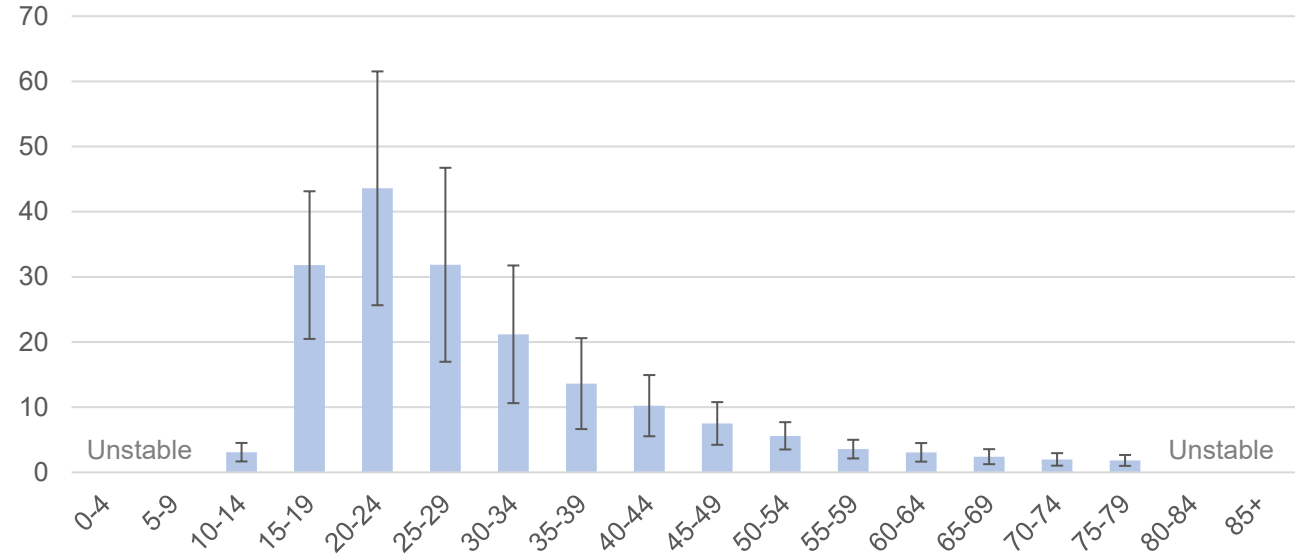
Despite these serious limitations, NEISS-API data is readily accessible through the CDC WISQARS web site and has been cited in many research articles. Due to the large degree of uncertainty (coefficient of variation), CDC no longer provided annual data for 2017-2020. Figure 13 illustrates the large 95% confidence intervals around the estimated number of treated and released ED visits nationally from firearm injuries during 2001-2016. Note the very wide confidence intervals. In 2016, for example, the estimated number of ED visits was approximately 47,000 with a confidence range of 20,000 to 74,000. It's not possible to determine from these data whether rates are actually increasing, decreasing, or remaining stable. For all years combined (2001-2020), NEISS-AIP data estimated 760,224 treated and released ED visits nationally from firearm injuries with a 95% confidence interval from 447,207 to 1,073,242. For all ED visits including those that were transferred or hospitalized during 2001-2020, NEISS-AIP data estimated 1,765,165 ED visits nationally from firearm injuries with a 95% confidence interval from 997,910 to 2,532,420. Whether these numbers are an accurate U.S. estimate or not, it is still a stunning number of nonfatal firearm injuries, well exceeding the 679,442 fatal firearm injuries in the U.S. during that same 20-year period.

Figure 13. Estimated Number of Firearm Injuries Treated and Released from Emergency Departments, U.S., 2001-2016 (NEISS via WISQARS)



According to the NEISS-AIP estimates, 87% of nonfatal firearm injuries treated and released at EDs were males, 7-fold higher than in females, while Blacks were 2-fold more frequent than Whites. Peak rates were among those 20-24 years of age, similar to the first peak for fatal firearm injuries (Fig. 14). In contrast to fatal injuries, however, firearm assaults, not suicides, were the overwhelming majority (73%) of nonfatal injuries, with unintentional/undetermined injuries a distant second (26%). Nonfatal firearm suicide attempts are uncommon since firearms are a highly lethal means of suicide with around a 90% case fatality rate.[21,22]

Figure 14. Estimated Age-Specific Rates per 100,000 of Nonfatal Firearm Injuries Treated & Released from Emergency Departments, U.S., 2001-2020 (NEISS, via WISQARS)



The other widely used and more reliable data source for nonfatal injuries is the Healthcare Cost and Utilization Project (HCUP), developed through a Federal-State-Industry partnership sponsored by the Agency for Healthcare Research and Quality. In contrast to NEISS-AIP, HCUP includes data from almost 1,000 hospitals and state-based data is also available. Among the available databases are the National Inpatient Sample (NIS), the Nationwide Emergency Department Sample (NEDS), the State Inpatient Databases (SID), and the State Emergency Department Databases (SEDD).

The state-level inpatient hospitalization data provide a nearly complete census of firearm injuries that resulted in a hospital discharge.[18] While there is a free online query system based on HCUP data called HCUPnet that provides basic information on nonfatal firearm injuries, the more detailed national and state-based databases have to be purchased for each year of data at a cost that can be a significant barrier to researchers. Pricing varies by data year and the database. Table 4 shows the cost for 2020 data for ED visits and In-Patient hospitalization databases for both the nationwide sample and the Arizona data.

Table 4. HCUP Costs* to Access 2020 Emergency Department Visits or In-Patient Hospitalizations and Years of Available Data

	Emergency Dept. Sample Database	Years Available	In-Patient Sample Database	Years Available
National	$1,000	2006-2020	$750	1988-2020
Arizona	$600 (non-profit, educ.)	2005-2021	$600 (non-profit, educ)	1990-2021

*Reduced student rates available for both national and state-level data. National rates are reduced for some previous years.

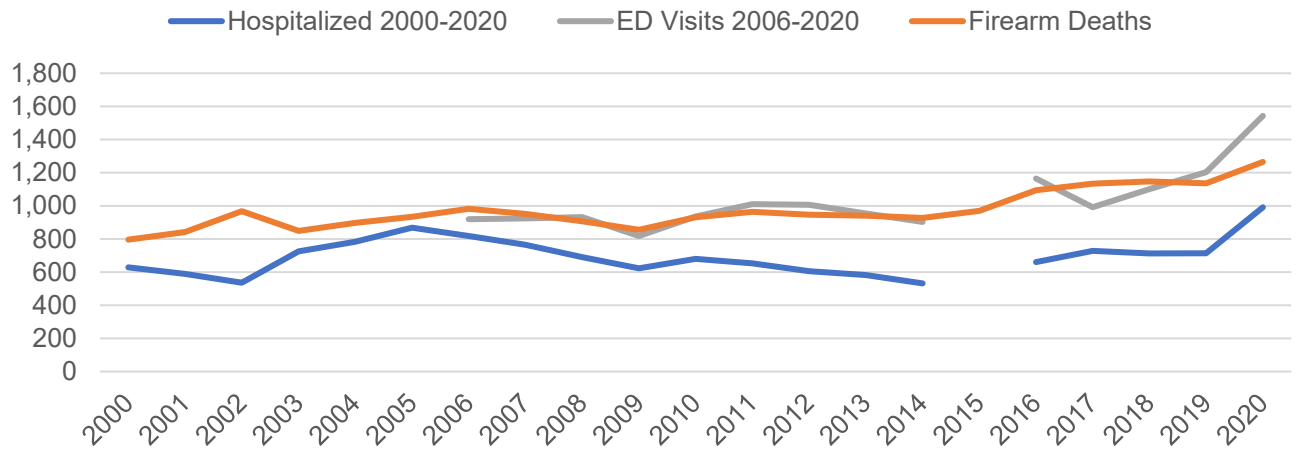
The HCUP site lists over 80 publications that utilized HCUP data to examine some aspect of nonfatal firearm injuries. Here, we will primarily present data from the free online query system provided by HCUPnet. HCUPnet provides limited query options with pre-set categories for each (Table 5).

Table 5. HCUPnet Query Options for Arizona Firearm Hospitalizations and ED Visits

ED Visits (# of categories)	In-Patient Hospitalizations (# of categories)
Patient Age Group (≤6)	Admission Source (2)
Patient Sex (2)	Patient Age Group (≤6)
Patient Race/Ethnicity (≤6)	Patient Sex (2)
Patient Urban/Rural Residence (4)	Patient Race/Ethnicity (≤6)
Expected Payor (5)	Patient Urban/Rural Residence (4)
Hospital Urban/Rural Location (3)	Expected Payor (5)
Hospital Trauma Level (2)	Hospital Ownership (3)
Years (2006-2020, excl 2015)	Hospital Bed size (3)
	Hospital Urban/Rural Location (3)
	Years (2000-2019, excl 2015)

Figure 15 shows trends in the numbers of hospitalizations, emergency department visits (treat and release), and deaths due to firearms in Arizona. Nonfatal firearm data are not reported (by HCUPnet) for calendar year 2015 due the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015.

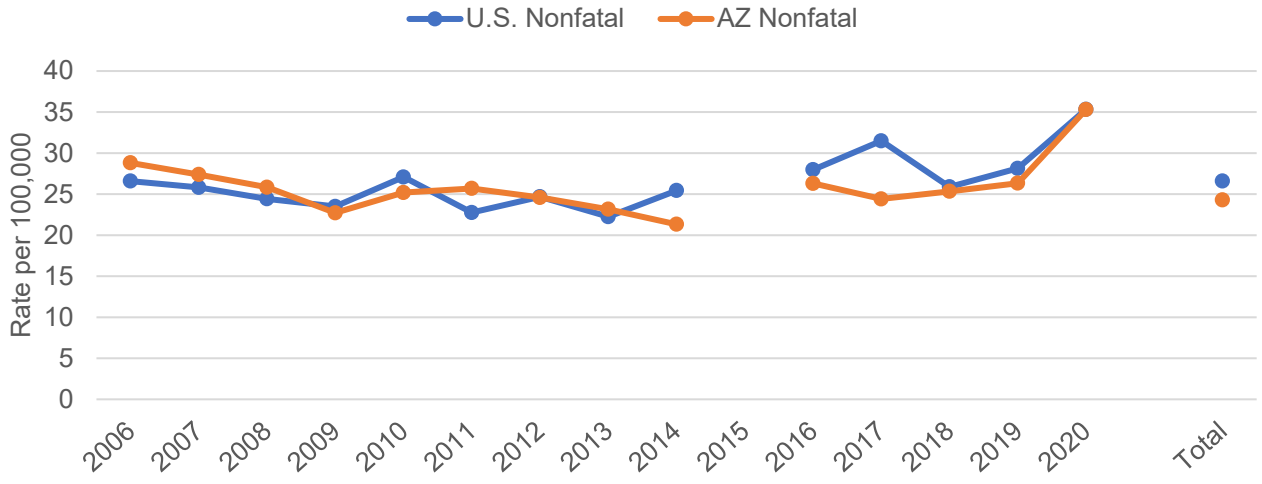
Figure 15. Hospitalizations, Emergency Department Visits (Treat & Release), and Deaths Due to Firearms, Arizona*
(Sources: HCUPnet, CDC WONDER)



*2015 data was not reported by HCUP due to the ICD coding change in Oct 2015; 2020 hospitalization data for AZ estimated based on % increase in U.S. data between 2019 and 2020.

While fatal firearm injury rates in Arizona are significantly (42%) higher than U.S. rates, estimated nonfatal firearm injury rates during 2006-2020 were similar in Arizona and the U.S. (Figure 16). The overall rate during 2006-2020 (excl. 2015) was approximately 10% lower in Arizona than the U.S. (24.3 vs 26.6 per 100,000).

Figure 16. Rates of Total Nonfatal Injuries (Hospitalizations & ED Visits), Arizona vs U.S., 2006-2020* (Source: HCUPnet)

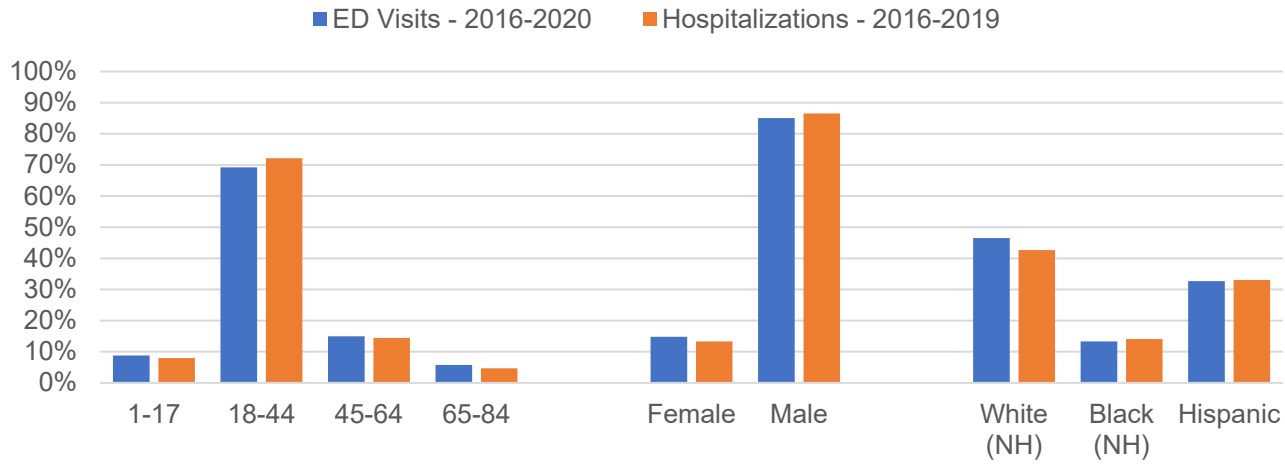


*2015 data not reported by HCUP due to the ICD coding change in Oct 2015; 2020 hospitalization data for AZ estimated based on % increase in U.S. data between 2019 and 2020.

As shown in Figure 17, nonfatal firearm injuries requiring an emergency department visit or hospitalization were most common among those aged 18-44 (70%) and male (≥85%). Non-Hispanic Whites comprised 43-47% of victims, non-Hispanic Blacks 13-14%, and Hispanics

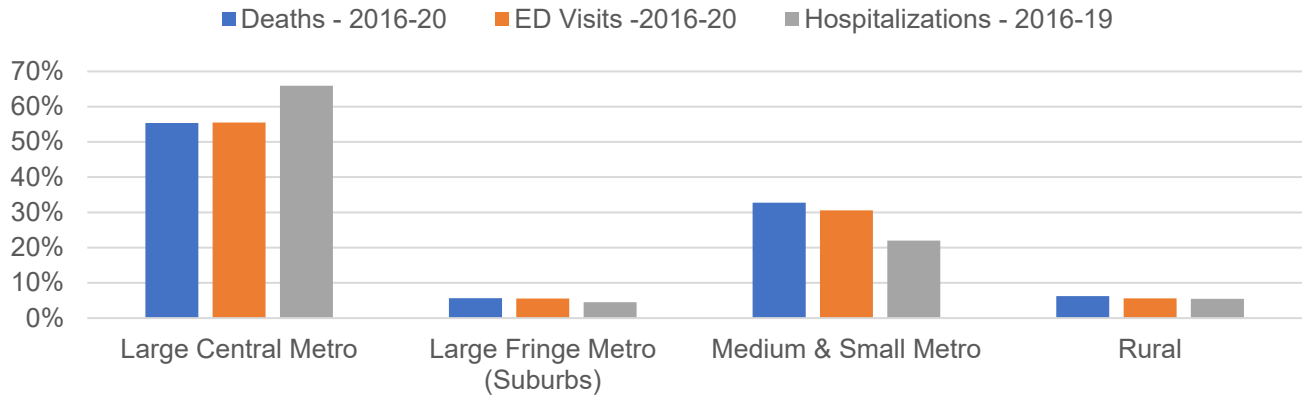
33%. Other racial categories were not consistently shown due to insufficient numbers. The proportions for race and sex were similar to those for fatal firearm injuries in Arizona, although the proportion of fatal firearm injuries among those aged 18-44 during that time period was lower (47% vs 70%). Medicare or Medicaid was the expected payor for 71% of the hospitalizations and 54% of emergency department visits in Arizona.

Figure 17. Hospitalizations and Emergency Department Visits by Age Category, Sex, and Race/Ethnicity, Arizona (Source: HCUPnet)



Finally, the urban/rural distribution of cases of both fatal and nonfatal firearm injuries were comparable in Arizona with over half the cases in the large central metro areas and 5% in rural areas (Fig. 18).

Figure 18. Firearm Deaths, Hospitalizations, and ED Visits by Urban/Rural Location, Arizona (HCUPnet)



Childhood Firearm Injuries

A 2022 update by Goldstick and colleagues[23] to a 2018 report[24] on the causes of death in children and adolescents found that firearm-related injuries became the leading cause of death among children and adolescents aged 1-19 in 2020. The methodology used for the national analysis was recreated for this report to determine the leading causes of death for children and adolescents in Arizona, as shown above in Figure 19.

Figure 19. Mortality Rates Of The Seven Leading Causes of Death In Children and Adolescents Aged 1-19 in Arizona

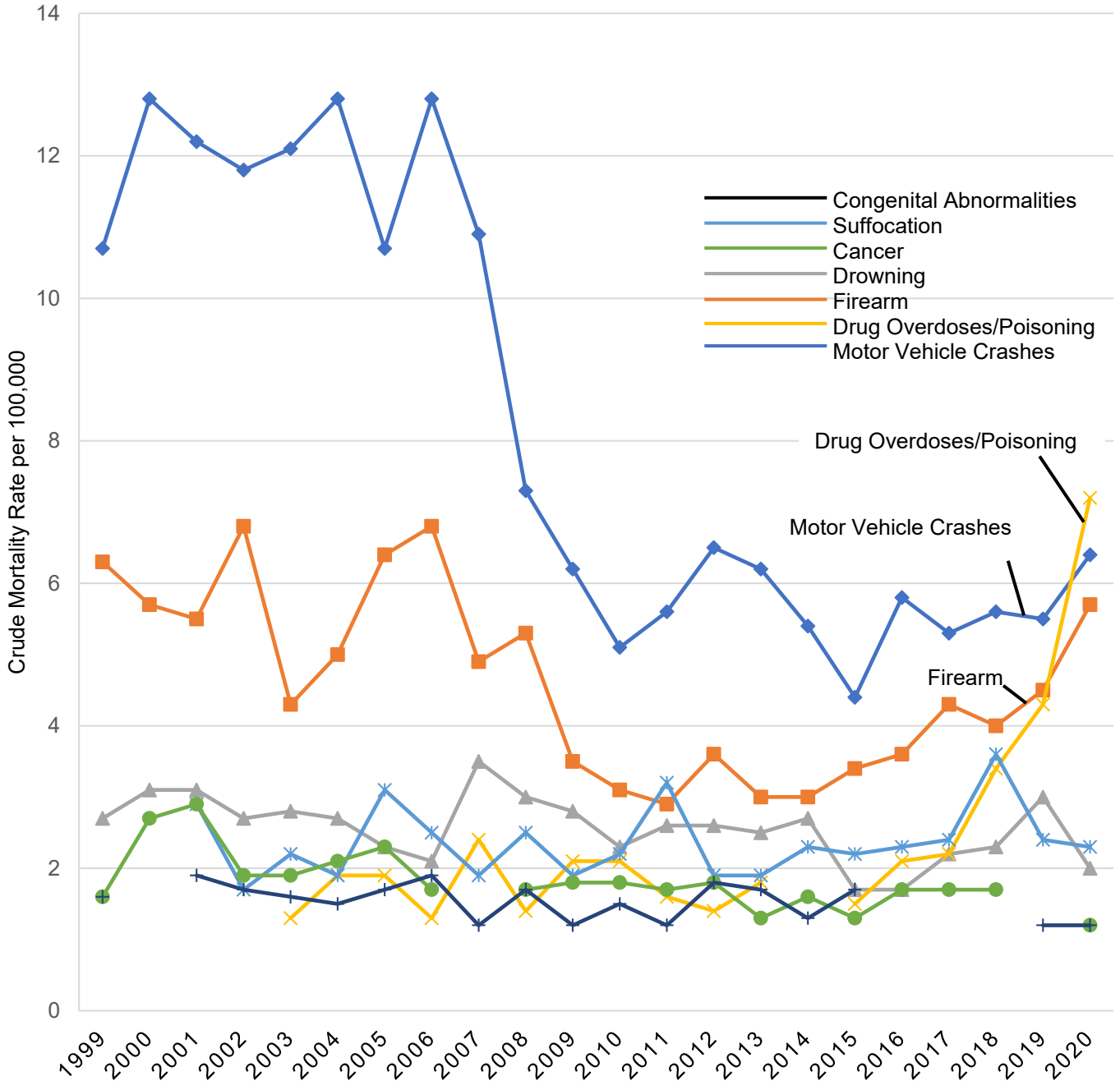
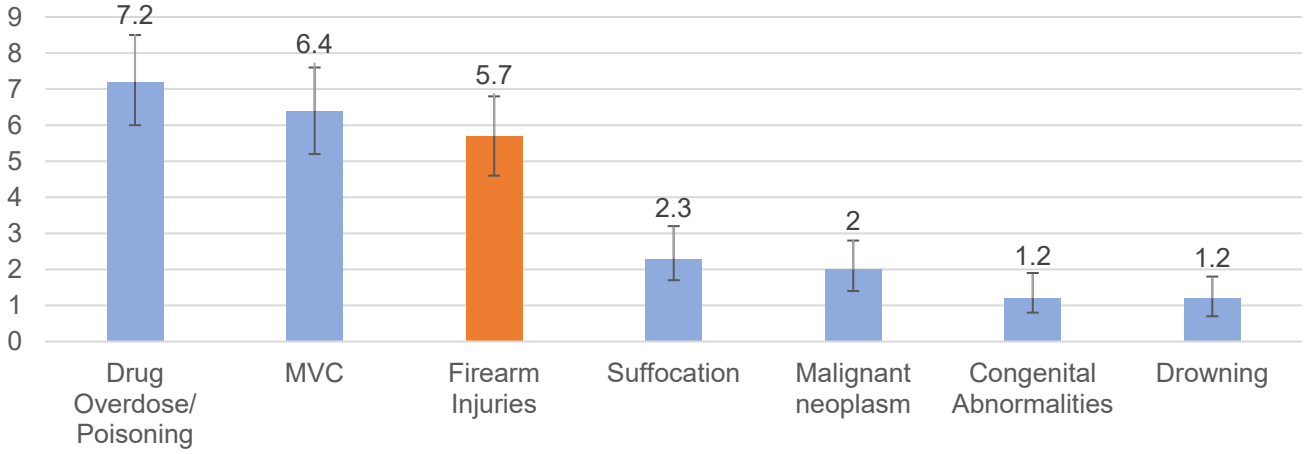


Figure 20 shows the seven leading causes of death among children and adolescents aged 1-19 in Arizona for 2020. The firearm mortality rate among Arizonan children and adolescents (5.7 per 100,000) was below the peak reached in both 2008 and 2002 (6.9 per 100,000); however, the rate has been generally increasing since its nadir in 2011 (2.9 per 100,000). Based on 2020 data, firearm mortality (5.7 per 100,000) was the third leading cause of death among children and adolescents in Arizona, falling only behind drug overdoses/poisoning (7.2 per 100,000) and motor vehicle crashes (6.4 per 100,000).

Figure 20. Crude Mortality Rates for the Leading Causes of Death for Children and Adolescents aged 1-19 in Arizona, 2020



To provide additional context for firearm mortality among children in the U.S., the annual number of children killed by firearms was compared to annual deaths from two occupational groups at risk of firearm or other violent deaths: active-duty military members and police officers. A Department of Defense Casualty Report indicated that there were 3,490 hostile military deaths in Iraq from 2003-2010 or 388 per year. Hostile deaths in Afghanistan from 2001-2014 totaled 1,847 or 132 per year. Firearm deaths among children aged 1-19 averaged 3,095 per year during 1999-2021—a dramatic difference.

A similar analysis compared firearm mortality among children in the U.S. to firearm mortality among law enforcement officers. Felonious assault mortality data was extracted from the FBI Law Enforcement Officers Killed and Assaulted (LEOKA) database. This analysis demonstrated that more children die due to firearm violence than do American police officers. From 2011-2021, there were over 60-fold as many firearm deaths among American children than American police officers killed by firearms. Converting these numbers of deaths to crude rates of firearm mortality per 100,000 children and police officers shows that from 2011-2021, there were 4.1 firearm-related deaths per 100,000 children vs. 7.1 firearm deaths per 100,000 police officers.

National analyses have found associations between sociodemographic factors and types of firearm injuries. Using the Nationwide Emergency Department Sample data from 2009-2016, Patel (2021) found that self-harm firearm injuries among youth younger than 21 were associated with several characteristics, including higher socioeconomic status and older age; firearm

assault, on the other hand, was associated with lower socioeconomic status and urban hospital location.[25]

Several research studies have investigated the link between firearm legislation and child firearm injury and mortality. One study reviewed state-level child access prevention (CAP) laws, which puts criminal liability on adults who let children have unsafe access to a firearm. Strong CAP laws require safe firearm storage in addition to imposing criminal liability on adults who provide firearms to a minor. States with strong CAP laws were found to significantly reduce all firearm injuries, self-inflicted, and unintentional pediatric firearm injuries.[26] A review found that the presence of firearms in a home significantly increases youth risk of firearm mortality, especially when the guns are stored unlocked and loaded.[27] This bolsters the conclusion from a 2019 modeling study which estimated that safely storing firearms in homes with children would prevent up to 32% of pediatric suicide and unintentional firearm deaths.[28]

Years of Potential Life Lost (YPLL)

Years of Potential Life Lost (YPLL) is a frequently used measure in public health to quantify the burden of premature deaths due to a specific cause in a population.[29] YPLL estimates the average time a person would have lived had they not died prematurely. It is calculated by subtracting the age at death for each death from a specified endpoint age, such as age 65 or 75. For example, if a person died at age 40, that death would contribute 35 YPLL before age 75. In this analysis, the endpoint age was 75 to approximate the life expectancy of Arizonans (76.3) in 2020. The YPLL measure is useful in emphasizing deaths among younger persons such as those due to injuries, including firearm deaths.[30]

Table 6 shows both the total YPLL for fatal firearm injuries before age 75 in Arizona and the average YPLL per death over the period from 1999 to 2020 by intent, sex, race, and ethnicity. Firearm suicides and homicides accounted for 95% of YPLL due to firearms, and males represented 85% of firearm YPLL. Non-Hispanic Whites accounted for half of firearm YPLL and Hispanics for one-third of YPLL. For context, the three leading contributors to YPLL in Arizona were unintentional injuries, cancer, and heart disease, collectively accounting for 49% of YPLL before age 75.

Table 6. Years of Potential Life Lost (YPLL) Before Age 75 Due to Firearms and Average Years of Life Lost Before 75, Arizona, 1999-2020

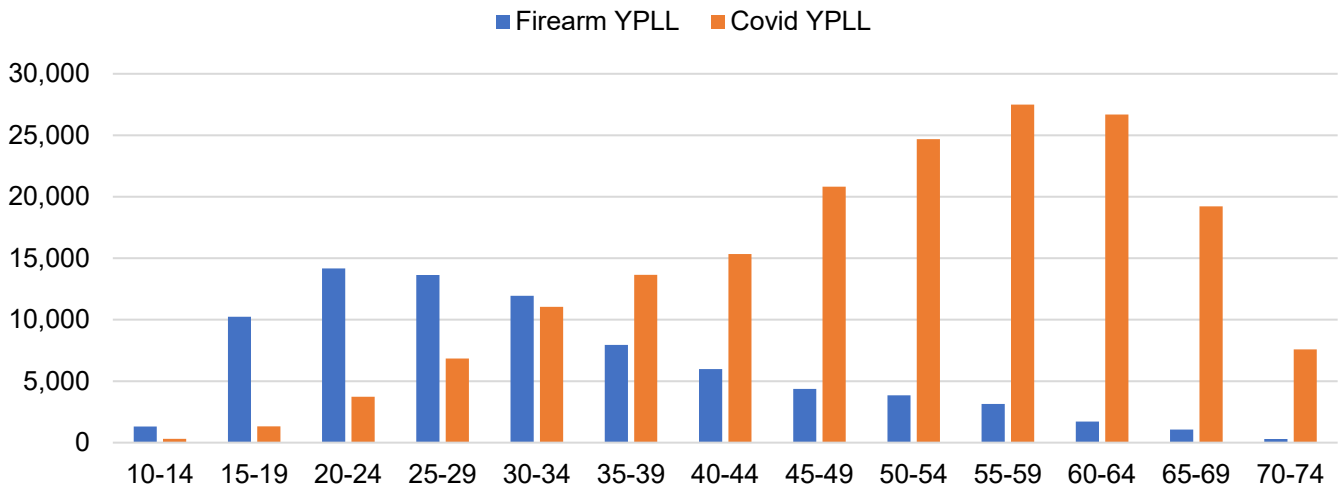
Firearm-Related	*Firearm YPLL*	*% of Total Firearm YPLL*	*Deaths*	*Average YPLL per Death*
Total Firearm (All Intents)	668,350	--	21,259	31.4
Suicides	354,361	53.0%	13,751	25.8
Homicides	280,141	41.9%	6,659	42.1
Undetermined	12,775	1.9%	310	41.2
Police Shooting	11,460	1.7%	296	38.7
Unintentional	9,613	1.4%	243	39.6

Firearm-Related	*Firearm YPLL*	*% of Total Firearm YPLL*	*Deaths*	*Average YPLL per Death*
Males	568,494	85.1%	18,068	31.5
Females	99,856	14.9%	3,191	31.3
White (NH)	341,011	51.0%	13,654	25.0
Black (NH)	53,900	8.1%	1,254	43.0
Amer. Ind (NH)	33,590	5.0%	784	42.8
Asian (NH)	7,137	1.1%	197	36.2
Hispanic (all races)	229,022	34.3%	5,184	44.2

Large differences were also evident in the average years of life lost per death, reflecting the different age distributions of firearm mortality rates. Suicides, for example, had an older age distribution than homicides and therefore had lower average loss of potential life (25.8 years) than homicides, which primarily impacted younger people (42.1 years). This is despite the fact that suicides comprised the majority of firearm deaths (64.7%), demonstrating the disproportionate impact of firearm homicide on young populations. With respect to race and ethnicity, non-Hispanic Whites had lowest average loss of life (25.0 years), while Blacks, American Indians, and Hispanics experienced the greatest average years of lost life (43-44 years).

Figure 21 provides an example of the contrast in YPLL between two causes of mortality – firearms and COVID-19—with significant differences in their age distributions. During 2020-21, firearm deaths had a higher YPLL than COVID-19 deaths up until age 35. The average loss of life for overall firearm deaths was 31.4 years, while the average loss of life from COVID-19 was 14.4 years.

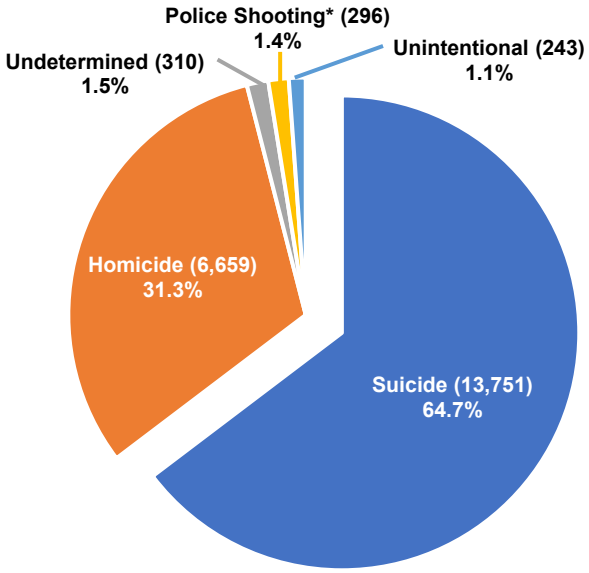
Figure 21. Years of Potential Life Lost (YPLL) Before Age 75, by Age Category, Firearm vs COVID-19 Deaths, Arizona, 2020-21



FIREARM SUICIDE

Firearm suicides represent the largest contributor to firearm deaths in both Arizona and the US. As shown below in Fig. 22, firearm suicides in Arizona account for 65% of total firearm deaths, and the proportion of suicides due to firearms has been between 54% and 63% over the past 20 years. Suicides are twice as common as firearm homicides, the next largest category.

Figure 22. Firearm Deaths by Intent, Arizona, 1999-2020



*Police shootings are significnatly underreported by Vital Statistics in Arizona

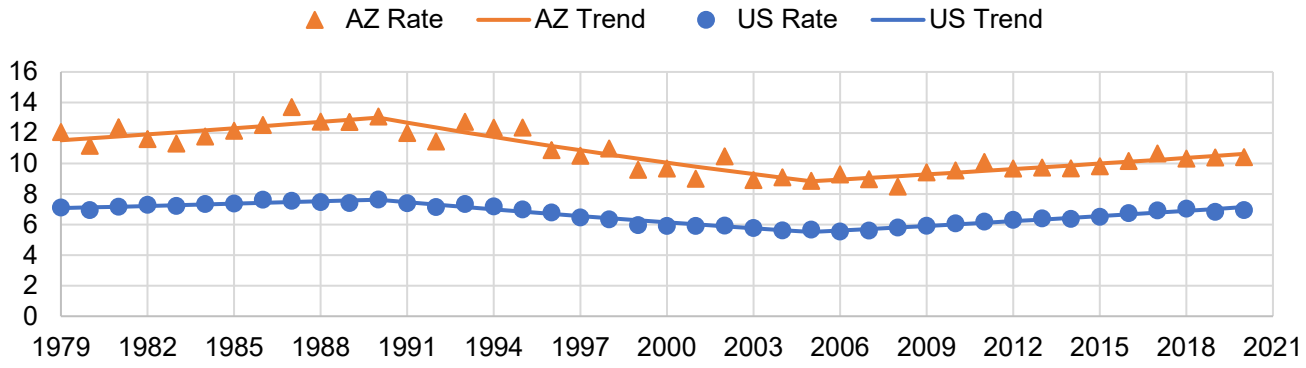
KEY POINTS

- Firearm suicide was the largest contributor to firearm mortality in Arizona (64.7%) and the United States (58.8%).
- Firearms were involved in 58% of suicides in Arizona from 1999-2020.
- The overall risk of firearm suicide among males was 6-fold higher than the risk among females.
- White males over 85 years old were most at risk of firearm suicide (61.5 deaths per 100,000), a rate 23.7-fold higher than the rate for females of the same age category.
- Overall rates were over 2-fold higher among Whites than any other racial and ethnic group.

The proportion of firearm deaths due to suicide in Arizona was greater than the national average; the percentage of firearm deaths in Arizona that were suicides (64.7%) was higher than the national percentage (58.8%).

Firearms were involved in well over half of total suicide deaths from 1999-2020 in Arizona (57.8%) and the U.S. (51.6%). Long-term trends of firearm suicides show similar patterns in Arizona and the U.S. (Fig. 23). Following a long-term significant decline in Arizona between 1990 and 2005 (2.5% per year decrease), rates have increased since 2005 by 1.2% per year.

Figure 23. Age-Adjusted Rates and Trends of Firearm Suicides, AZ vs US, 1979-2020



From 1999-2020, Arizona had a 56% higher age-adjusted rate of firearm suicide deaths (9.7 per 100,000) than the national average rate of 6.2.

While these figures provide an overall perspective, a more detailed analysis shows significant disparities in firearm suicides by race, ethnicity, sex, age, and rurality.

Race and Ethnicity

As seen in Table 7, non-Hispanic White Arizonans were at the highest risk of suicide (12.1 per 100,000) among all racial and ethnic groups, experiencing a 25% increased risk of mortality compared to the state average. On the other end of the spectrum, Arizonans identifying as Asian and Pacific Islanders (API) experienced the least risk of firearm suicide, at 2.6 per 100,000. Despite this low rate, the API population in Arizona still experienced a significantly higher mortality rate than the national average (1.4).

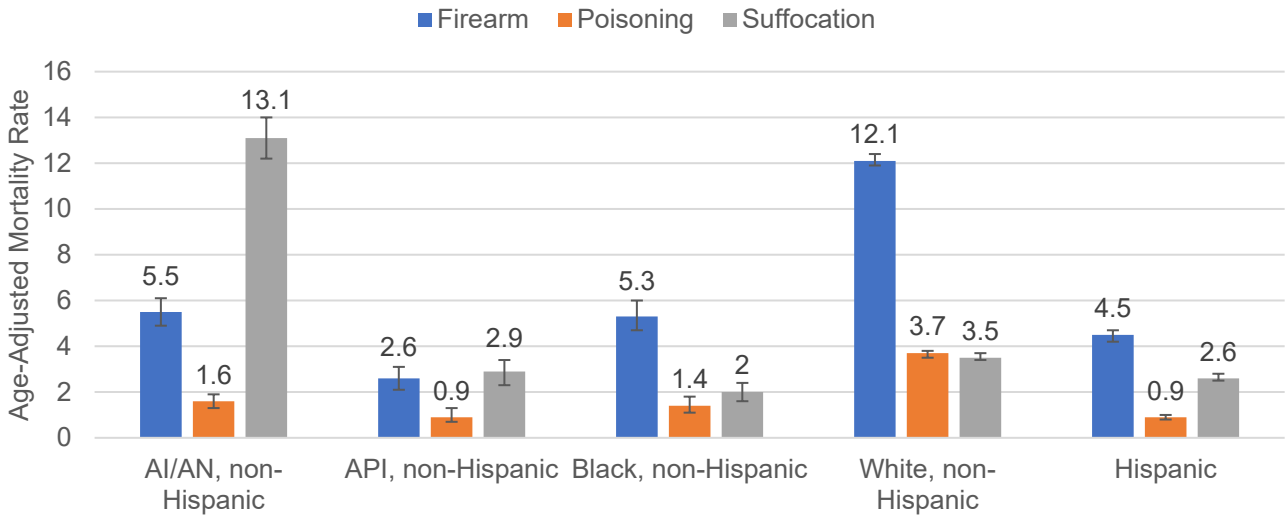
Table 7. Firearm Suicide Deaths and Rates per 100,000, Arizona vs. U.S., 1999-2020

Geography	Race, Ethnicity	Deaths	Age-Adjusted Rate*	95% Confidence Interval
Arizona	White, non-Hispanic	11,205	12.1	11.9 – 12.4
	Black, non-Hispanic	309	5.3	4.7 – 6.0
	AI/AN, † non-Hispanic	322	5.5	4.9 – 6.1
	API, † non-Hispanic	118	2.6	2.1 – 3.1
	Hispanic (any race)	1,681	4.5	4.2 – 4.7
	All	13,751	9.7	9.5 – 9.9
United States	White, non-Hispanic	374,092	7.8	7.8 – 7.8
	Black, non-Hispanic	25,650	3.0	3.0 – 3.1
	AI/AN, non-Hispanic †	3,669	6.6	6.4 – 6.8
	API, non-Hispanic †	5,255	1.4	1.4 – 1.5
	Hispanic (any race)	23,256	2.4	2.3 – 2.4
	All	433,098	6.2	6.2 – 6.2

* Differences between the Arizona and U.S. mortality rates are statistically significant for every racial category
† Abbreviations: API – Asian and Pacific Islanders; AI/AN – American Indian/Alaska Native

Table 7 shows that individuals from different racial and ethnic groups experience different rates of firearm suicide. Additionally, a recent study of suicide deaths in a California county reported ethnic differences in suicide method. [31] This study found that White and Black individuals were more likely to use a firearm to die by suicide than individuals from other racial groups, while Latino/a/x and API individuals were more likely to die by hanging. Furthermore, the use of a firearm was the most common means of suicide among Black, White, and Hispanic populations, while suffocation was much more common in AI/AN and API populations, as seen in Figure 24.

Figure 24. Mechanism of Suicide Mortality in Arizona, 1999-2020



These racial differences vary for males and females, as Table 8 exhibits. The data also show that there were significant differences in firearm suicide rates between males and females which persist in every racial category. For instance, non-Hispanic White males experienced a 5.7-fold increased risk of suicide mortality when compared to non-Hispanic White females, Black males had a 7.1-fold increased risk, AI/AN males had an 11.7-fold increased risk, and Hispanic males had an 8.1-fold increased risk. This suggests that it may be important to target males for firearm suicide prevention measures.

Table 8. Firearm Suicide Deaths and Age-Adjusted Rates of Firearm Deaths per 100,000 by Sex and Race, Arizona, 1999-2020

Sex	Race, Ethnicity	Deaths	Age-Adjusted Rate	95% Confidence Interval
Male	White, non-Hispanic	9,539	21.0	20.5 – 21.4
	Black, non-Hispanic	271	9.2	8.0 – 10.4
	AI/AN, † non-Hispanic	293	10.5	9.2 – 11.7
	API, † non-Hispanic	99	4.7	3.8 – 5.7
	Hispanic (Any race)	1,483	8.1	7.6 – 8.5
	Total	11,794	17.1	16.8 – 17.4
Female	White, non-Hispanic	1,666	3.7	3.5 – 3.9
	Black, non-Hispanic	38	1.3	0.9 – 1.8
	AI/AN, † non-Hispanic	29	0.9	0.6 – 1.3
	API, † non-Hispanic	19	Unreliable*	0.5 – 1.3*
	Hispanic (Any race)	198	1.0	0.9 – 1.2
	Total	1,957	2.8	2.6 – 2.9

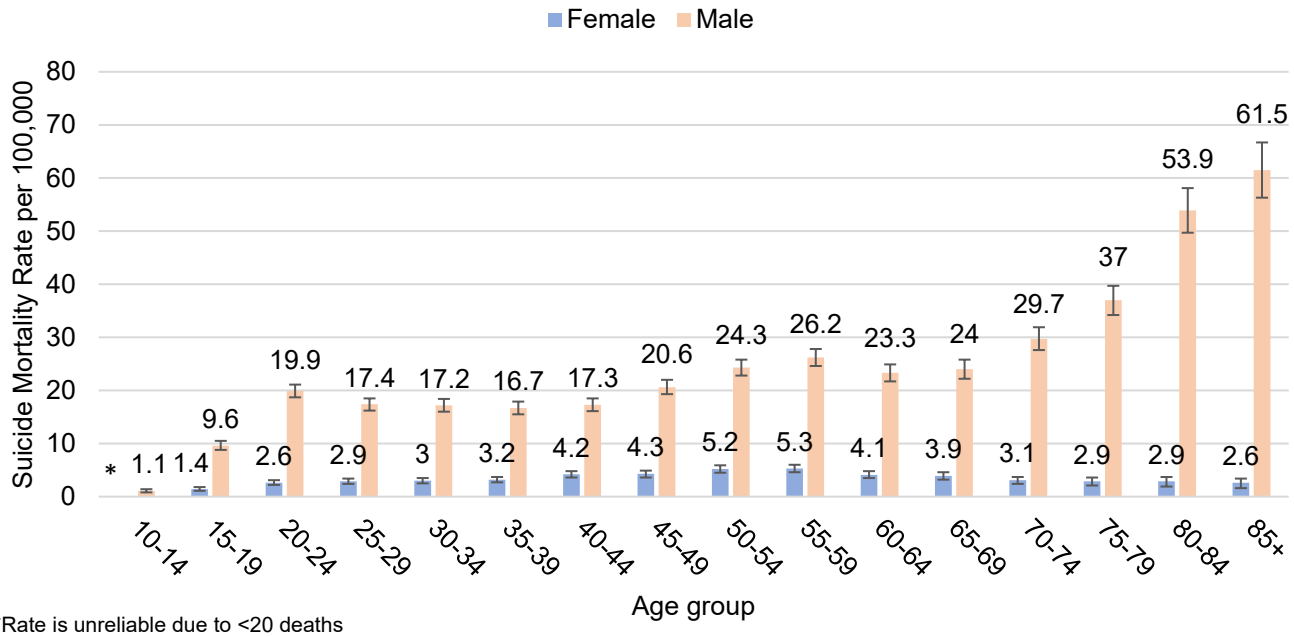
* This rate is based on 20 or fewer deaths and may be unreliable; the data should be interpreted with caution
† Abbreviations: API – Asian and Pacific Islanders; AI/AN – American Indian/Alaska Native

Age and Gender

Data clearly show that the rate of firearm suicide mortality among Arizonans was highest in the 85+ age range, a group which experienced a mortality rate of 24.8 per 100,000. This rate also differed significantly from the national average rate of 13.2 for the same age category. This represents an 88% increased risk for Arizonans aged 85+ when compared to the national average.

The disproportionate burden of firearm suicide on White populations is at least partly attributed to the staggering rate of firearm suicides experienced by older-aged White males. As Table 9 and Figure 25 show, firearm suicide rates increase significantly across the lifespan for males, a trend not seen among females. Firearm suicide rates among females increased until the age range of 55-59 before decreasing for the rest of the life span.

Figure 25. Firearm Suicide Rate per 100,000 by Sex and Age, Arizona, 1999-2020



*Rate is unreliable due to <20 deaths

The overall risk of firearm suicide among males was 6.1-fold higher than the risk among females. Men over 85 years old were most at risk of firearm suicide (61.5 per 100,000). This equates to a 23.7-fold increased risk for the oldest age category of males when compared to females in the same age category (2.6 per 100,000). Similar trends were seen nationally, with suicide risk increasing throughout the life course, a trend which was quite pronounced in Arizona.[32]

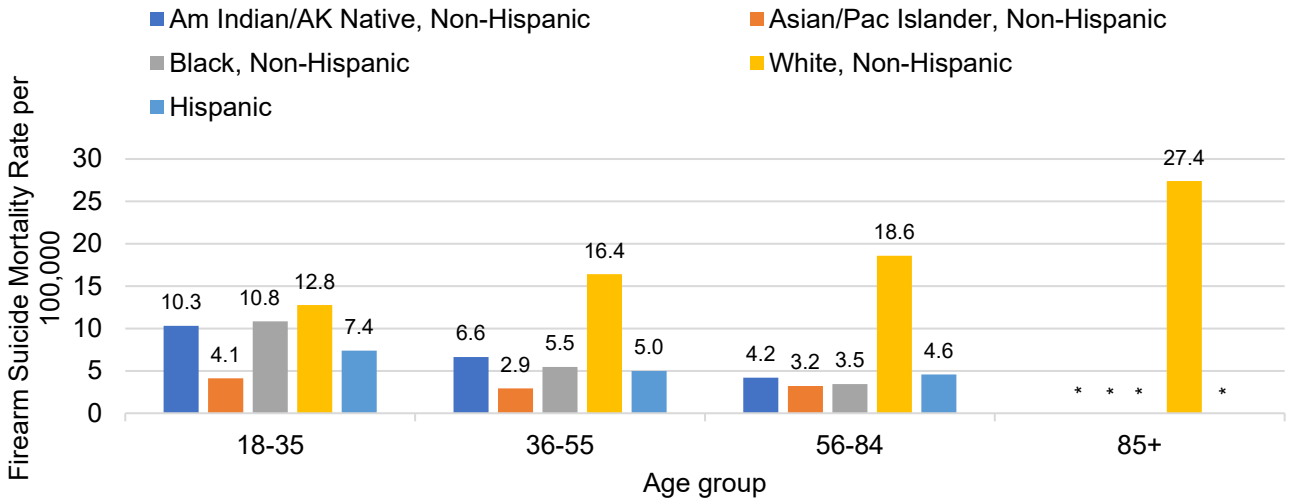
Comparing these rates in Arizona to the national average suggest that Arizona experienced significantly higher suicide mortality rates for every age category. As shown in Table 9, these differences also increased across the lifespan.

Table 9. Firearm Suicide Deaths and Rates of Firearm Deaths per 100,000 by Age, Arizona and United States, 1999-2020

	Arizona		United States		Rates are different
Age	Deaths	Rate	Deaths	Rate	
5-14	69	0.4	2,510	0.3	No
15-24	1,669	8.6	50,823	5.4	Yes
25-34	1,972	10.4	60,698	6.6	Yes
35-44	1,892	10.4	65,730	7.1	Yes
45-54	2,327	13.4	79,405	8.6	Yes
55-64	2,167	14.3	69,943	9.1	Yes
65-74	1,664	14.4	49,333	9.7	Yes
75-84	1,417	21.4	38,874	13.0	Yes
85+	572	24.8	15,734	13.2	Yes
Total	13,751	10.0	433,098	6.4	Yes

Figure 26 shows how the age-related increase in suicide among adults was a trend seen primarily in the non-Hispanic White population. Stratifying the results by sex shows that non-Hispanic White males had the most dramatic rise in suicide mortality in the later years of life while also having the highest suicide mortality. Males belonging to non-White and non-Hispanic racial categories experienced decreases in suicide later in life. Non-Hispanic Whites over 85 years old experienced the greatest risk of suicide mortality (27.4 per 100,000). This trend prevailed among males over 85 (67.2 per 100,000), but not females (2.8 per 100,000). Non-Hispanic White females had the highest risk of suicide mortality in the 36-55 age group (6.2 per 100,000).

Figure 26. Firearm Suicide Mortality Rate in Arizona; 1999-2020



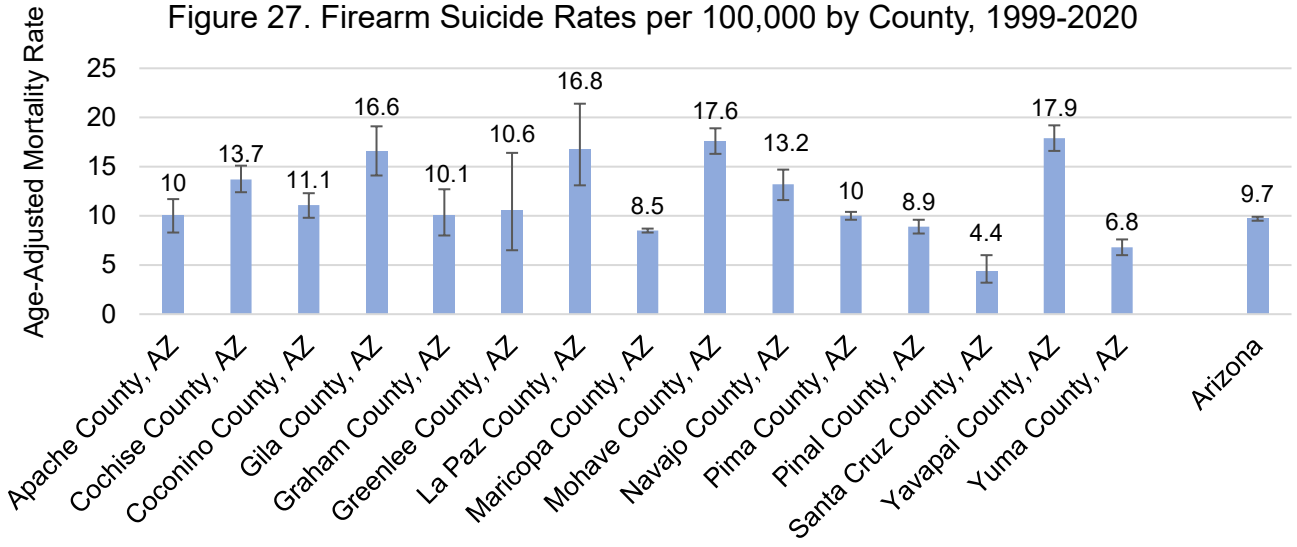
*Data is suppressed becaues the age and racial category had fewer than 10 deaths.

County-Level and Urban-Rural Status

Firearm suicide rates varied significantly by county. As shown in Figure 27, Gila (16.6), La Paz (16.8), Mohave (17.6), Navajo (13.2), and Yavapai (17.9) counties experienced suicide rates significantly higher than the state average (9.7). On the other hand, Maricopa (8.5), Santa Cruz (4.4), and Yuma (6.8) counties had suicide rates significantly lower than the state average.

In an analysis of firearm suicide rates for each of the 435 U.S. congressional districts by Everytown,[33] Arizona's fourth congressional district (CD-04)—which encompasses the area of the state from the western periphery of Phoenix to the western borders of the state—had the highest firearm suicide rate during 2014-2018 of any district, with 18.0 firearm suicides per 100,000 (compared to a district average of 7.1). In CD-04, 63% of suicides were completed with a firearm (compared to a district average of 50%).

Figure 27. Firearm Suicide Rates per 100,000 by County, 1999-2020



Beyond county classifications, metropolitan and non-metropolitan areas in Arizona experienced different rates of suicide. Small metro areas (counties in metropolitan statistical areas with populations less than 250,000[34]) of Arizona had the highest suicide rate, with 13.8 per 100,000 in comparison to the state average of 9.7 (Fig. 28 and Table 10).

Figure 28. Age-Adjusted Firearm Suicide Mortality Rates by Urban-Rural Status in Arizona, 1999-2020

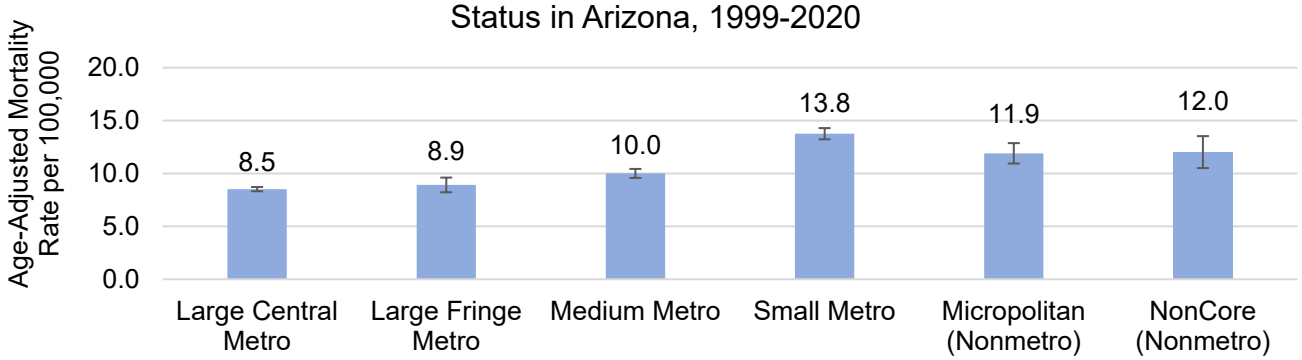


Table 10. Firearm Suicide Deaths, Rates, and 95% Confidence Intervals, by County and Urbanization Category, Arizona, 1999-2020

County	Urbanization classification	Person-Years	Deaths	Age-Adjusted Mortality Rate	95% Confidence Interval
Apache	Noncore	1,551,691	143	10.0	8.3 – 11.7
Cochise	Small metro	2,767,878	419	13.7*	12.4 – 15.1
Coconino	Small metro	2,899,465	305	11.1	9.8 – 12.3
Gila	Micropolitan	1,160,766	206	16.6*	14.1 – 19.1
Graham	Micropolitan	791,113	76	10.1	8.0 – 12.7
Greenlee	Noncore	190,371	20	10.6	6.5 – 16.4
La Paz	Noncore	446,983	94	16.8*	13.1 – 21.4
Maricopa	Large central metro	83,652,934	7,138	8.5*	8.3 – 8.7
Mohave	Small metro	4,237,864	864	17.6*	16.3 – 18.9
Navajo	Micropolitan	2,325,881	292	13.2*	11.6 – 14.7
Pima	Medium metro	21,113,711	2,240	10	9.6 – 10.4
Pinal	Large fringe metro	7,247,174	660	8.9	8.2 – 9.6
Santa Cruz	Micropolitan	977,728	42	4.4*	3.2 – 6.0
Yavapai	Small metro	4,533,870	955	17.9*	16.6 – 19.2
Yuma	Small metro	4,181,996	297	6.8*	6.0 – 7.6
Arizona		138,079,425	13,751	9.7	9.5 – 9.9

* Indicates that the county's mortality rate is statistically significantly different from the AZ rate.

Suicide Method

As shown in Figures 29a and 29b, the percentage of suicide deaths due to firearms were higher in Arizona (58%) than the national average (52%). Research has pointed to gun ownership as a risk factor for firearm suicide.[35-37] A national estimate of firearm and non-firearm suicide according to household gun ownership found that 90% of firearm suicides occur within families owning a gun.[38] Arizona's lax gun laws, combined with higher-than-average gun ownership, may be two factors that lead to the increased proportion of suicide deaths carried out using a firearm.

Figure 29a. Weapon used in Suicide Deaths, Arizona, 1999-2020

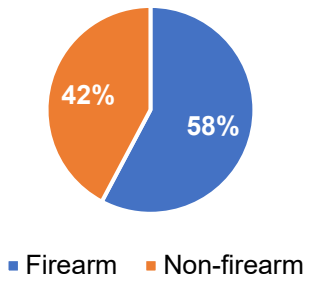
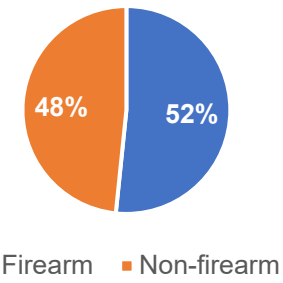


Figure 29b. Weapon used in Suicide Deaths, United States, 1999-2020



A recent study researched suicidal ideation among firearm purchasers in New Jersey, Minnesota, and Mississippi during an increased period of firearm purchasing (January to June 2021).[39] The study found that people purchasing firearms had a significantly higher likelihood than non-firearm owners to report suicidality, a trend which was particularly distinguished among first-time firearm owners. Another study estimated relationships between gun ownership and suicide, finding that approximately 90% of people who die by firearm suicide live in a house with a gun; the study also found that that while homes with a gun make up about one-third of the U.S. population, they account for 60% of suicides.[38]

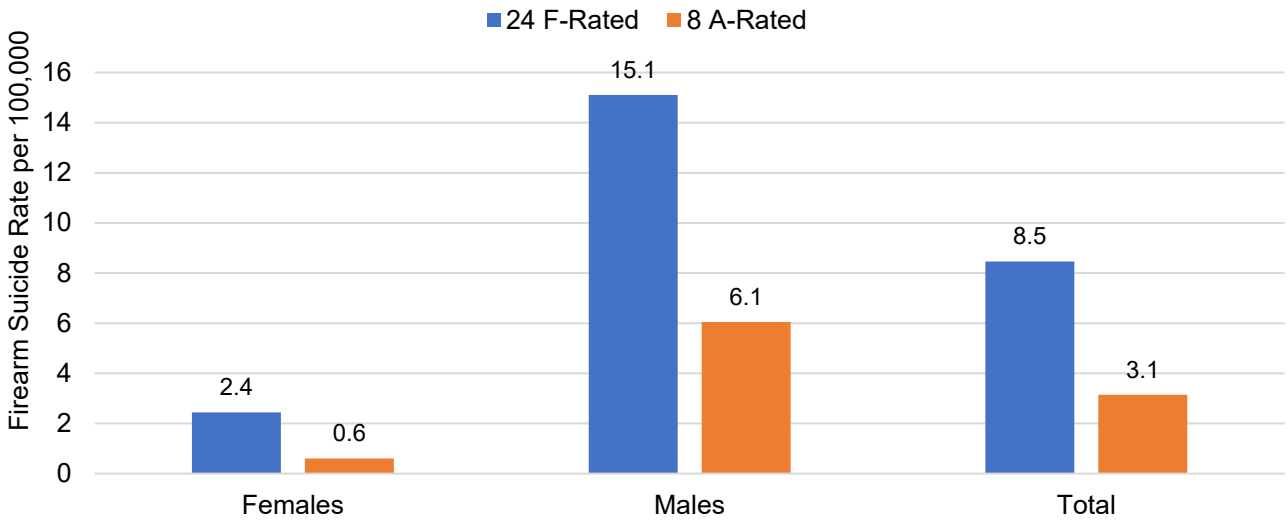
Gun Law Ratings and Firearm Suicide Rate:

To evaluate the overall strength of gun legislation, the Giffords Law Center creates an annual gun law scorecard to grade the strength of gun laws in each state. Using letter grades from A to F, A-rated states have the strongest gun laws, while F-rated states have the weakest gun laws. Arizona has been given an F rating for gun law strength and ranked 42 out of 50 in terms of gun law strength in 2021. There are significant discrepancies in firearm suicide between A-rated states such as New Jersey, California, Illinois, and New York and F-rated states such as Arizona, Arkansas, Wyoming, and Texas.

Gender

Disparities in A- and F-rated states also cuts through analyses by gender, demonstrating that among all demographic analyses run for this report, F-rated states experienced significantly higher rates of firearm suicides than A-rated states (Fig. 30).

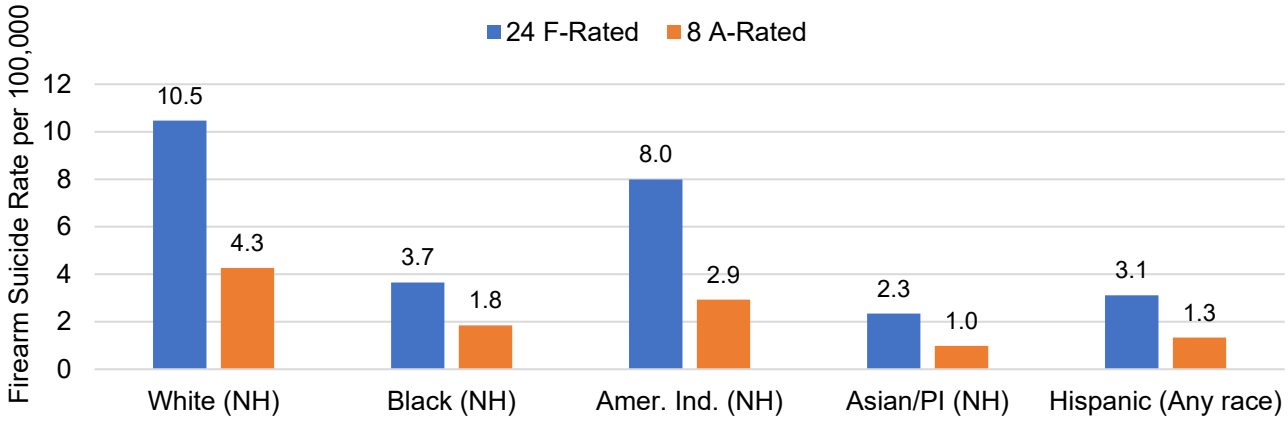
Figure 30: Firearm Suicide Rates Among 24 States with Failing (F-Grades) for Gun Laws vs 8 States with A-Grades, by Gender, 1999-2020



Race

Figure 31 shows the racial disparities in firearm suicide rates, but across all racial and ethnic categories, firearm suicide is significantly higher in F-rated states than it is in A-rated states with stricter gun legislation.

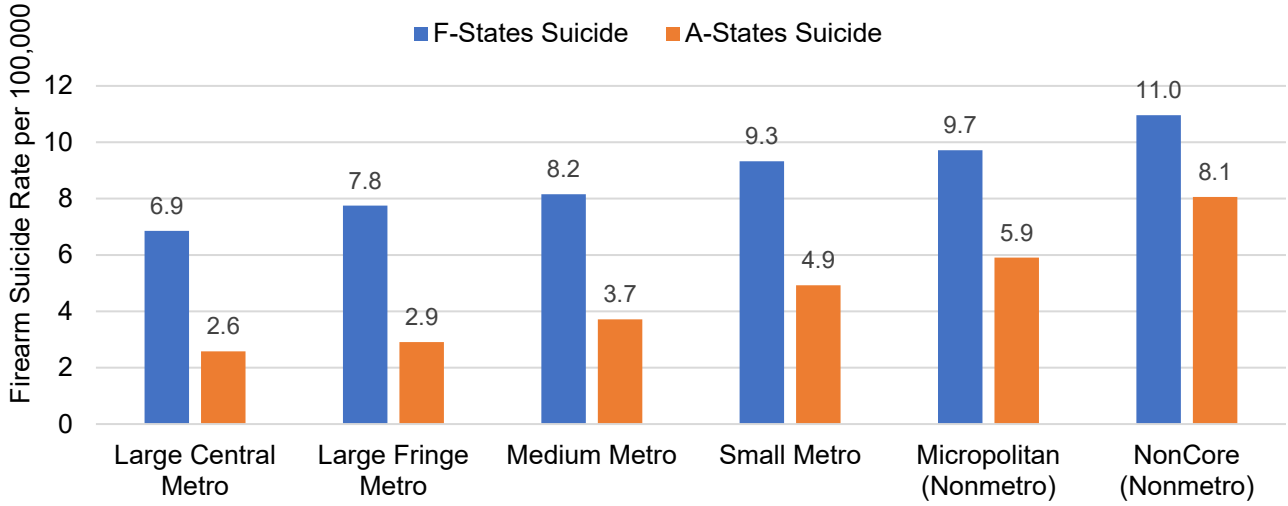
Figure 31. Firearm Suicide Rates Among 24 States with Failing (F-Grades) for Gun Laws vs. 8 States with A-Grades, by Race and Ethnicity, 1999-2020



Urban-Rural Status

As seen in Figure 32, the states given a failing grade (including Arizona) experienced significantly higher rates of firearm suicide when compared to states receiving an A grade. Generally, as the figure shows, suicide also increased with increased rurality.

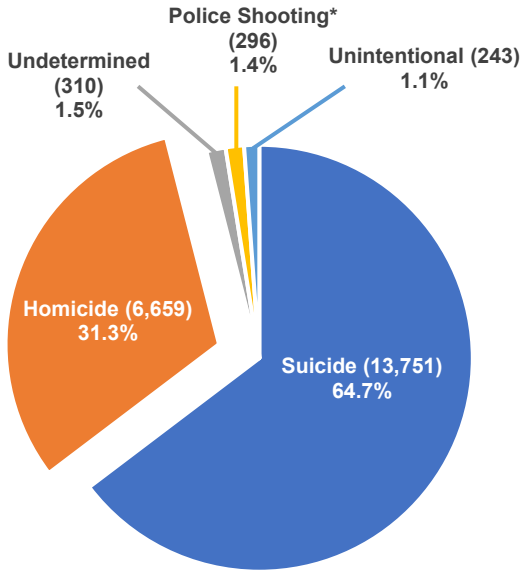
Figure 32. Firearm Suicide Rates Among 24 States with Failing (F-Grades) for Gun Laws vs 8 States with A-Grades, by Urbanicity, 1999-2020



FIREARM HOMICIDE

As shown in Figure 33, firearm homicides represent the second largest contributor to all firearm-related deaths in both Arizona (31.3%) and the United States (37.4%) Firearms were involved in well over two-thirds of all homicide deaths during 1999-2020 in Arizona (67.5%) and the U.S. (69.4%).

Figure 33. Firearm Deaths by Intent, Arizona, 1999-2020



*Police shootings are significnatly underreported by Vital Statistics in Arizona

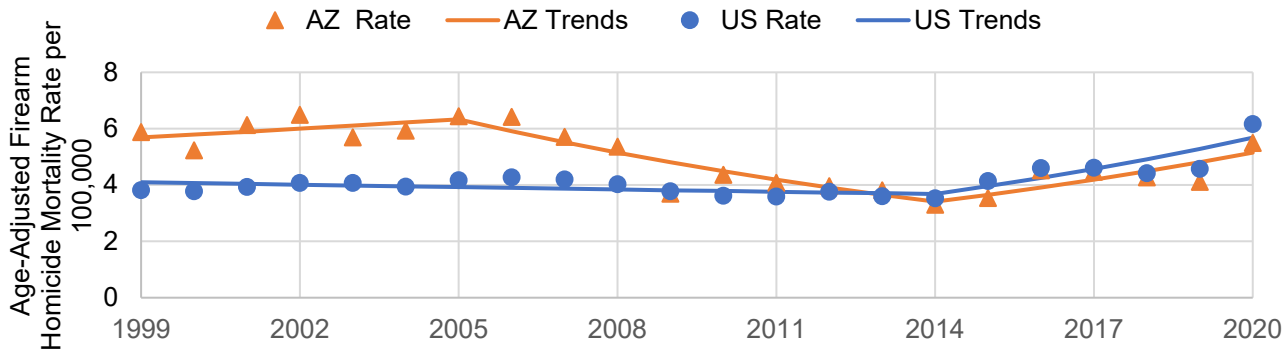
KEY POINTS

- Firearm homicides are the second-largest contributor to firearm mortality in Arizona and the U.S.
- Males had a significantly higher risk of firearm homicide than females. Black males had over double the risk compared to every other racial category.
- Rates for males and females peaked for the 20–24-year age category.
- States with an F-rating for firearm violence prevention legislation (including Arizona) had higher rates of firearm homicide among all racial, sex, and rurality categories, except among Black people, indicating a possible gap in coverage of firearm legislation.

A trend analysis in Arizona for the period 1999-2020 indicated that after a decade-long decline in rates of firearm homicides (2005-2014), rates again began increasing by 7.1% per year between 2014 and 2020 (Fig. 34). Nationally, firearm homicide rates remained stable from 1999 to 2014, after which rates also began increasing by 7.5% per year, similar to the increase in Arizona. The highest rate in AZ over the past four decades occurred in 1995 (8.4) while the highest rate in the U.S. occurred in 1993 (6.8).

Overall, during 1999-2020, Arizonans had a 19.5% higher risk of dying by firearm homicide compared to the national age-adjusted average. This equates to a rate of 4.9 firearm homicides per 100,000, significantly higher than the U.S. rate of 4.1.

Figure 34. Age-Adjusted Rates and Statistical Trends of Firearm Homicides, AZ vs U.S., 1999-2020



Race and Ethnicity

Trends in firearm homicide in Arizona varied significantly depending on racial group. As seen in Table 11, non-Hispanic Blacks in Arizona experienced a significantly higher risk of firearm homicide. When compared to the Asian and Pacific Islander population, the least at-risk group in Arizona, non-Hispanic Blacks experienced an 8.6-fold increased risk of firearm homicide. This trend is in line with national data showing that residential segregation and structural violence may contribute to the disproportionately high rates of gun homicide in U.S. Census tracts with a higher proportion of Black residents.[40]

Comparing Arizona to the United States also clearly highlights that Hispanics in Arizona are 80% more likely to be a victim of firearm homicide than Hispanics in the U.S. In fact, Hispanic Arizonans had the highest risk of homicide by a firearm than Hispanics living in any other state.

Table 11. Firearm Homicide Deaths and Age-Adjusted Rates of Firearm Deaths per 100,000, Arizona vs. U.S., 1999-2020

Geography	Race, Ethnicity	Deaths	Age-Adjusted Rate*	95% Confidence Interval
Arizona	White, non-Hispanic	2,021	2.6*	2.5 – 2.7
	Black, non-Hispanic	907	14.7*	13.7 – 15.7
	AI/AN, † non-Hispanic	382	6.2*	5.6 – 6.8
	API, † non-Hispanic	73	1.7*	1.3 – 2.1
	Hispanic	3,217	7.2*	6.9 – 7.4
	All	6,659	4.9*	4.8 – 5.0
United States	White, non-Hispanic	67,146	1.6	1.6 – 1.6
	Black, non-Hispanic	152,523	16.8	16.7 – 16.9
	AI/AN, † non-Hispanic	2,512	4.4	4.2 – 4.5
	API, † non-Hispanic	4,548	1.2	1.2 – 1.2
	Hispanic	47,561	4.0	4.0 – 4.0
	All	275,473	4.1	4.1 – 4.2

* Differences between the Arizona and U.S. mortality rates are statistically significant
† Abbreviations: API – Asian and Pacific Islanders; AI/AN – American Indian/Alaska Native

To further investigate the specific groups experiencing increased rates of mortality, these racial trends were stratified by gender in order to highlight the much higher rates of firearm homicide in males across every racial category. As shown in Table 12, non-Hispanic Black males in Arizona experienced a 6.3-fold increased risk of firearm homicide when compared to females. The increased mortality in the male population were also dramatically higher in AI/AN (4.2-fold increased risk) and Hispanic (6.8-fold) populations.

Table 12. Firearm Homicide Deaths and Age-Adjusted Rates of Firearm Deaths per 100,000 by Sex and Race, Arizona, 1999-2020

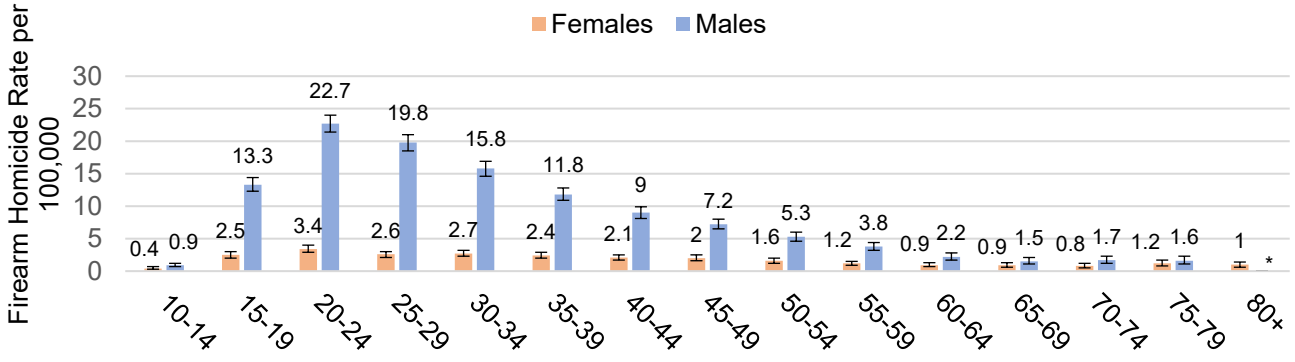
Gender	Race, Ethnicity	Deaths	Age-Adjusted Rate	95% Confidence Interval
Male	White, non-Hispanic	1,496	3.8	3.6 – 4.0
	Black, non-Hispanic	798	24.1	22.4 – 25.8
	AI/AN, non-Hispanic	310	10.1	9.0 – 11.3
	API, non-Hispanic	43	2.1	1.5 – 2.8
	Hispanic (any race)	2,828	12.2	11.8 – 12.7
	All	5,530	8.0	7.8 – 8.2
Female	White, non-Hispanic	525	1.3	1.2 – 1.4
	Black, non-Hispanic	109	3.8	3.1 – 4.5
	AI/AN, non-Hispanic	72	2.4	1.9 – 3.0
	API, non-Hispanic	30	1.3	0.9 – 1.9
	Hispanic (any race)	389	1.8	1.6 – 2.0
	All	1,129	1.7	1.6 – 1.8

* Differences between male and female mortality rates are statistically significant across all racial categories
† Abbreviations: API – Asian and Pacific Islanders; AI/AN – American Indian/Alaska Native

Age and Gender

As with race, trends in firearm homicide were mediated by both gender and age. Across all ages, the risk of firearm homicide was 4.7-fold higher among males than females. Males are most at risk for homicide mortality between the ages of 15-34, with the greatest risk occurring between the ages of 20-24 (22.7 deaths per 100,000). For females, the highest risk also occurred between 20-24 years of age (3.4 deaths per 100,000), but the differences between age categories was much less pronounced than the dramatic increases seen in the male population (Figure 35). This general age trend was also seen on the national level.

Figure 35. Firearm Homicide Rate per 100,000 by Age and Sex, Arizona, 1999-2020



* indicates that there were fewer than 10 deaths in this category.

Despite the rates of female homicide being lower than male rates, there were still significant risks for females. A national analysis found that women are at a higher risk of being murdered during pregnancy than they are of dying from the leading three causes of maternal mortality (i.e., high blood pressure disorders, hemorrhage, and sepsis).[41] Another study found that there was an eight-fold increase in intimate partner femicide when abusers had access to firearms.[42]

In general, firearm homicide deaths in Arizona were significantly higher than the national average (Table 13). This was seen for all age categories other than 5-14, 65-74, and 85+.

Table 13. Firearm Homicide Deaths and Rates per 100,000 by Age, Arizona and United States, 1999-2020

	Arizona		United States		Rates are different
Age	Deaths	Rate	Deaths	Rate	
5-14	103	0.5	4,249	0.5	No
15-24	2,091	10.8	93,954	10.0	Yes
25-34	1,989	10.5	82,927	9.0	Yes
35-44	1,160	6.4	46,546	5.0	Yes
45-54	696	4.0	26,136	2.8	Yes
55-64	304	2.0	12,346	1.6	Yes
65-74	141	1.2	5,000	1.0	No
75-84	84	1.3	2,260	0.8	Yes
85+	14	Unreliable*	662	0.6	No
Total	6,659	4.8	275,473	4.1	Yes

* The rate is unreliable due to less than 20 deaths in the age category

County-Level and Urban-Rural Status

As Table 14 shows, firearm homicides were highest in Gila County, with a rate of 5.8 homicides per 100,000, and lowest in Yavapai County, with a rate of 2.0. While the Gila County rate was the highest, the wide confidence interval indicates that the rate was not significantly different from the statewide rate.

Table 14 and Map (Fig. 36). Firearm Homicide Deaths and Age-Adjusted Rates of Firearm Deaths per 100,000, Arizona Counties, 1999-2020

County	Urbanization classification	Deaths	Rate	95% Confidence Interval
Apache	Noncore	67	4.6	3.5 – 5.8
Cochise	Small metro	82	3.1*	2.4 – 3.9
Coconino	Small metro	70	2.5*	1.9 – 3.2
Gila	Micropolitan	52	5.8	4.2 – 7.6
Graham	Micropolitan	14	Unr*	1.0 – 3.0
Greenlee	Noncore	NA	NA	NA
La Paz	Noncore	11	Unr.*	1.0 – 4.6
Maricopa	Large central metro	4,481	5.3*	5.2 – 5.5
Mohave	Small metro	159	4.3	3.6 – 5.0
Navajo	Micropolitan	96	4.6	3.7 – 5.6
Pima	Medium metro	1,101	5.4	5.0 – 5.7
Pinal	Large fringe metro	286	4.3	3.8 – 4.8
Santa Cruz	Micropolitan	25	2.8*	1.8 – 4.2
Yavapai	Small metro	103	2.5*	2.0 – 3.0
Yuma	Small metro	107	2.7*	2.1 – 3.2
Arizona		6,659	4.9	4.8 – 5.0

Unr. indicates that the rate is unreliable due to less than 20 deaths.
NA indicates that the data is suppressed due to less than 10 deaths.
* indicates that the county rate is significantly different from the state rate.

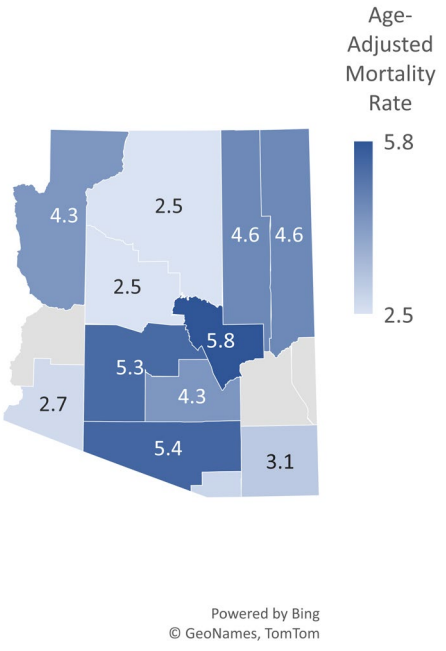
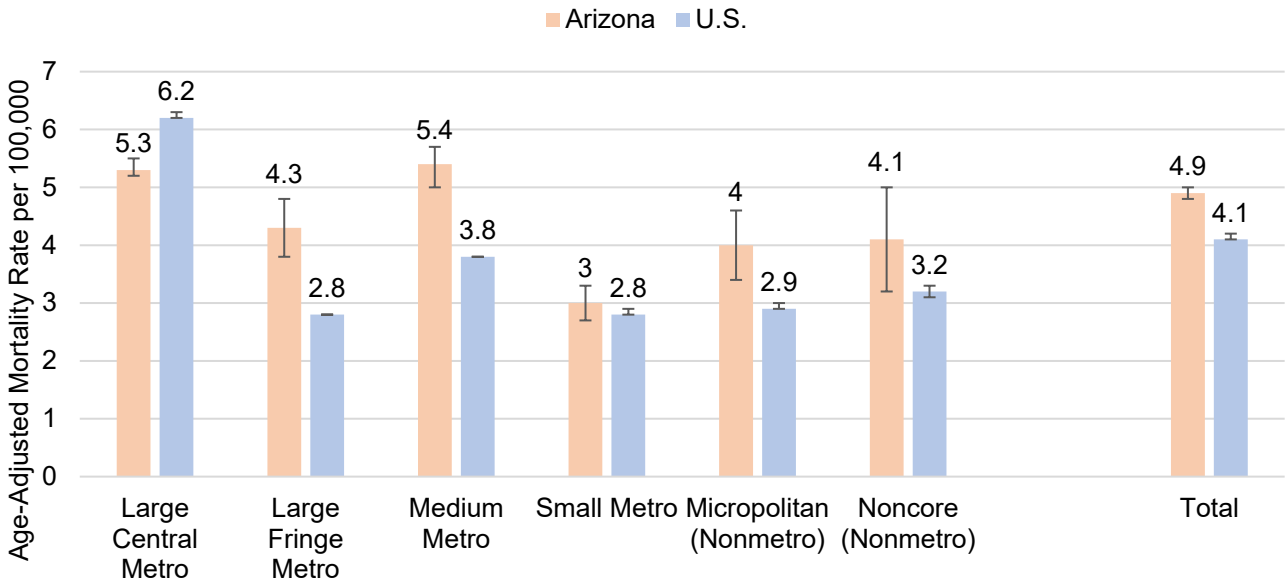


Figure 37 shows firearm homicide rates by urbanization in Arizona and nationally. In contrast to firearm suicide rates which increase as population density decreases, homicide mortality rates in Arizona were higher in the large and medium metro areas.

Figure 37. Age-Adjusted Firearm Homicide Rates by Urbanization in Arizona and U.S., 1999-2020



Nationally, large central metro areas had the highest homicide mortality rate of all urbanization categories, at 6.2 per 100,000. Arizona's only large central metro county (Maricopa) had a significantly lower rate of 5.3 per 100,00, but Arizona rates exceeded the U.S. rates for every other category of urbanization status.

Homicide Method

As seen in Figures 38a and 38b, homicide deaths were carried out most frequently with a firearm at both the state and national level.

Figure 38a. Firearm Use in Homicide Deaths, Arizona, 1999-2020

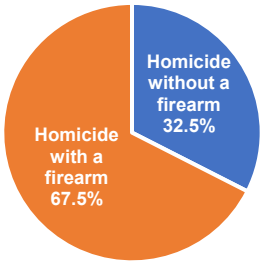


Figure 38b. Firearm Use in Homicide Deaths, U.S., 1999-2020

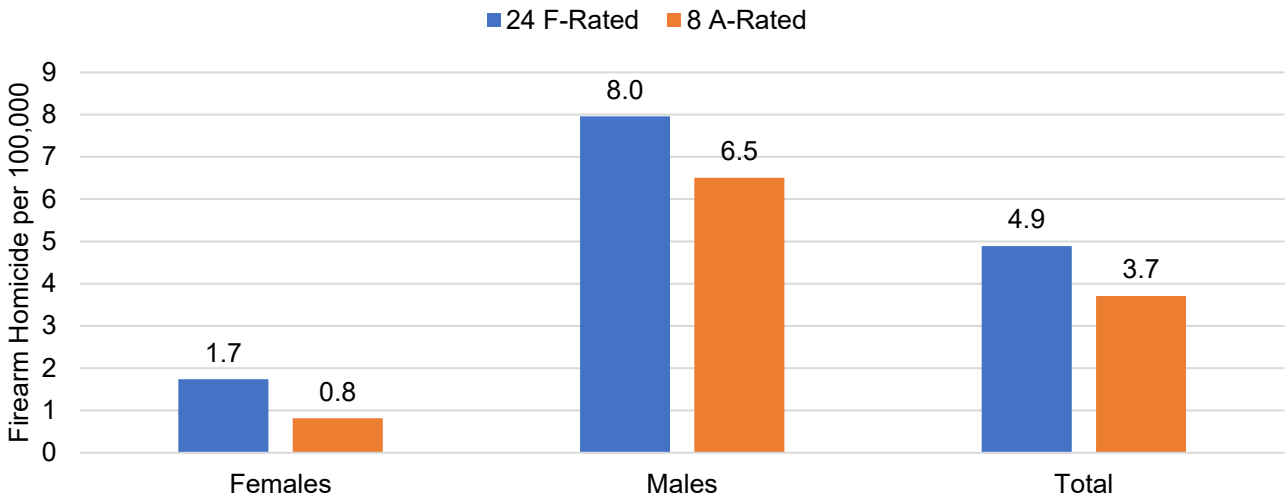
Gun Law Ratings and Firearm Homicide Rate

To evaluate the overall strength of gun legislation, the Giffords Law Center creates an annual gun law scorecard to grade the strength of gun laws in each state. Using letter grades from A to F, A-rated states have the strongest gun laws, while F-rated states have the weakest gun laws. Arizona has been given an F rating for gun law strength and ranked 42 out of 50 in terms of gun law strength in 2021. As shown below, there were significant differences in firearm suicide between A-rated states such as California and F-rated states such as Arizona.

Gender

As seen in Figure 39, when compared to F-rated states, A-rated states had significantly lower firearm homicide rates among both male and female populations. This difference was particularly dramatic in females, who experienced 2.1-fold higher risk of homicide in F-rated states when compared to A-rated states. Males had a less extreme difference (1.2-fold higher risk among males in F-rated states), although still significant.

Figure 39. Firearm Homicide Rates Among 24 States with Failing (F-Grades) for Gun Laws vs 8 States with A-Grades, by Gender, 1999-2020

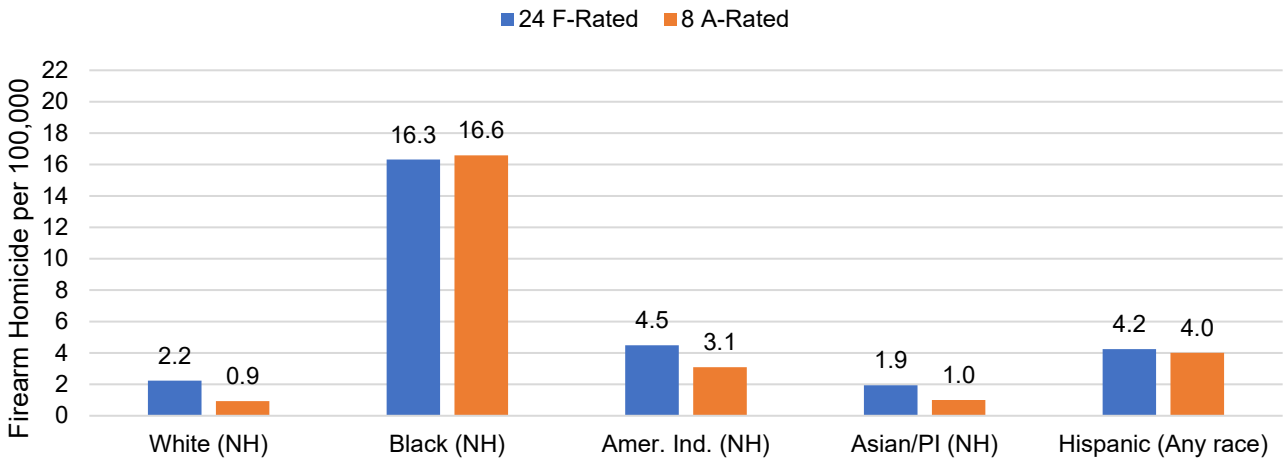


*All differences in this graph between A-rated and F-rated states are statistically significant.

Race

Figure 40 shows a possible racial disparity in the impacts of gun legislation. While other confounders impact this relationship, every racial category except for non-Hispanic Blacks, there were lower homicide rates in A-rated states with stricter gun legislation than in F-rated states. This suggests that stricter gun legislation may not impact all racial groups equally. In a multiple linear regression analysis, neither Giffords ratings nor gun ownership were associated with firearm homicide rates, while the percent of Blacks and people in poverty were both highly correlated ($p < 0.001$), consistent with other research.[43]

Figure 40. Firearm Homicide Rates Among 24 States with Failing (F-Grades) for Gun Laws vs 8 States with A-Grades, by Race and Ethnicity, 1999-2020

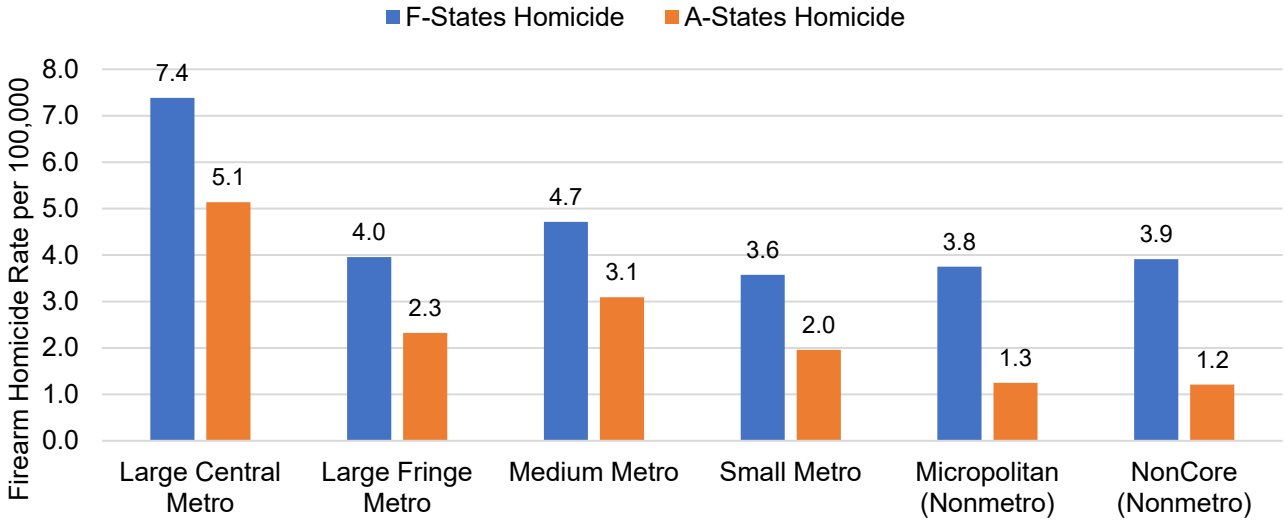


*All differences in this graph between A-rated and F-rated states are significant.

Urban-Rural Status

Firearm homicide rates were higher in states with F ratings than those with A ratings for every urban-rural category (Fig. 41). The difference in mortality rates between A-rated and F-rated states was greater in less-densely populated counties than those in more-densely populated counties. This trend was opposite to the trend for firearm suicide, for which the difference was greater in more populated counties than those in less populated counties.

Figure 41. Firearm Homicide Rates Among 24 States with Failing (F-Grades) for Gun Laws vs 8 States with A-Grades, by Urbanicity, 1999-2020



*All differences in this graph between A-rated and F-rated states are significant.

POLICE SHOOTINGS

KEY POINTS

- Most (90%) shootings involved an armed suspect.
- 94% of police shooting deaths were males.
- The peak age category was 25-29.
- Police shootings are undercounted in vital statistics; Arizona vital statistics reported only one-third of the fatal police shootings reported in multiple other data sources.
- Blacks and American Indians are overrepresented in police shootings, while Whites and Hispanics are underrepresented.
- Arizona rates have been increasing by 4.0% per year.
- The Phoenix Police Dept. had the highest rate among the ten largest U.S. cities, 2015-2021, although rates were similar to Tucson and Mesa.

While police shootings represent less than 4% of total firearm-related deaths, these incidents frequently become closely scrutinized and challenged by family, community members, and the media as to whether the use of fatal force was necessary to protect the lives of law enforcement or members of the public. Most shootings (approximately 90%) involve a suspect armed with some form of weapon such as a gun, knife, or vehicle, according to multiple data sources. Of greatest concern are those shootings in which the victim was unarmed or when mental illness and crisis situations are involved. Those shootings contribute to worsening relations and mistrust between law enforcement and the communities they serve. *The Washington Post* found that almost 1 in 5 police shootings in the U.S. involved a situation in which news reports indicated the victim had a history of mental health issues, expressed suicidal intentions or was experiencing mental distress at the time of the shooting.

Data Sources: Vital Statistics

Multiple publicly-accessible sources of data on police shootings are available. Except for government sources, most provide names, dates, locations, age, race, sex, agency involved, whether the subject was armed, and other circumstances related to the shooting. Most also allow data to be downloaded. These sources are summarized in Table 15 and described below.

Table 15. Sources of Data on Police Shootings

Source	Years of Coverage	Location	Fatal Shootings	Nonfatal Shootings	Other Causes	Agency Involved
Vital Statistics	1978-2021	County, State	Yes	No	No	No
NVDRS (public data)	2003-2019*	State	Yes	No	Yes	No
Fatal Encounters	2000-present	City, State	Yes	No	Yes	Yes
Mapping Police Violence	2013-present	City, State	Yes	No	Yes	Yes
Wash Post Fatal Force	2015-present	City, State	Yes	No	No	No
Gun Violence Archive	2014-present	City, State	Yes	Yes	No	No
Arizona Republic	2011-2018	Arizona	Yes	Yes	No	No
Phoenix Police Dept	2017-present	Phoenix PD	Yes	Yes	No	PHXPD

*As of the time of this report; varies by state; Arizona data beginning in 2015.

Fatal shootings by law enforcement in the line of duty are identified in death certificate data (such as in CDC WONDER) by ICD-10 code Y35.0. This category is labelled as "Legal Intervention" and defined as "injuries inflicted by the police or other law-enforcing agents, including military on duty, in the course of arresting or attempting to arrest lawbreakers, suppressing disturbances, maintaining order, and other legal action."

Despite the "legal intervention" terminology, this classification does not indicate whether the death caused by law enforcement was lawful or legal.[44] In this report, civilian deaths caused by use of firearms by law enforcement will be referred to by the more descriptive term, "police shootings," although some shootings may involve other law enforcement agencies such as U.S. Border Control, Homeland Security, etc.

Data Sources: Comparison of Police Shootings by Data Source

Multiple sources of data on police shootings are publicly accessible. These include death certificate data from CDC's WONDER and WISQARS, the FBI Supplemental Homicide Reports (SHR), and non-governmental sources including *The Washington Post* "Fatal Force" database, Gun Violence Archive, Mapping Police Violence, and Fatal Encounters, among other regional databases. Arizona-specific data are also available from the *Arizona Republic* database and the Phoenix Police Department Officer-Involved Shootings website and dashboard. The dashboard provides a fairly detailed profile of police shootings (fatal and nonfatal) from January 2017 to present (see below).

In addition to the databases noted above, a comprehensive CDC-funded source of data on fatal violence, including police shootings, is the National Violent Death Reporting System (NVDRS). NVDRS collects information about violent deaths, including homicides, suicides, and deaths where individuals are killed by law enforcement acting in the line of duty. NVDRS abstractors review data from death certificates, coroner/medical examiner reports, law enforcement reports, and toxicology reports, then combine them for a more complete profile of violent deaths. States have joined this program at various times between 2003 and 2019. While all states are now included in the program, reliable and statewide data are not yet available for all states.

It has been well documented that vital statistics sources (e.g., CDC WONDER) that rely only on death certificate data systematically undercount police shootings.[45,46] Cases are missed when the death certificate does not explicitly indicate that the shooting involved law enforcement and the death may be categorized as a civilian homicide.[1]

To evaluate the extent to which vital statistics undercount police shootings in Arizona, NVDRS and vital statistics data for police shootings were compared for the period 2015-2019 (the only years of data available for Arizona from NDVRS at the time of this analysis). This comparison indicated that 75 fatal police shootings were reported from vital statistics while 222 shootings were reported by NVDRS. In other words, vital statistics captured only one-third (33.8%) of the deaths identified by NVDRS.

Further comparisons of police shootings between vital statistics and NVDRS data for other states for the same time period are shown in Table 16. Only Oklahoma had a greater undercount in

police shootings than Arizona based on vital statistics (≤6% of NVDRS counts). In contrast to Arizona and Oklahoma, vital statistics for Maryland, New Mexico, and Oregon all captured over 90% of the NVDRS police shootings. For all 25 states with data for 2015-2019, the percent of captured deaths was 59.4%, comparable to published research.[47] In an analysis of 25 states for all time periods that had reliable NVDRS data, the percent of NVDRS deaths captured by vital statistics ranged from 16.2% in Oklahoma (2004-2019) to 95.1% in New Mexico (2005-2019), and only three states captured at least 90% of the police shootings.

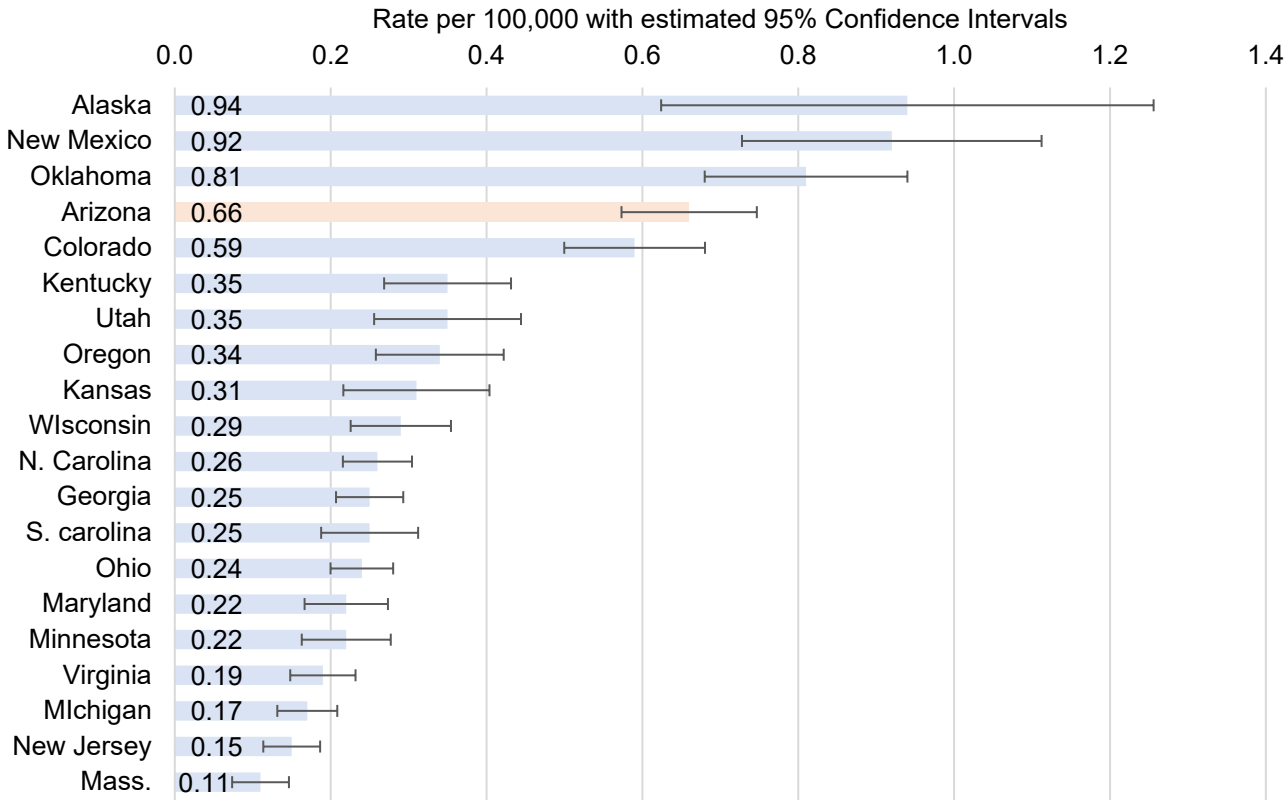
Table 16. Comparison of Police Shooting Deaths and Rates* from Vital Statistics (VS) vs the National Violent Death Reporting System (NVDRS), 2015-2019.

	NVDRS			VS		
States†	Person Years	Deaths	Rate	Deaths	Rate	Ratio of Deaths VS/NVDRS
ALASKA	3,689,104	34	0.94	21	0.59	0.618
ARIZONA	35,225,769	222	0.66	75	0.22	0.338
COLORADO	28,058,573	164	0.59	96	0.34	0.585
GEORGIA	52,091,508	129	0.25	88	0.18	0.682
KANSAS	14,556,872	42	0.31	17	0.12	0.405
KENTUCKY	22,252,330	71	0.35	52	0.24	0.732
MASSACHUSETTS	34,260,672	35	0.11	30	0.07	0.857
MARYLAND	30,163,423	65	0.22	65	0.21	1.000
MICHIGAN	49,795,959	75	0.17	36	0.09	0.480
MINNESOTA	27,836,963	57	0.22	48	0.19	0.842
NORTH CAROLINA	51,334,713	132	0.26	99	0.18	0.750
NEW JERSEY	44,698,836	65	0.15	28	0.05	0.431
NEW MEXICO	10,446,451	88	0.92	83	0.86	0.943
OHIO	58,264,947	137	0.24	79	0.13	0.577
OKLAHOMA	19,665,813	149	0.81	<10	N/A	≤ 0.06
OREGON	20,673,668	66	0.34	60	0.30	0.909
SOUTH CAROLINA	25,114,475	62	0.25	24	0.11	0.387
UTAH	15,516,032	53	0.35	45	0.31	0.849
VIRGINIA	42,318,025	79	0.19	47	0.13	0.595
WISCONSIN	28,981,530	78	0.29	56	0.21	0.718
Total	654,656,454	1,855	0.30	1,102	0.17	0.594

*Rates are Average Annual Age-Adjusted Rates per 100,000.
†20 States with ≥20 NVDRS deaths; Total is for all 25 States with NVDRS data for 2015-2019.

Figure 42 shows the rates and confidence intervals of police shootings for the same 20 states shown in Table P2 with reliable NVDRS data for 2015-19. The top five states – including Arizona – had significantly higher rates than the remaining 15 states.

Figure 42. Age-Adjusted Rates of Police Shootings for 20 States with Reliable Data from NVDRS, 2015-2019



Data Sources: Non-Governmental Sources

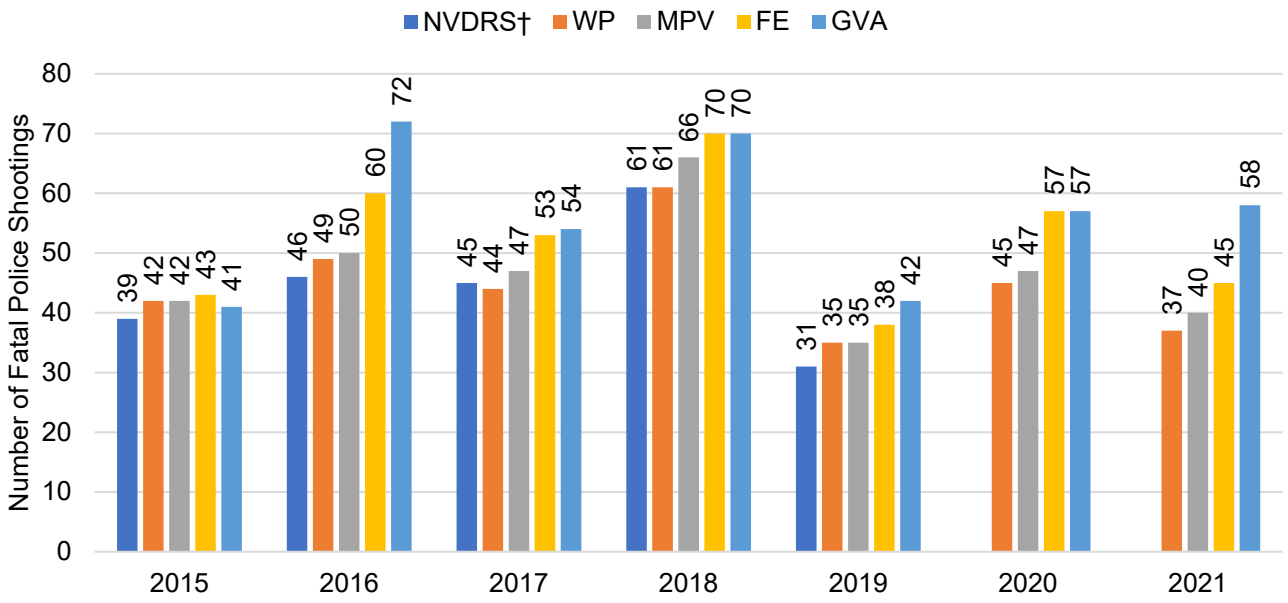
As mentioned above, other data sources on police shootings are publicly accessible and provide additional perspectives on police shootings. Here we compare Arizona data from NVDRS, and the four widely-utilized and continuously-updated online data sources: *The Washington Post* "Fatal Force" (WP), Fatal Encounters (FE), Mapping Police Violence (MPV), and Gun Violence Archive (GVA). As noted in Table 15, each database differs regarding the time period covered. The FE and MPV databases also include police-caused fatalities from causes other than firearms, (e.g., asphyxiation and motor vehicle crashes); for this comparison, only fatal police shootings were included.

Figure 43 shows the reported numbers of police shootings in Arizona from the five sources for the period 2015-2021 (2015-2019 for NVDRS). The numbers of reported fatal police shootings were very comparable among the NVDRS, WP, and MPV data, while FE and GVA consistently had higher totals. A recent analysis comparing data on fatal police shootings from the WP, MPV,

and FE found that the data did not differ significantly, but were becoming more dissimilar over time.[48]

The number of fatal police shootings reported in the *Arizona Republic* database (AZR) for 2011-2018 averaged 90% of the total shootings from FE for that same time period, but closely matched the fatal shootings reported by the WP and MPV databases for the 2015-2018 period (data not shown).

Figure 43. Comparison of Reported Numbers of Fatal Police Shootings by Data Source* 2015-2021, Arizona

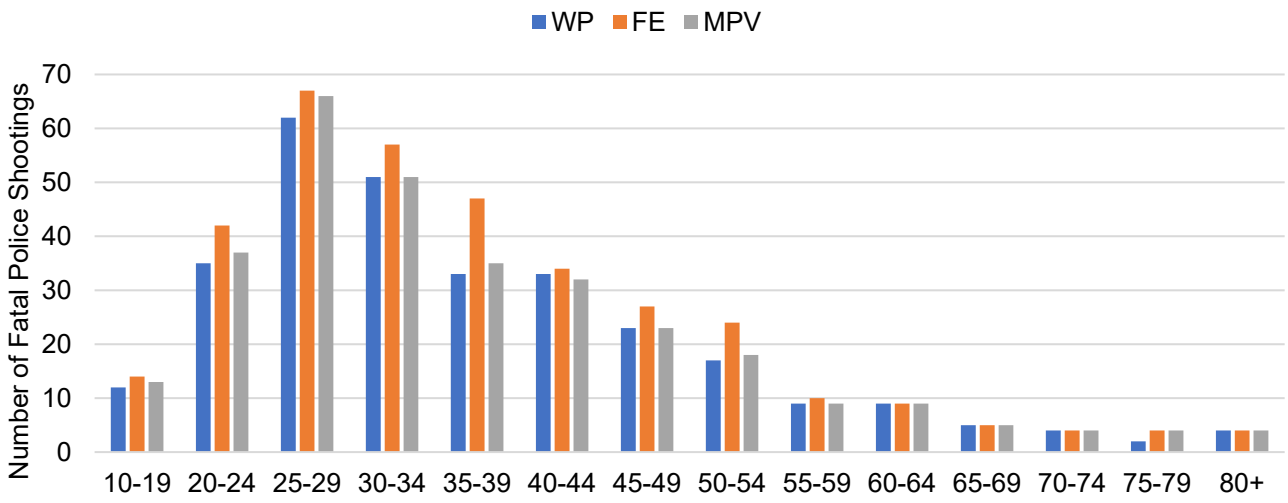


*NVDRS – National Violent Death Reporting System; WP-Washington Post; MPV-Mapping Police Violence; FE-Fatal Encounters; GVA-Gun Violence Archive.
†NVDRS data is only available for 2015-2019 at the time of this analysis.

Age, Race/Ethnicity, Location

All the online databases include available information on gender, location, race, and age, along with many other variables. In all datasets—as well as in NVDRS—males comprise 94% of fatal police shootings. Figure 44 shows police shootings in Arizona by age category. The peak age was the 25-29 age group (also in NVDRS) and the range was from 14 to 89 in all sources.

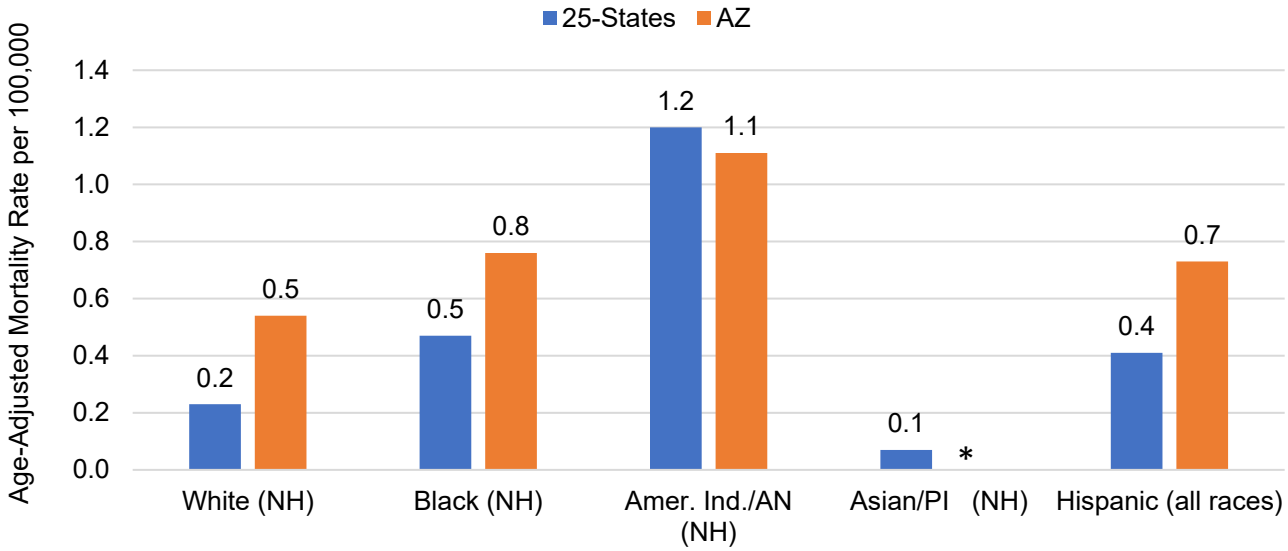
Figure 44. Number of Police Shooting Deaths by Age, Arizona, 2015-2021 by Data Source*



*WP – Washington Post; MPV – Mapping Police Violence; FE – Fatal Encounters

Figure 45 shows the age-adjusted rates of police shootings from NVDRS data by race and ethnicity for Arizona and the 25 states with data for 2015-2019. The highest rate in Arizona was among non-Hispanic American Indians, and the lowest rate was among non-Hispanic Whites (a rate could not be determined for Asian and Pacific Islanders due to data suppression).

Figure 45. Rates of Police Shootings by Race/Ethnicity, NVDRS Data, 25-States vs Arizona, 2015-2019

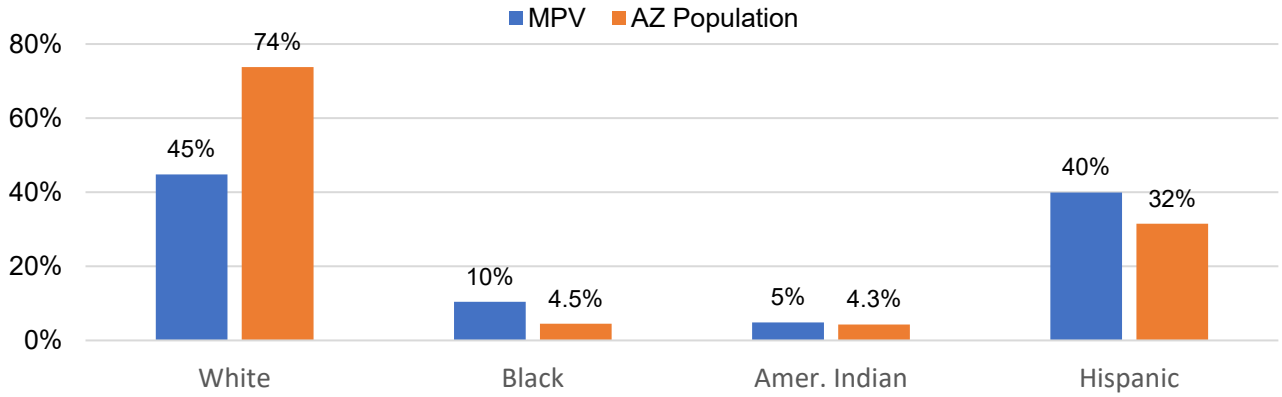


*Rate not available for Arizona due to data suppression (<10 deaths). NH = non-Hispanic.

In a further analysis of racial disparities in police shootings in Arizona, the percentages of police shootings by race and ethnicity from the Mapping Police Violence database during 2015-2021

were compared to the percentages in the general population from the American Community Survey data for 2016-2020 (Figure 46). Consistent with national data, Whites were underrepresented in police shootings (45% vs 74% in the general population), while Blacks were overrepresented in police (10% vs 4.5%).[49] A similar disparity was found with Phoenix Police Department shootings which overrepresents Blacks and American Indians/Alaska Natives relative the city's population and underrepresents Whites and Hispanics.

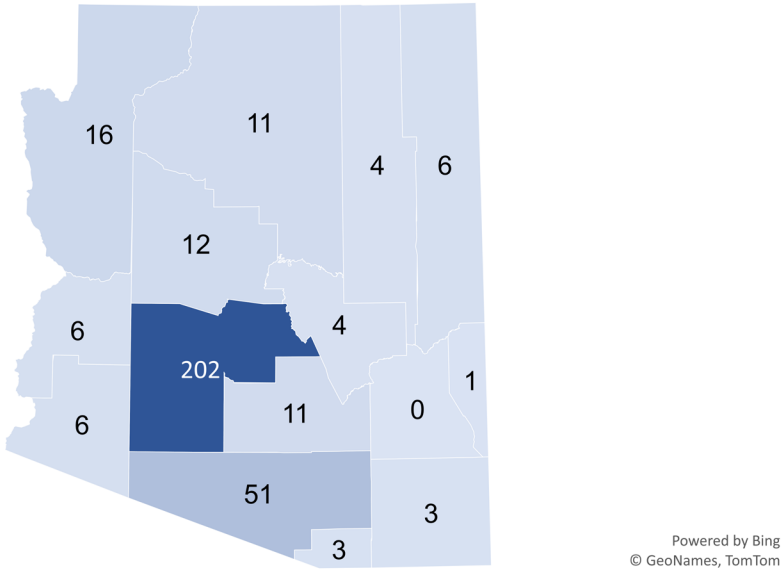
Figure 46. Percent of Police Shootings by Race/Ethnicity During 2015-2021 from the MPV Database Compared to Race/Ethnicity Percentages in the Overall Population, 2016-2020, Arizona



MPV - Mapping Police Violence

Figure 47 shows the number of police shootings by county where the death occurred, based on the MPV database for the period 2015-2021. Not surprisingly, the majority (75%) of deaths occurred in the two most populous counties, Maricopa and Pima.

Figure 47. Fatal Police Shootings by County Where Death Occurred, Arizona, 2015-2021 (Source: Mapping Police Violence)

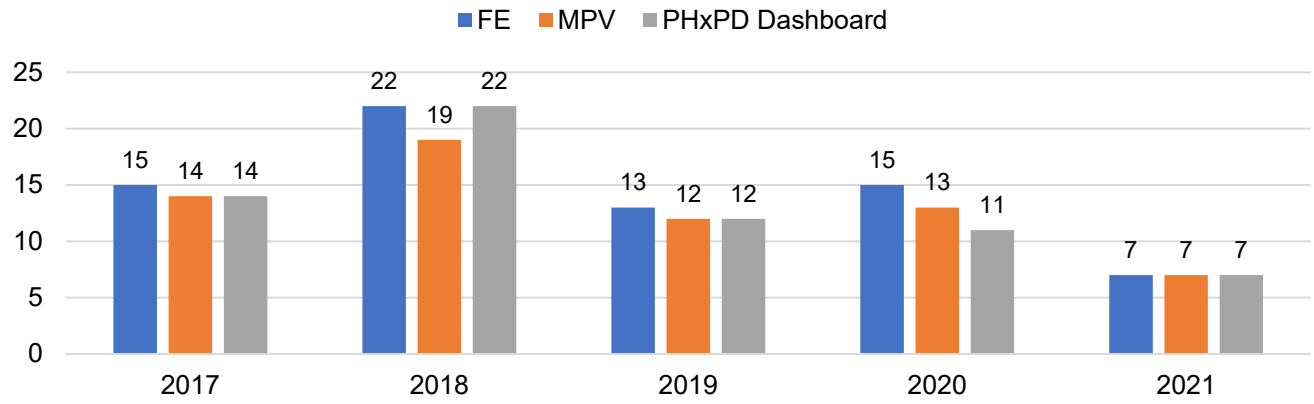


Fatal Shootings by the Phoenix Police Department

The number of shootings by Phoenix Police Department (PHXPD) has been a serious and persistent concern over many years. Several sources of data provide perspectives on this issue. Data from FE indicated 128 fatal shootings during 2013-2021 (14.2 per year) while MPV reported 135 fatal police shootings for that same time period (14.8 per year). As previously noted, an officer-involved shooting dashboard provides details of shootings from 2017 to present. Figure 48 shows close agreement on the reported number of fatal shootings by the PHXPD from 2017 to 2021 and two other data sources.

In addition to these online data sources, two detailed reports have examined officer-involved shootings by the PHXPD. One report was conducted in collaboration with the Center for Violence Prevention and Community Safety at Arizona State University and addressed shootings that occurred during 2009-2014.[50] Another report by the National Police Foundation (NPF) in 2019 focused on elevated shootings in 2018 but included data from 2009-2018.[51] The 2019 NPF report showed the 20 police departments with the greatest number of fatal police shootings in 2018 based on the Washington Post database. The PHXPD had the greatest number of fatal shootings (23). The two next highest numbers of fatal shootings in 2018 involved police departments in Los Angeles (14) and Las Vegas (11). When shootings were adjusted by population of each city, the PHXPD had the sixth highest rate.

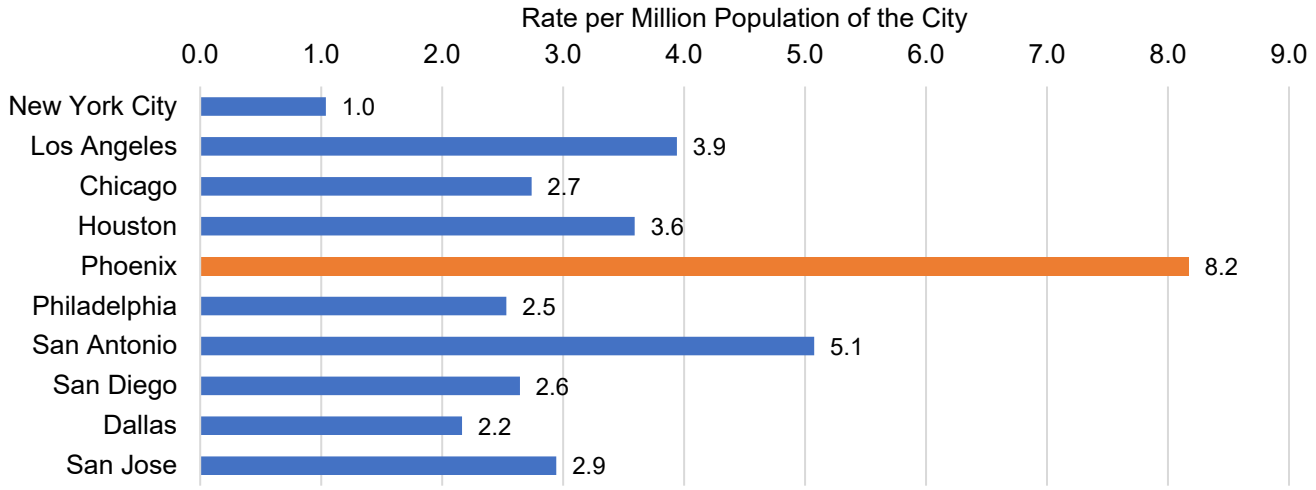
Figure 48. Number of Fatal Shootings by the Phoenix Police Department by Data Source, 2017-2021



FE – Fatal Encounters; MPV – Mapping Police Violence

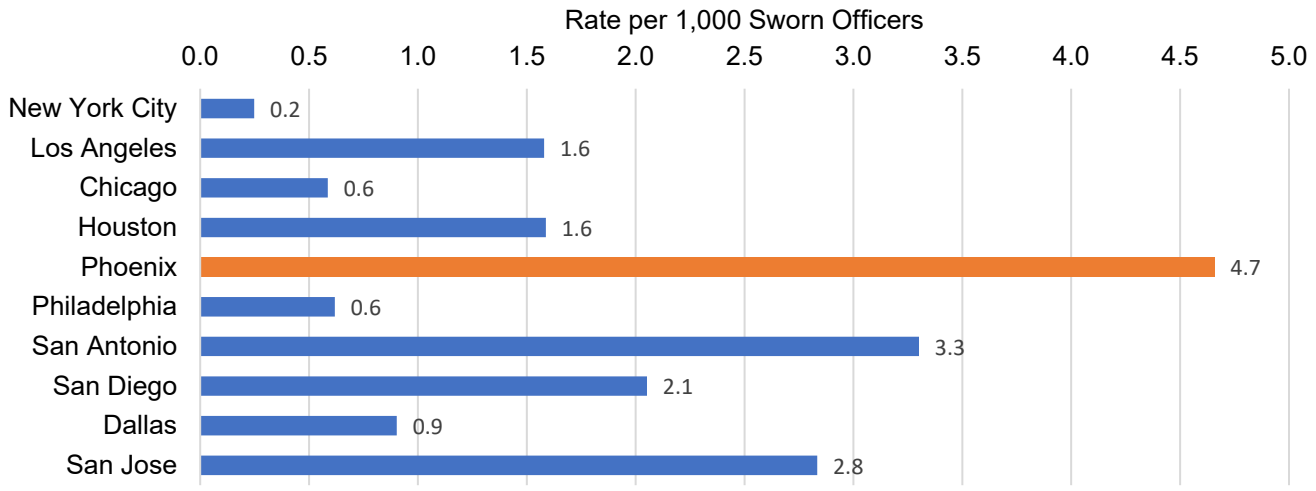
To examine longer-term frequencies of fatal police shootings by city police departments, rates of fatal police shootings by city police departments were determined for the ten largest U.S. cities for the period 2015-2021. The number of fatal shootings was obtained for each city from the MPV database. Two approaches were then used to allow comparisons among cities. Similar to the 2019 NPF report, one approach was to divide the number of deaths by the population (person-years) of the city for the same time period to obtain an approximate rate. As shown in Figure 49, the Phoenix Police Department (PHXPD) had the highest rate.

Figure 49. Rates of Fatal Shootings per Million by Police Departments of the Ten Largest U.S. Cities, 2015-2021



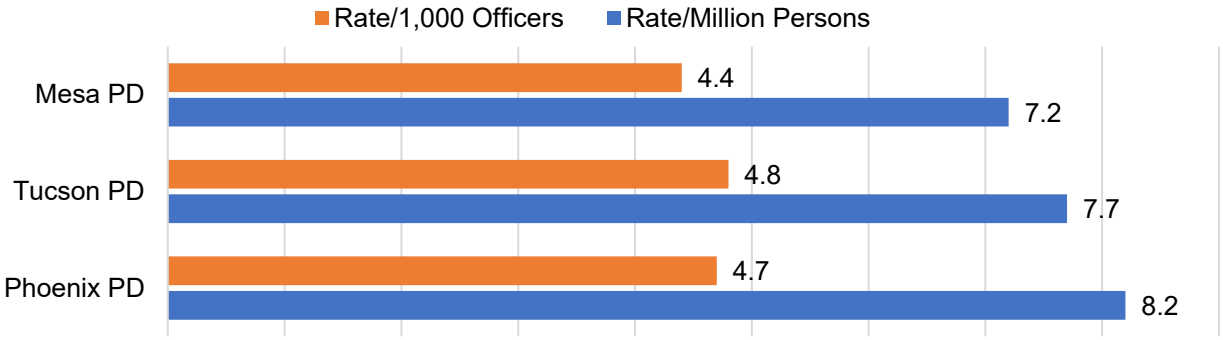
The second approach was to determine the rate of fatal shootings per 1,000 full-time sworn officers based on law enforcement employee data from the FBI Crime Data Explorer for the period 2015-2021. Again, the PHXPD rate was the highest among the ten largest cities (Fig. 50).

Figure 50. Rates of Fatal Police Shootings per 1,000 Officers for the Ten Largest U.S. Cities, 2015-2021



While rates of fatal police shootings by the PHXPD were the highest among the ten largest U.S. cities, it should not be assumed that the PHXPD rates were higher than all other city police agencies. While it was not feasible to examine rates in the other 12,500 local police departments in the U.S., fatal shooting rates were examined by police departments in Arizona's next two largest cities: Mesa and Tucson. Using the same methodology, rates were determined per million population and per 1,000 officers. As shown in Fig. 51, PHXPD rates did not differ substantially from rates by police departments in Tucson and Mesa.

Figure 51. Rates of Fatal Shootings by Mesa, Tucson, and Phoenix Police Departments, 2015-2021



At least one example of a higher rate could readily be found. A 2015 article in *The Guardian* reported exceptionally high rates of police shootings in 2015 by two Kern County California police agencies—the Bakersfield Police Department and the Kern County Sheriff's Office. Rates were examined for Bakersfield for the period 2015-2021. The rate of fatal police shootings per 1,000 officers was 9.1, nearly double the rate for the Phoenix, Tucson, and Mesa police departments.

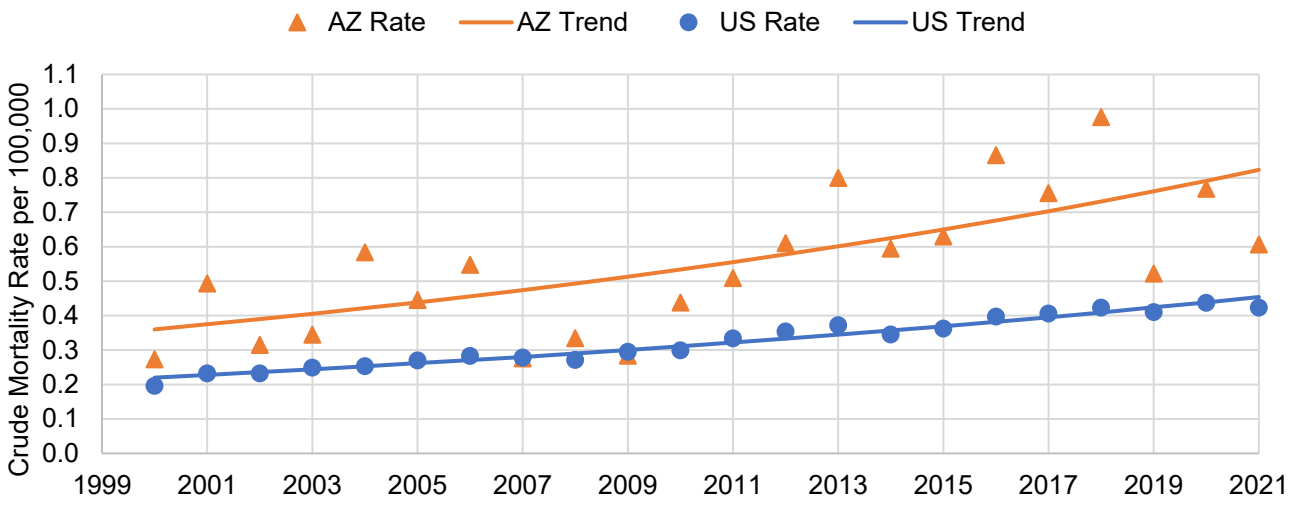
To examine whether violent crime rates were associated with rates of police shootings for the ten largest cities, a regression analysis was conducted based on FBI reported violent crimes rates (2015-2020) and police shootings. No correlations were found between violent crime rates and the rates of police department shootings per 1,000 sworn officers (r^2= 0.01, p = 0.78) or police shootings per million population (r^2 = 0.07, p = 0.46) among the 10-largest cities.

On Aug. 5, 2021, the U.S. Department of Justice announced that it would be investigating the Phoenix Police Department regarding a wide range of practices and patterns, including allegations of abuse, discriminatory practices, use of excessive force, retaliation, accountability, and other possible misconduct, just months after opening similar investigations in Minneapolis and Louisville. In September 2022, Jeri Williams retired as Phoenix police chief and was replaced by interim chief Michael Sullivan.

Trends in Police Shootings

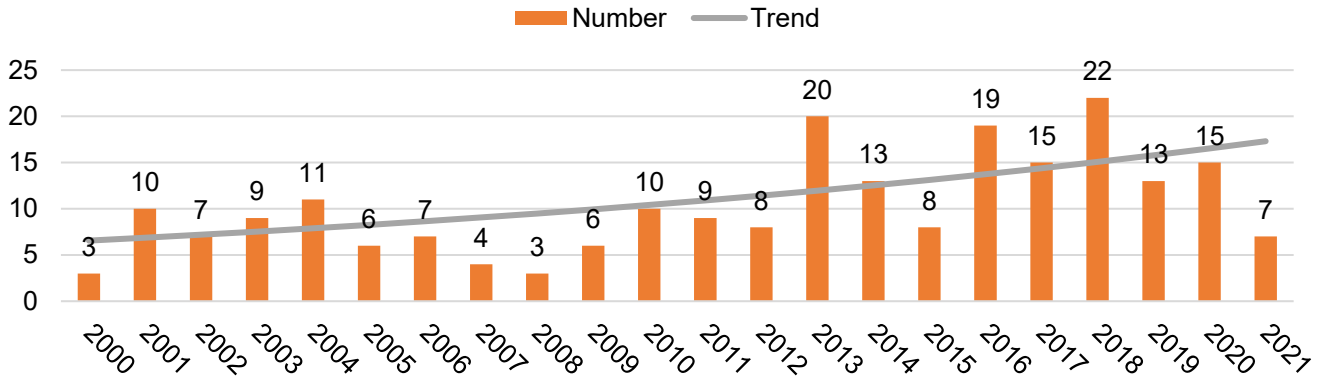
Trends of fatal police shootings were examined for Arizona and the U.S. based on 2000-2021 data from FE. Statistically significant (p < 0.001) increasing trends were found in both Arizona (average 4.0% increase per year) and in the US (3.5% per year) during that period (Fig. 52).

Figure 52. Rates and Trends of Police Shootings Reported by Fatal Encounters, AZ vs US, 2000-2021



Trends were also examined for fatal shootings by the Phoenix Police Department. Despite the year-to-year variability, fatal police shootings also showed a statistically significant rising trend, with an average increase of 4.7% per year during 2000-2021 ($p = 0.004$) (Fig. 53).

Figure 53. Numbers and Trend of Fatal Police Shootings by Phoenix Police Reported by Fatal Encounters, 2000-2021



Lifetime Risks of Fatal Police Violence

Edwards et al, 2019 estimated the lifetime risk of being killed by police in the U.S. based on a lifetable analysis with data from FE for 2013-2018.[52] They reported that the average lifetime risk of being killed by police violence was 1 in 2,000 among men and 1 in 33,000 among women in the US. The highest lifetime risk was among Black males with odds of 1 in 1,000. Estimated lifetime odds were about 1 in 1,700 for American Indian/Alaska Native males, 1 in 1,900 for Hispanic males, and about 1 in 2,600 for White males.

UNINTENTIONAL FIREARM DEATHS

Unintentional firearm deaths represent only a small percentage (1.1%) of all firearm deaths in Arizona from 1999-2020 (Fig. 54). However, Arizona still had well over 200 deaths in this category from 1999-2020. Despite being the smallest category of firearm deaths, many of these deaths are preventable with deliberate safety precautions including personalization devices, loaded chamber indicators, and magazine safeties.[6,53,54]

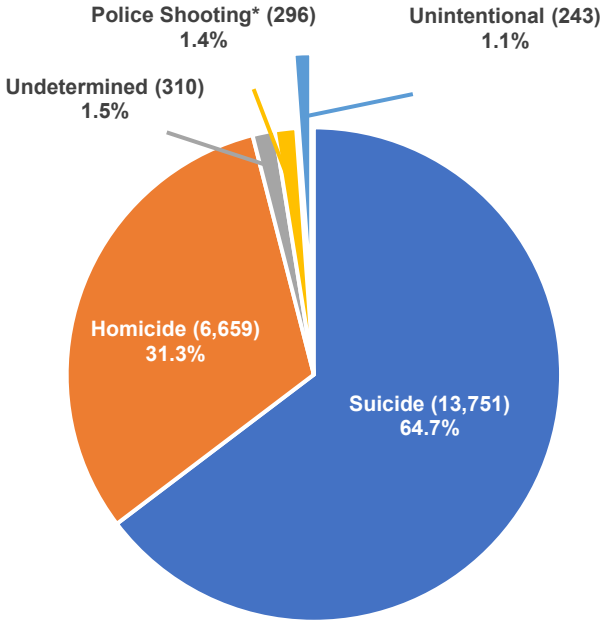
KEY POINTS

- Over 200 Arizonans died from unintentional firearm shootings from 1999-2020.
- Unintentional firearm deaths are undercounted in vital statistics reports.
- Consistent with national data, males between 15 and 24 appear to have the highest rate of dying from unintentional firearm shootings.
- The largest share of deaths occurred because someone unintentionally pulled the trigger and while someone was playing with a gun.

Data inconsistencies

Comparing the unintentional firearm mortality data from CDC Vital Statistics (VS) report to the National Violent Death Reporting System (NVDRS) shows that VS reports a significant undercount of unintentional firearm deaths. Comparing the number of deaths reported in NVDRS and VS from 2015 to 2019 demonstrated that VS only included 60% of the deaths reported in the NVDRS database. Due to data misclassification, it is possible that the number of unintentional firearm deaths is both underreported and overreported. A 2011 study showed that NVDRS accurately classified unintentional firearm deaths with near perfect accuracy, but they also found that VS data were quite inaccurate, with 38% of true unintentional deaths missed and 42% of reported deaths being falsely categorized as unintentional.[55] This study ultimately shows that many suicides and homicides are incorrectly coded as unintentional deaths in the VS database and that the reverse is also true—many unintentional deaths are misclassified. As such, this analysis will rely on NVDRS data, which is available for Arizona from 2015-2019 at the time of this report.

Figure 54. Firearm Deaths by Intent, Arizona, 1999-2020



*Police shootings are significnatly underreported by Vital Statistics in Arizona

Unintentional Firearm Death by Socioeconomic Status and Circumstance

Because there were only 73 unintentional firearm deaths reported in Arizona from 2015-2019, it was not possible to analyze data by age, gender, race, ethnicity, and rurality, as was done for

suicide and homicide deaths. Instead, high-level overviews can be provided to give a sense of which socioeconomic groups in Arizona were most at risk of unintentional firearm deaths from 2015-2019.

The highest risk group was White males between the ages of 15-24. Out of the 73 deaths reported in Arizona from 2015-2019, 84% (61) of them were White individuals (35 non-Hispanic Whites, 26 Hispanic Whites). Males accounted for 78% of deaths and experienced an approximately three-fold higher risk of unintentional firearm death when compared to females. Some 74% (54) of unintentional firearm deaths occurred at homes.

Nationally, overall rates of unintentional firearm deaths have generally declined since 1999; however, rates among the youngest children (age 1-4) have increased significantly.[56] And while rates declined nationally by 29% among White youths between 2010 and 2019, rates increased by 48% among Black youths.[53]

Almost 99% (72) of the unintentional deaths were able to be categorized based on the circumstances of the death. Table 17 shows the breakdown of unintentional firearm deaths in Arizona by circumstance. The largest portion of deaths (43%, 31 deaths) occurred when an individual unintentionally pulled the trigger on a gun. Other common circumstances included playing with a gun, thinking that the gun was unloaded, thinking that the magazine was disengaged, and cleaning the gun.

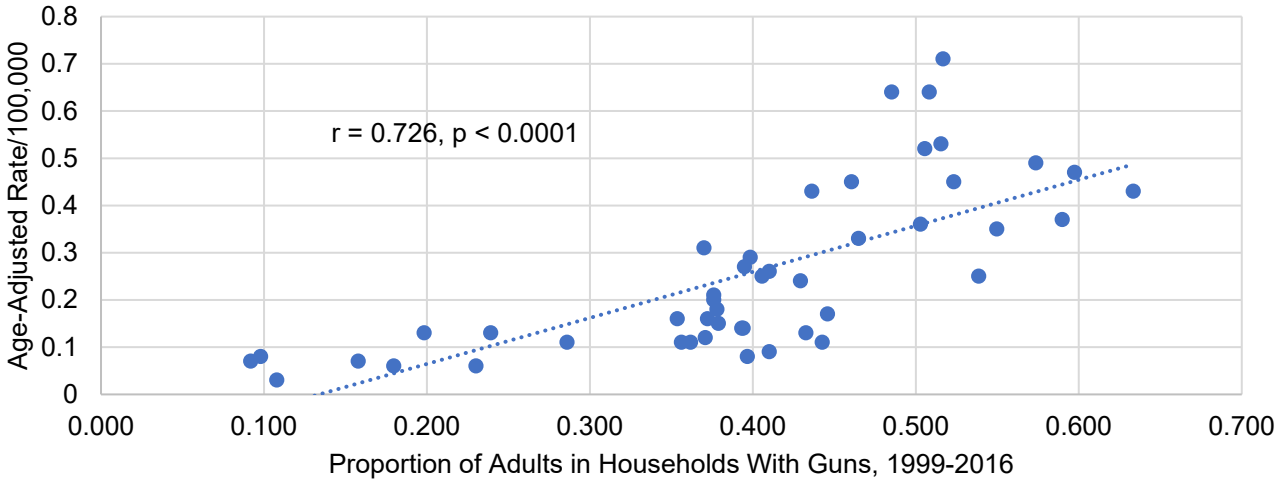
TABLE 17. UNINTENTIONAL FIREARM DEATHS BY CIRCUMSTANCE, ARIZONA AND 24 STATES WITH AVAILABLE DATA, 2015-2019

CIRCUMSTANCE	Arizona		24 States	
	Deaths	Percent	Deaths	Percent
UNINTENTIONALLY PULLED TRIGGER	31	43.1%	220	23.9%
PLAYING WITH GUN	25	34.7%	340	36.9%
OTHER CONTEXT OF INJURY	24	33.3%	251	27.2%
THOUGHT GUN WAS UNLOADED-OTHER	21	29.2%	129	14.0%
OTHER MECHANISM OF INJURY	19	26.4%	197	21.4%
THOUGHT UNLOADED MAGAZINE DISENGAGED	14	19.4%	67	7.3%
CLEANING GUN	13	18.1%	90	9.8%
SHOWING GUN TO OTHERS	9	12.5%	111	12.0%
GUN FIRED LOADING/UNLOADING	8	11.1%	47	5.1%
DROPPED GUN	4	5.6%	52	5.6%
HUNTING	2	2.8%	68	7.4%
TARGET SHOOTING	2	2.8%	36	3.9%
GUN DEFECT OR MALFUNCTION	2	2.8%	35	3.8%
GUN MISTAKEN FOR TOY	2	2.8%	27	2.9%
THOUGHT SAFETY WAS ENGAGED	0	0.0%	18	2.0%

Total number of victims: Arizona = 73 (72 with known circumstances), 24 States = 1,000 (922 with known circumstances).

As with firearm suicides and domestic firearm homicides, the presence of firearms in the home poses an increased risk of unintentional firearm injuries.[56] A regression analysis that included 47 states with reliable data showed a highly significant correlation between unintentional firearm mortality rates and the proportion of households with a firearm (Fig. 55).

Figure 55. Unintentional Firearm Mortality Rates 1999-2020 vs Household Gun Ownership 1999-2016 (RAND), 47 States



As discussed elsewhere in this report, child access prevention and safe storage laws are effective in reducing firearm mortality.[28,57] Arizona does not have a child access prevention or safe storage law, but does make a parent liable for fines or civil damages resulting from a minor's use of a firearm in limited circumstances.

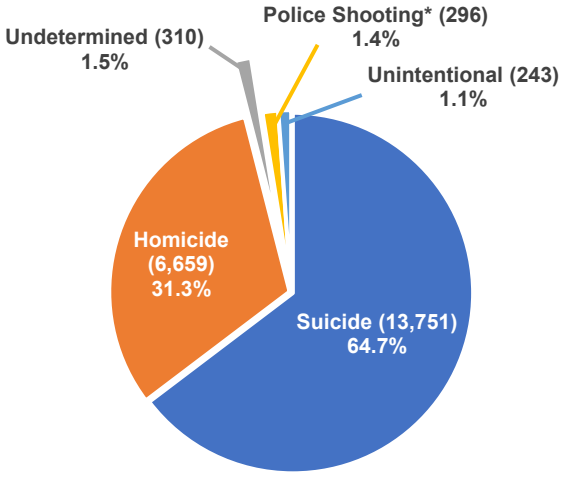
UNDETERMINED FIREARM DEATHS

As with unintentional firearm deaths, undetermined firearm deaths make up a small, but important percentage (1.5%) of firearm deaths in Arizona. There were 310 undetermined firearm deaths between 1999-2020 (Fig. 56).

KEY POINTS

- Over 300 Arizonans have died from firearm shootings of undetermined intent from 1999-2020.
- Arizona has the fifth highest rate of undetermined firearm deaths among U.S. states.
- The mortality risk for males is quadruple the rate for females.
- Teens and young adults in the age range of 15-24 are at the highest risk of undetermined firearm mortality.

Figure 56. Firearm Deaths by Intent, Arizona, 1999-2020

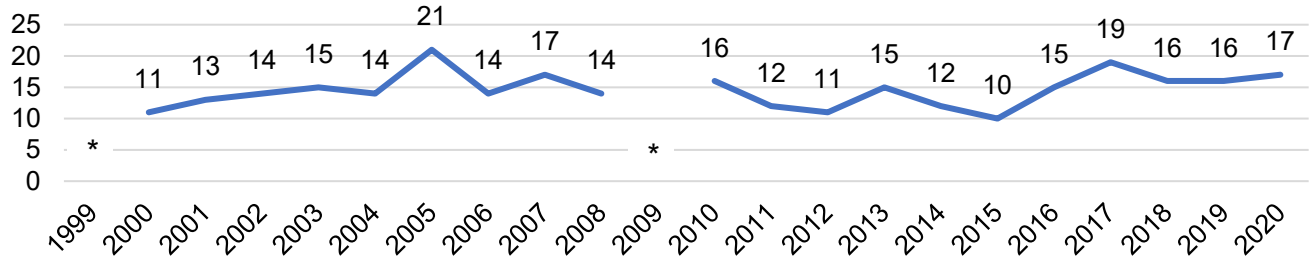


*Police shootings are significnatly underreported by Vital Statistics in Arizona

Undetermined deaths are deaths for which a medical examiner or coroner did not determine a specific intent (i.e., suicide, accidental, homicide) for a non-natural death. This is typically indicated when the evidence equally supports or refutes multiple intentions. While there are few undetermined deaths every year, evidence suggests that these deaths may be systematically misclassified. According to one study, suicide is undercounted for two primary reasons. First, there are legal, religious, and insurance-related implications to a suicide determination; second, there is a high level of evidence required to declare a death a suicide (e.g., suicide note, witness testimony, prior psychiatric treatment).[58] It is important to note that higher rates of undetermined deaths may indicate an undercount of homicide and suicide in specific racial and ethnic groups.[59]

Undetermined firearm deaths in Arizona have varied slightly between 1999 and 2020, with an average of 15 undetermined firearm deaths per year (Fig. 57). Note that data on the number of undetermined deaths for 1999 and 2009 were unavailable due to fewer than 10 deaths; this means that the average number of undetermined deaths is slightly less than the calculated average.

Figure 57. Undetermined Firearm Deaths in Arizona by Year, 1999-2020



*indicates that there were fewer than 10 deaths this year and data was suppressed.

Using two-year averaged rates from 1999-2020, no significant trends were found for undetermined firearm deaths in Arizona.

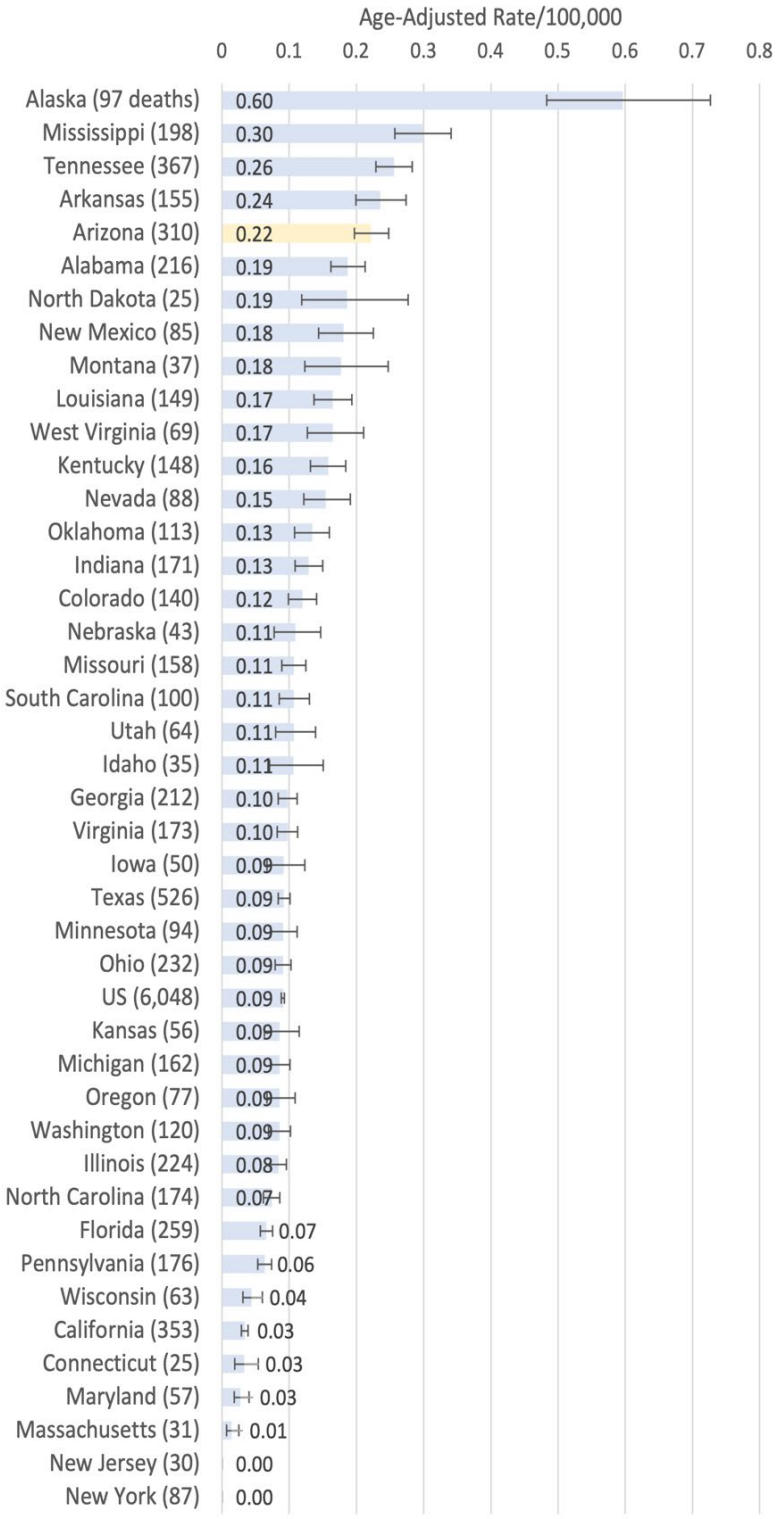
As seen in Figure 58, Arizona ranks fifth highest for age-adjusted undetermined firearm death rate, a significantly higher than the U.S. average.

Undetermined Firearm Death by Socioeconomic Status

Because there are few undetermined firearm deaths, it is difficult to extract meaningful trends from these deaths; however, there are a few categories in which trends still emerge. This was particularly true for sex-based differences. The age-adjusted rate of undetermined firearm deaths was significantly higher for males, which had quadruple the rate of undetermined firearm deaths (0.4 per 100,000) than that of females (0.1 per 100,000).

Racial differences also prevailed. The rate of undetermined deaths was highest among American Indian and Alaska Native (AI/AN) populations, with an age-adjusted mortality rate of 0.3 per 100,000, although this rate was not significantly higher than for Whites (0.2 per 100,000). Nationally, AI/AN also had the highest rates of undetermined firearm deaths, but this again did not reach statistical significance. Finally, those aged 15-24 had a significantly higher risk of undetermined firearm death than any other age group, with a mortality rate of 0.6 per 100,000, in comparison to the all-ages rate of 0.2 per 100,000. This was also significantly higher than the national crude mortality rate for people aged 15-24 (0.2).

Figure 58. Rates, Deaths, and Confidence Intervals for Firearm Deaths of Undetermined Intent, by State, 2019-2020
(*excludes D.C. and 8 states with insufficient data*)



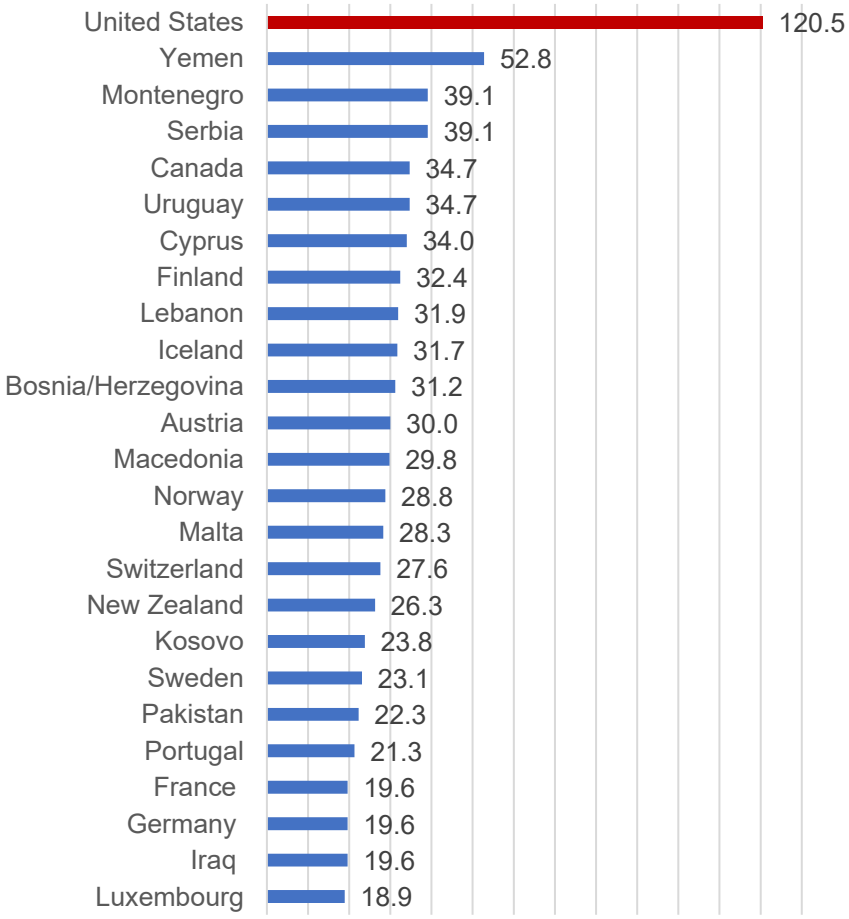
FIREARM OWNERSHIP

The United States is a nation of guns, guns, and more guns. Indeed, the U.S. had more civilian guns than people in 2017 and led the world in private gun ownership per capita (120.5 guns per 100 persons) according to the Small Arms Survey (Fig. 59).[60] Of the estimated global total of 857 million civilian-owned firearms, 393 million (46%) were in the U.S. With record gun sales of over 80 million since 2017, that per capita rate has increased significantly.

KEY POINTS

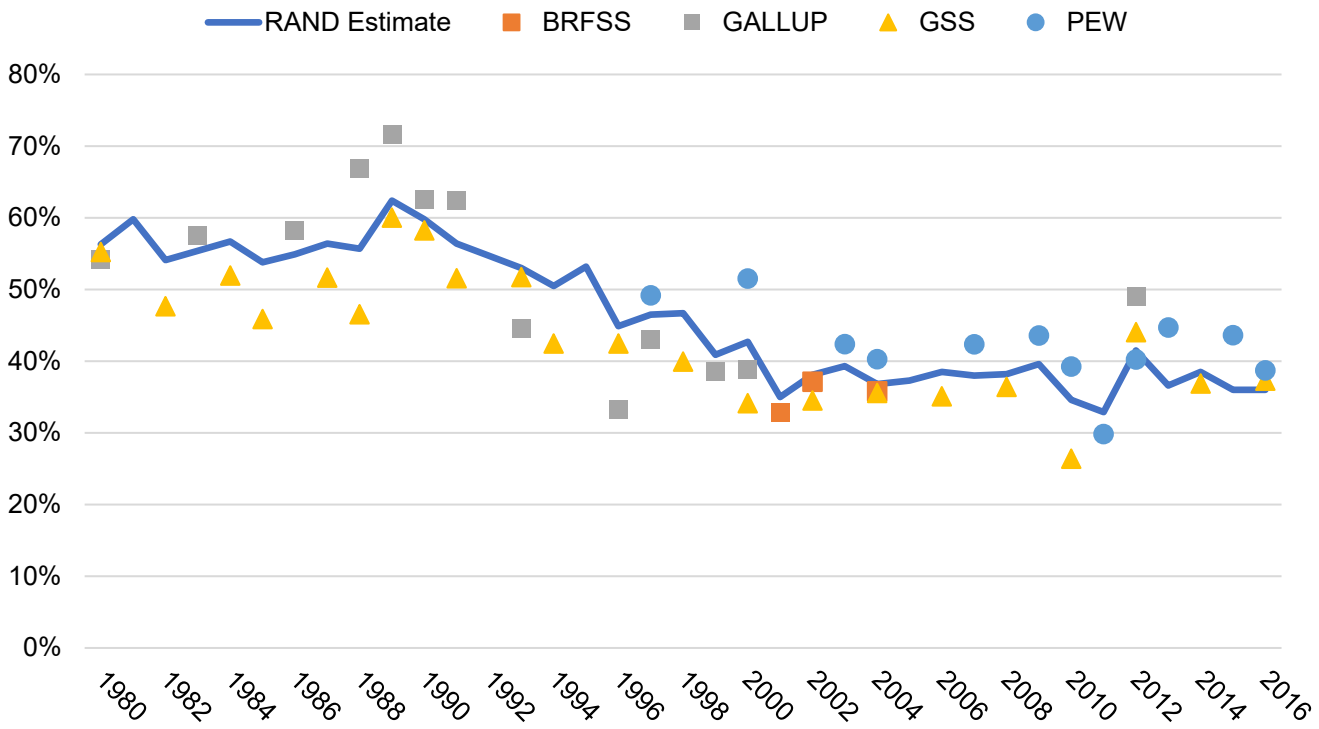
- The US leads the world in guns per capita.
- The proportion of households with a gun has declined in most states since the early 1980's.
- Approximately 36% of AZ households owned a gun in 2016, down from 62% in 1989.
- Gun sales increased by 5%/year until 2019.
- In 2020, gun sales increased by 64% in the US and by 104% in AZ over 2019 sales.
- 1/3rd of 2020 buyers were reacting to pandemic lockdowns, fears of government, Covid, or the 2020 election.

Figure 59. Estimated Number of Civilian Firearms per 100 Residents in 2017, Top 25 Countries (Small Arms Survey, Geneva)



Multiple polls and surveys have been conducted over many decades asking about gun ownership. Although not the most recent data, the most comprehensive assessment of household gun ownership at the state level was conducted by Schell and colleagues at the RAND Corporation.[3] These researchers used a modeling approach to combine direct measures of gun ownership from 51 survey-based estimates along with proxy measures such as the proportion of suicides due to firearms, state resident hunting licenses, background checks, gun magazine subscriptions, and other sources. The results were annual state-level measures of the proportion of adults living in a household with a firearm over a 37-year period (1980-2016). Figure 60 shows the estimates for Arizona along with data points from individual surveys.

Figure 60. Estimated Proportion of Adults Who Live in a Household With a Firearm, Arizona, 1980-2016 (RAND, Schell et al, 2020)

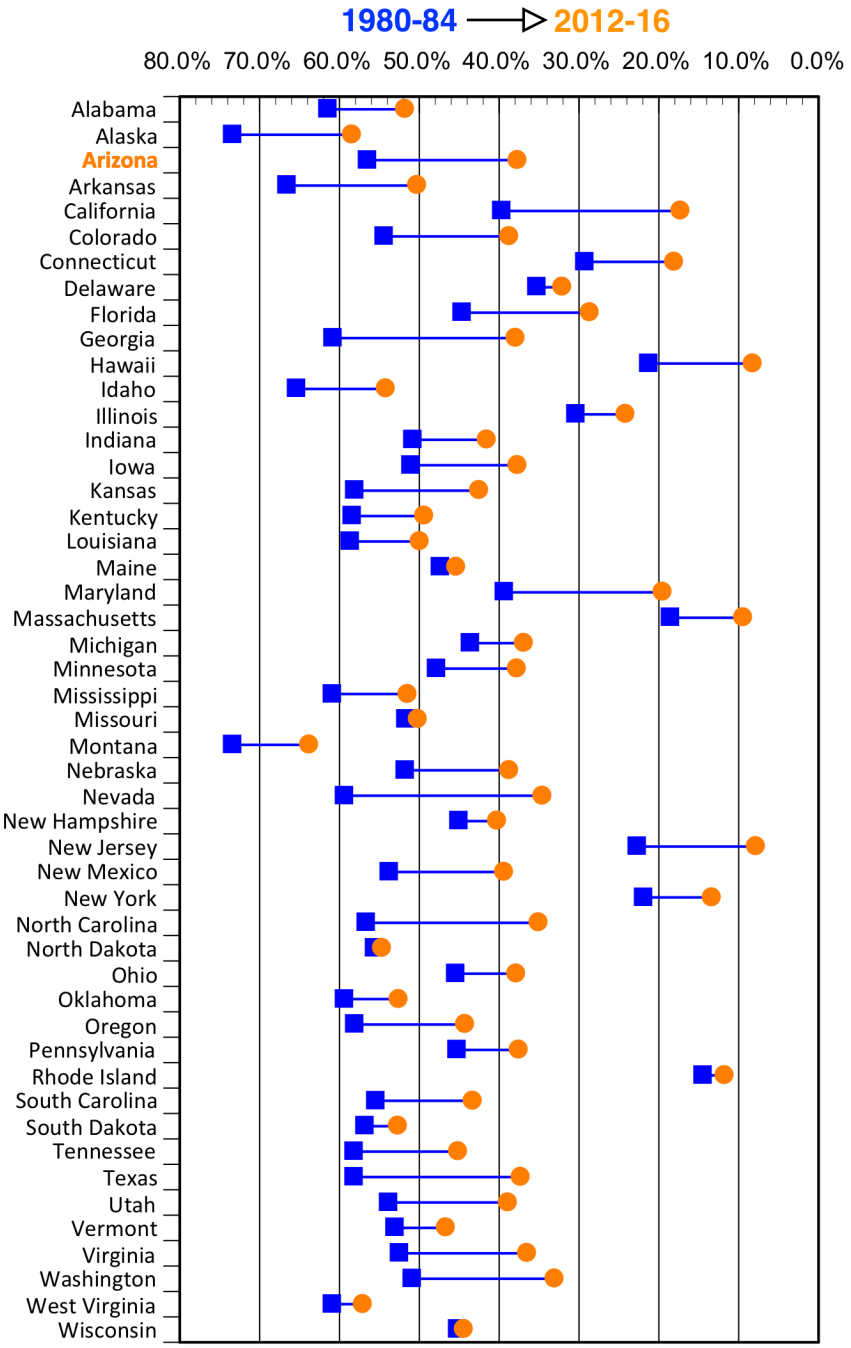


BRFSS – CDC Behavioral Risk Factor Surveillance System
Gallup – Gallup Polls
GSS – General Social Survey (NORC, University of Chicago)
PEW – PEW Research Center Polls

Arizona household gun ownership peaked in 1989 at 62%. Household ownership then declined significantly by 3.9% per year until 2001, after which rates remained relatively unchanged and averaged around 37% during 2014-2016. Based on three-year rolling averages, household gun ownership in Arizona consistently exceeded the national average by 4% to 14% during 1980-2016.

The decline in household ownership was evident in other states as well. Figure 61 shows changes in household gun ownership between two five-year periods, 1980-84 and 2012-2016. Five states showed declines in household ownership of 20% or more (Nevada, Georgia, California, North Carolina, and Texas) while North Dakota and Wisconsin showed less than a 1% decline.

Figure 61. Changes in the Proportion of Adults Living in Households with a Firearm between 1980-84 and 2012-16 by State.



While the proportion of adults living in households with guns has been declining, the number of guns being purchased has continued to increase. While this may seem contradictory, recent national surveys indicated that 66% of gun owners own more than one gun (Pew, 2017)[61] and that the average gun owner owns five firearms (English, 2022).[4]

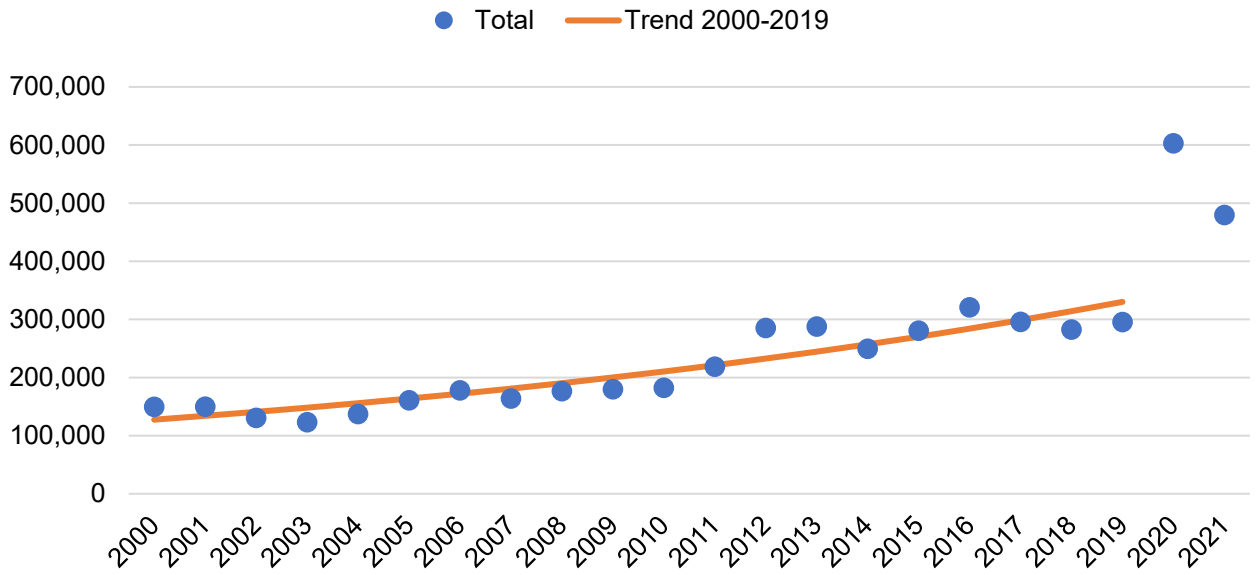
Gun sale trends are often estimated based on data from the FBI National Instant Criminal Background Check System (NICS). Federal background checks are generally required when guns are sold through dealers in most states. However, background checks are not required for private sales or for other exemptions based on state-level permit laws such as Arizona's concealed weapon permits. It was estimated that 22% of the most recent gun sales in 2015 did not involve a federal background check.[62] With those limitations noted, this report will refer to estimated "gun sales" based on processed NICS data.

While the FBI background check data is publicly accessible directly from the NICS site (in pdf format), several organizations process the NCIS data (with or without detailed descriptions of how the data are processed) and make it available, usually at a cost. TheTrace.org provides stunning graphics, documents how it selects and processes the data, and makes the data publicly available at no cost; therefore, its data was used here.

In the U.S., estimated gun sales were increasing by an average of 4.5% per year between 2000 and 2019. However, in 2020 sales increased by 64% over 2019 and 36% over the previous high in 2016. Sales exceeded 21 million in the U.S. for 2020, a record high that was almost matched in 2021 as well (19 million). The National Sport Shooting Foundation (the firearms trade association) firearm retailer survey indicated that almost 33% of their customers were first-time buyers in the first six months of 2020 and 30% in 2021.

An even larger increase occurred in Arizona in 2020 (Fig. 62). While sales were increasing by an average of 5.1% per year from 2000 to 2019, 2020 sales increased by a shocking 104% over 2019 sales and 88% over the previous high in 2016. Sales went from 296,000 in 2019 to 603,000 in 2020, also a record high. Sales in 2021 were also elevated at 480,000 estimated sales.

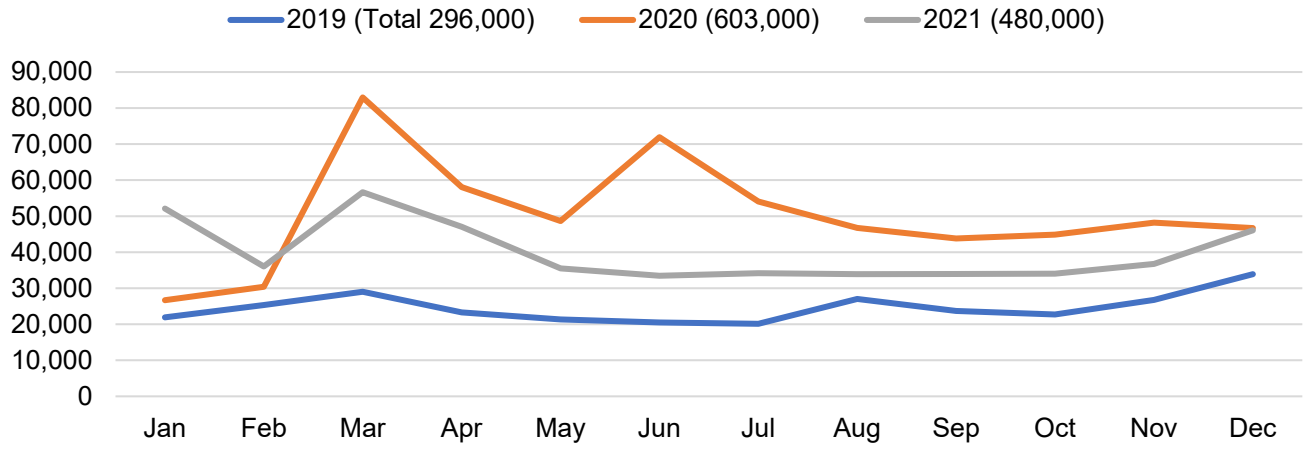
Figure 62. Estimated Annual Firearm Sales, Arizona, 2000-2021
(Source: TheTrace.org)



These dramatic increases were made possible, in part, by the fact that most states (including Arizona) that issued pandemic stay-at-home orders designated licensed federal firearm vendors as essential businesses or included provisions for them to remain open during the pandemic.[63]

Figure 63 shows the estimated monthly sales for Arizona for 2019-2021. The peak sales were in March 2020 with 83,000 sales, with a second peak in June with 72,000 sales.

Figure 63. Estimated Firearm Sales by Month and Year, Arizona, 2019-2021 (Source: TheTrace.org)



Firearm sales often spike following mass shootings, civil unrest, and concerns about possible restrictions on gun purchases. A timeline graphic by TheTrace, shows spikes in firearm sales after the 9/11 attacks, the 2008 presidential election, the Sandy Hook school shooting, and the San Bernardino shooting. But the largest spikes corresponded with the start of the COVID-19 pandemic, Black Lives Matter protests, and the capitol attack and the presidential inauguration. A recent survey conducted by four universities between Dec. 16, 2020, and Jan. 11, 2021 asked some 25,000 people why they bought a gun in 2020.[64] The most common reasons, as is typical, were protection against crime (70%) and target shooting or hunting (47%). However, almost one-third (32%) said they were reacting to pandemic lockdowns, fears of the government, COVID-19, or the 2020 election. It was also found that respondents who attended Trump rallies and protests over lockdowns and the election were 3.9 times more likely to purchase firearms than those who didn't, even after accounting for ideology, party affiliation, and other factors. Respondents who already owned a gun and had COVID-19 were more likely to buy another gun than those who didn't have COVID-19.

The number of domestically manufactured firearms has increased sharply over the past three decades according to a 2022 ATF report.[65] While the U.S. population increased by 18% from 2000 to 2020, the number of domestically manufactured firearms per 100,000 persons increased by 144%, from 1,397 to 3,410.

A 2021 national survey of gun ownership estimated that 81.5 million U.S. adults aged 18 and over (31.9%) owned a firearm.[4] The survey further found that 30.2% of gun owners have owned an AR-15 or similarly styled rife. As shown in Figures 64 and 65, rates of adult gun ownership

varied significantly by state. In Arizona, it was estimated that 32% of adults (1.8 million) own a firearm, and of those gun owners, some 29% have ever owned an AR-15 style rifle.

Figure 64. Estimated Percent of Adult Population Owning Firearms in 2021
(Source: English, 2022)

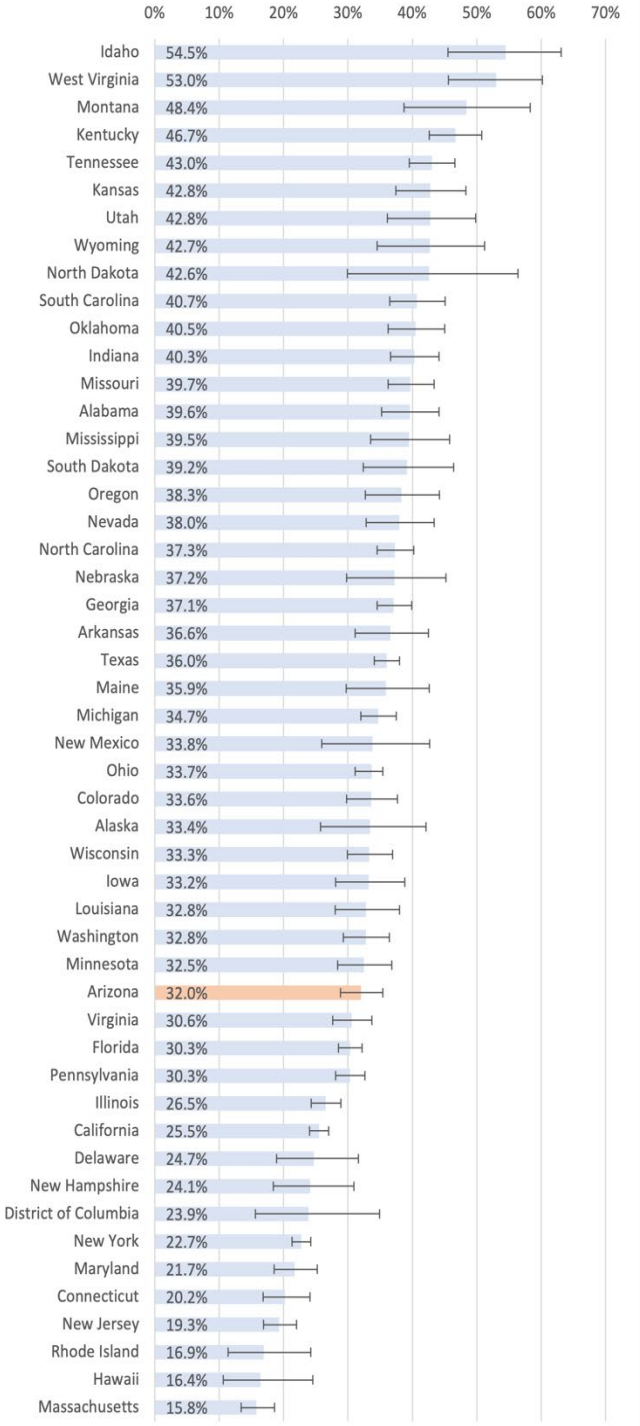
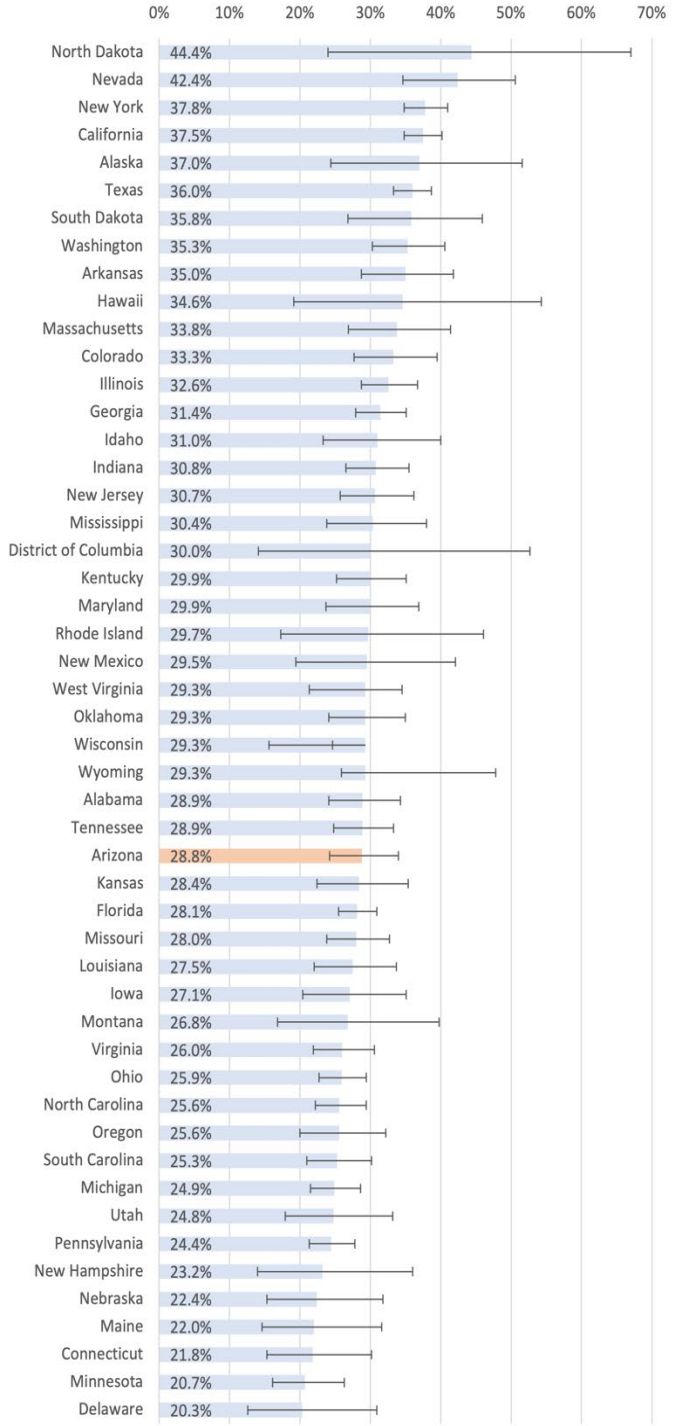


Figure 65. Percent of Gun Owners Reporting That They Have Ever Owned An AR-15 Styled Rifle
(Source: English, 2022)



Firearm Ownership and Firearm Mortality

Firearm ownership is strongly correlated with firearm mortality, including homicides,[66] suicides,[67-70] homicide with suicide,[71] mass shootings,[72] and unintentional shootings.[56,73] Figures 66 illustrates the significant correlation between the proportion of households with a gun (average 1999-2016) and firearm suicides for 50 states, while Figure 67 shows the absence of a correlation between non-firearm suicides and gun ownership. Figure 68 shows the significant correlation between unintentional firearm mortality and household gun ownership for 19 states with reliable data for the period 1999-2016.

Figure 66. Firearm Suicide Rates vs Household Gun Ownership, 1999-2016, 50 States

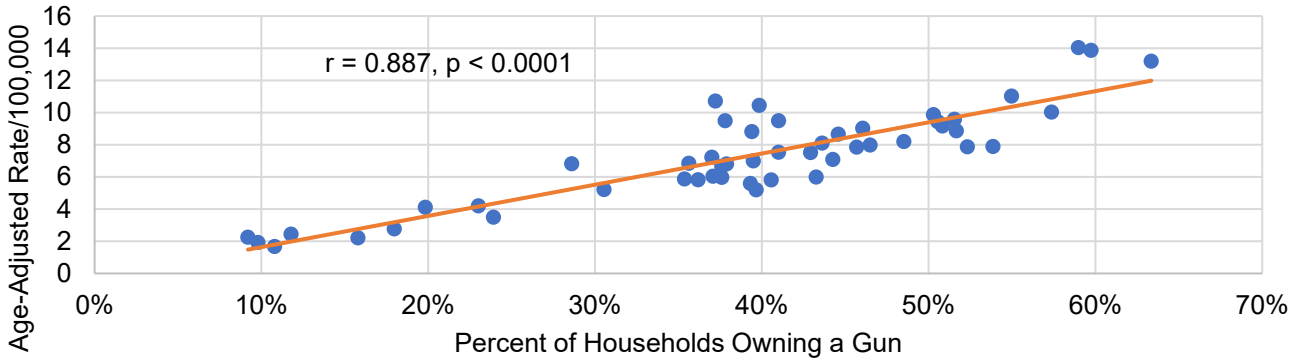


Figure 67. Non-Firearm Suicide Rates vs Household Gun Ownership, 1999-2016, 50 States

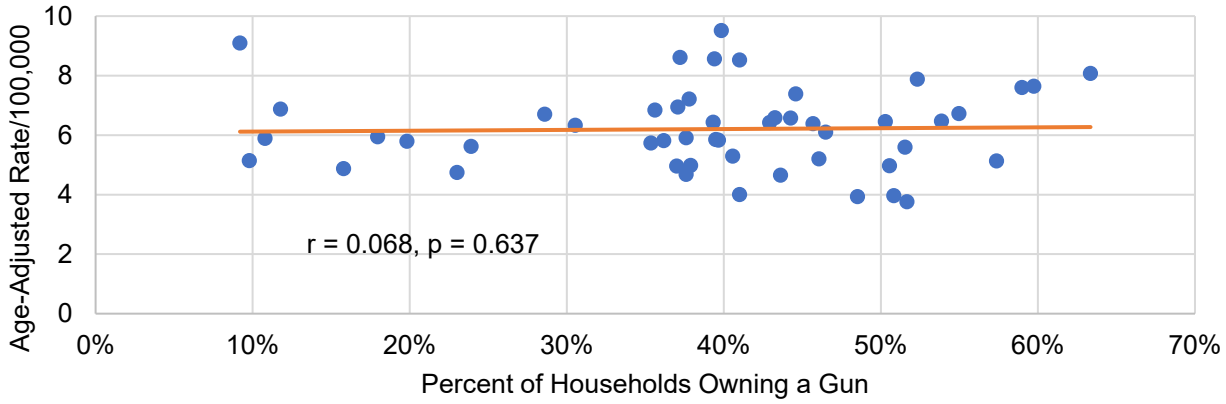
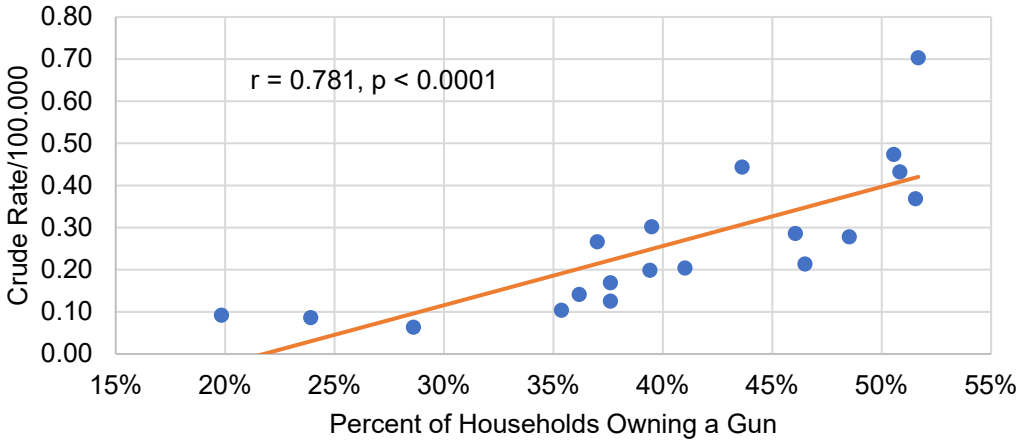


Figure 68. Unintentional Firearm Mortality Rates vs Household Gun Ownership, 1999-2016, 19 States



Ghost Guns

Privately-made firearms or PMFs, also known as "Ghost guns," are firearms that can easily be assembled by individuals with a few tools from parts or kits usually purchased online. Everytown Research has identified over 100 companies selling ghost gun parts online. They can also be made via 3D printers, although commercially-available component kits have been of greater public safety concern.

These guns do not have serial numbers, do not require background checks, and are untraceable. They are especially appealing to those who would otherwise be prohibited from purchasing a firearm, including criminals and even children. The number of ghost gun owners is unknown, but ghost guns have increasingly been involved in violent crimes, including mass shootings, and have become an increasing concern for law enforcement. Between 2016 and 2021, the number of ghost guns seized by law enforcement at crime scenes increased 11-fold (1,000%) and were involved with 692 homicides or attempted homicides. Media reports (Fox10, abc15) indicate that only about 1% of firearms recovered by law enforcement in Arizona have been ghost guns.

While a number of states have enacted various restrictions on ghost guns, Arizona went the opposite direction with the April 2021 passage of House Bill 2111, "Second Amendment Freedom Act." This bill was enacted to preemptively block enforcement of anticipated new federal restrictions on ghost guns. That new federal rule became effective on August 24, 2022, and now classifies ghost guns and their main components as "firearms," thus requiring serial numbers and other gun sale requirements as with commercially manufactured firearms. As noted in a White House press release:

> "This final rule bans the business of manufacturing the most accessible ghost guns, such as unserialized "buy build shoot" kits that individuals can buy online or at a store without a background check and can readily assemble into a working firearm in as little as 30 minutes with equipment they have at home. This rule clarifies that these kits qualify as

> "firearms" under the Gun Control Act, and that commercial manufacturers of such kits must therefore become licensed and include serial numbers on the kits' frame or receiver, and commercial sellers of these kits must become federally licensed and run background checks prior to a sale – just like they have to do with other commercially-made firearms."

The rule does not require private individuals to add serial numbers to their own ghost guns or to have a licensed dealer do so. However, it does require that ghost guns voluntarily taken into inventory by licensed dealers be marked with a serial number and licensee number and a record kept of the acquisition. It's unclear how this rule will be impacted by House Bill 2111. It's also unclear the extent to which businesses will comply with the rule and how the Department of Justice will enforce the rule.

SCHOOL SHOOTINGS

KEY POINTS

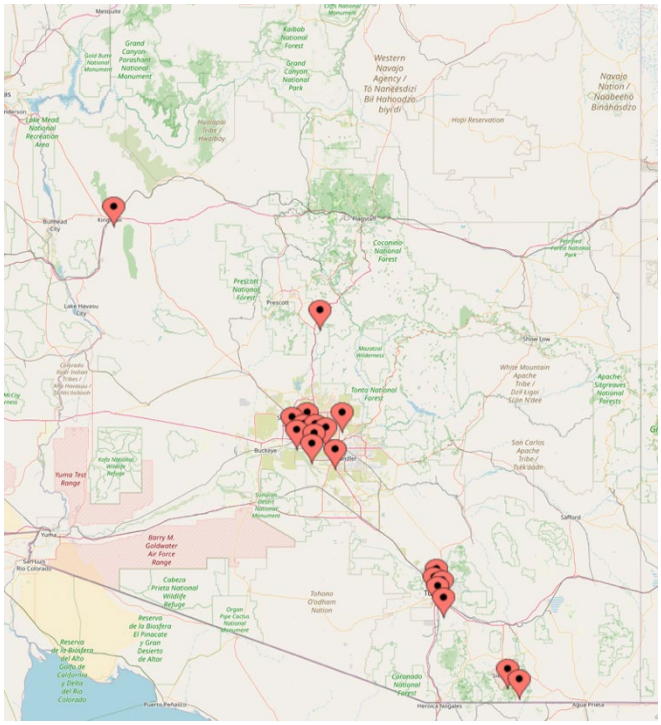
- Between 1970 and November 2022, there have been 20 school shootings in Arizona, six of which have occurred in the last three years.
- Four of these instances were accidental, four were escalations of disputes, and other circumstances include hostage situations and suicide, among other circumstances.
- School shooting incidents in the U.S. have been increasing by 30% per year since 2011.
- Despite receiving the most media attention, indiscriminate shootings only accounted for 4.8% of school shootings nationwide.

A school shooting is defined as any circumstance in which a firearm is fired on a school campus. Despite the small percentage of overall firearm deaths, these shootings often impact some of the most vulnerable members of society—children. The long-term ramifications of school shootings come from not only deaths and injuries, but also the mental health of the student body, teachers, and school staff. A 2022 policy brief summarized the impacts of surviving a school shooting on mental health, educational outlook, and future earnings.[74] The report found that more than 100,000 students attend schools where there was a school shooting in 2018 and 2019. Students who experienced a school shooting had higher rates of antidepressant usage after the shooting; decreases in test scores, attendance, and enrollment rates; and lower lifetime earnings.

Methodology

The Center for Homeland Defense and Security (CDHS) K-12 School Shooting Database is a compendium of all known instances from January 1970 through June 2022 in which a firearm is brandished, fired, or a bullet touches school property regardless of the time, day, and victim. Using news reports, peer-reviewed studies, government reports, media, non-profits, blogs, and other sources, the K-12 School Shooting Database is one of the most comprehensive data sources on school shootings in the United States. Since July 2020, the database has since been taken over by an independent researcher which is updated on a regular basis to reflect the most recent school shootings in the United States.[2]

Figure 69: Location of K-12 School Shootings in Arizona from 1970 until November 2022

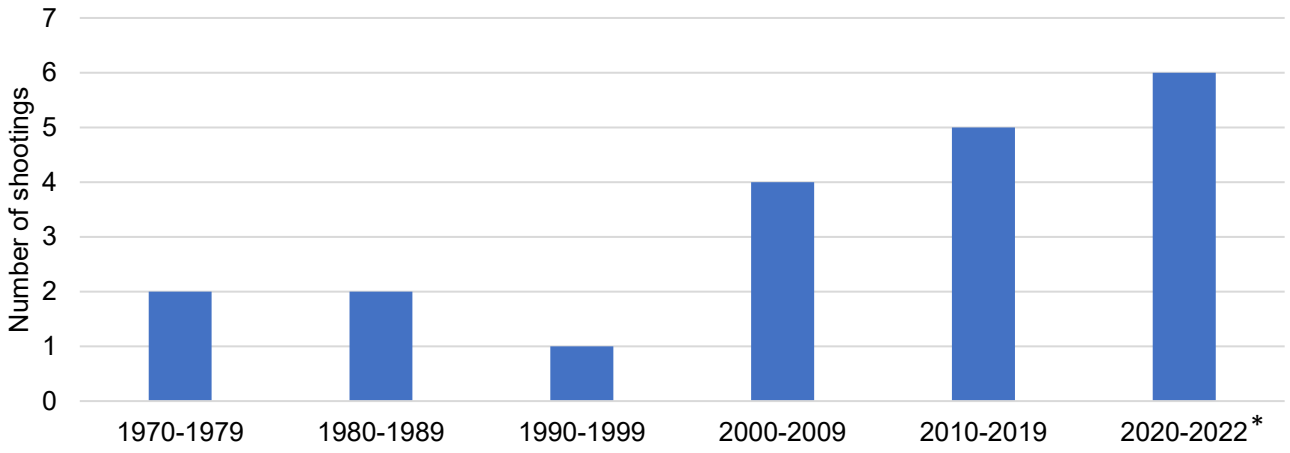


Analysis of School Shootings in Arizona

From 1970 until November 2022, there have been 20 school shootings in Arizona at 19 schools, which left six individuals dead and eight wounded. Figure 69 shows the locations of each of these shootings. One school, Cesar Chavez High School in Phoenix, has had two shootings—

one gang-related and another related to the escalation of a dispute. Of these shootings, 11 occurred in Maricopa County, five in Pima County, two in Cochise County, one in Yavapai County, and one in Mohave County. The majority of these shootings occurred at high schools (11). Four occurred at elementary schools.

Figure 70. Incidence of School Shootings in Arizona
January 1970-November 2022



*Note that this represents only the first three years of the decade

As shown in Figure 70, school shootings have been increasing in frequency in Arizona; there were two documented school shootings in Arizona in the 1970s, two in the 1980s, one in the 1990s, four in the 2000s, five in the 2010s, and six in the *first three years* of the 2020s. Note that in the figure, the first five bars represent 10 years and the last bar represents the last three years of data.

Circumstances surrounding the shootings varied, as seen in Table 18. The most common circumstances for a school shooting were accidental and escalation of a dispute. One example of an accidental shooting occurred in March 2022, when a 14-year-old accidentally shot a 15-year-old's leg on the school bus. An example of a dispute escalation occurred in November 2021, when a 16-year-old shot another student in the school bathroom during the attempted sale of a ghost gun.

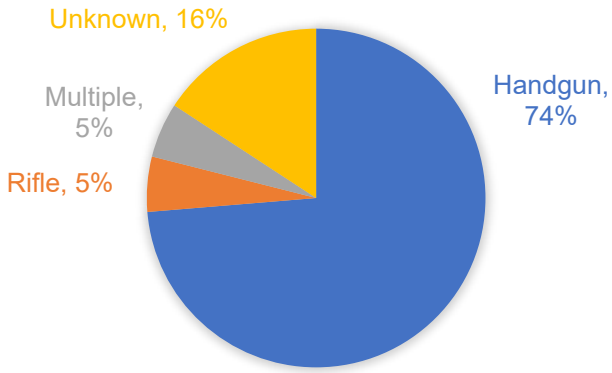
The shooters were mostly current or former students (9). Four of the shooters had no relation to the school, two were school staff members, one was the estranged husband of

Table 18. Circumstances of AZ School Shooting, 1970 – June 2022

Shooting circumstances	**Incidence**
Accidental	4
Escalation of Dispute	4
Domestic with Targeted Victim	2
Hostage or standoff	2
Suicide or attempted suicide	2
Murder-Suicide	1
Indiscriminate	1
Psychosis	1
Unknown	1
Anger over Grade/ Suspension/Discipline	1
Undetermined	1

a preschool teacher, and three had unknown ties to the school. As presented in Figure 71, handguns were the most frequently used firearm in shootings.

Figure 71. Types Of Firearms Used In AZ School Shootings, January 1970 - November 2022

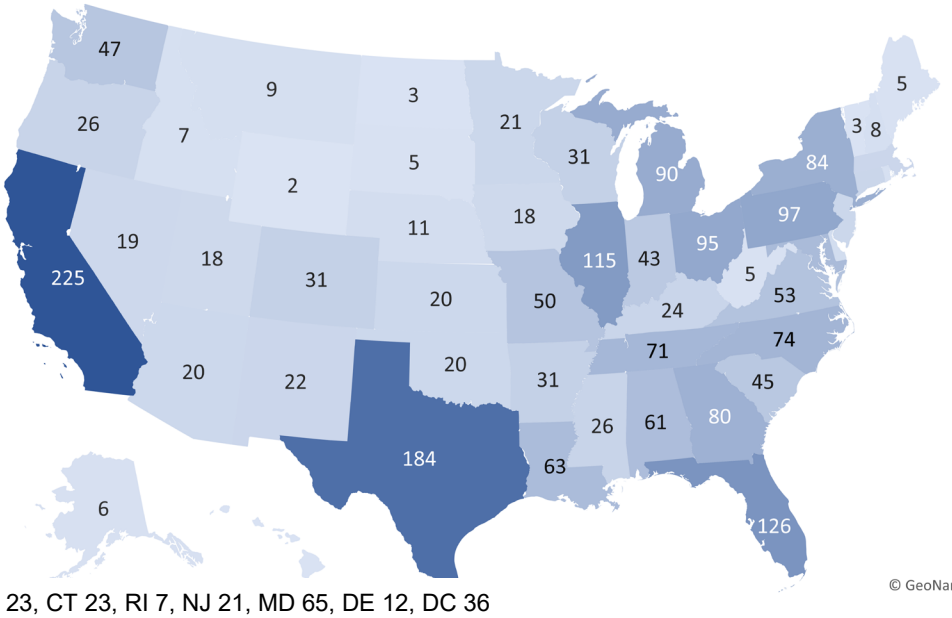


Despite not being represented in traditional school shooting databases, firearm violence on college campuses also represents a threat to student safety. Two high-profile firearm violence cases have occurred on college campuses in Arizona, most notably the 2015 shooting at Northern Arizona University and the 2022 shooting of a University of Arizona professor by a former student known to be a threat.

Analysis of School Shootings in the United States

All fifty U.S. states and Washington D.C. have had a school shooting. The severity and loss of life varies tremendously, from a low of two in Wyoming to a high of 225 in California (Fig. 72).

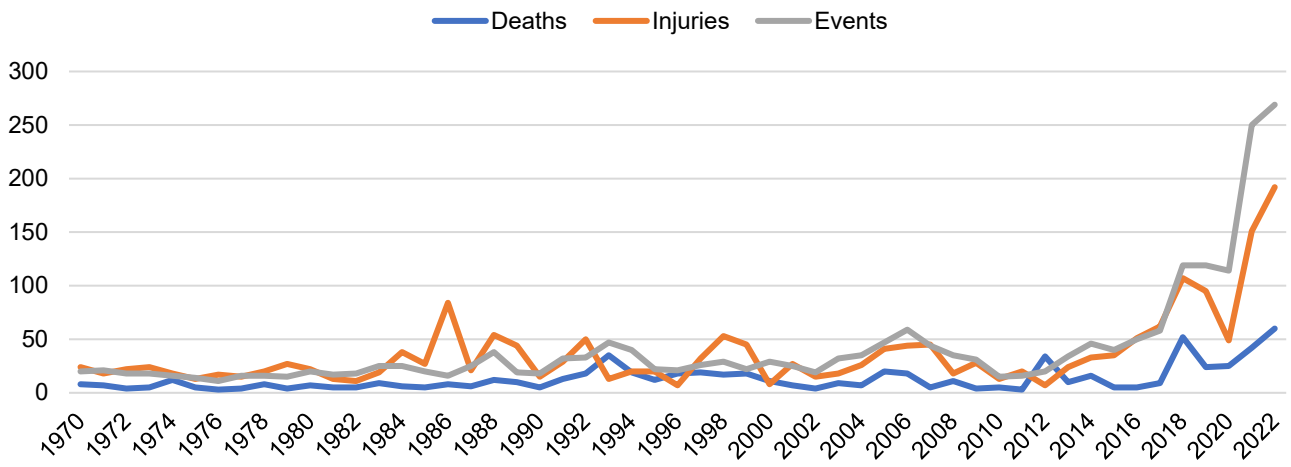
Figure 72. Location of School Shootings in the U.S., January 1970-November 2022



Not shown: HI 3, MA 23, CT 23, RI 7, NJ 21, MD 65, DE 12, DC 36

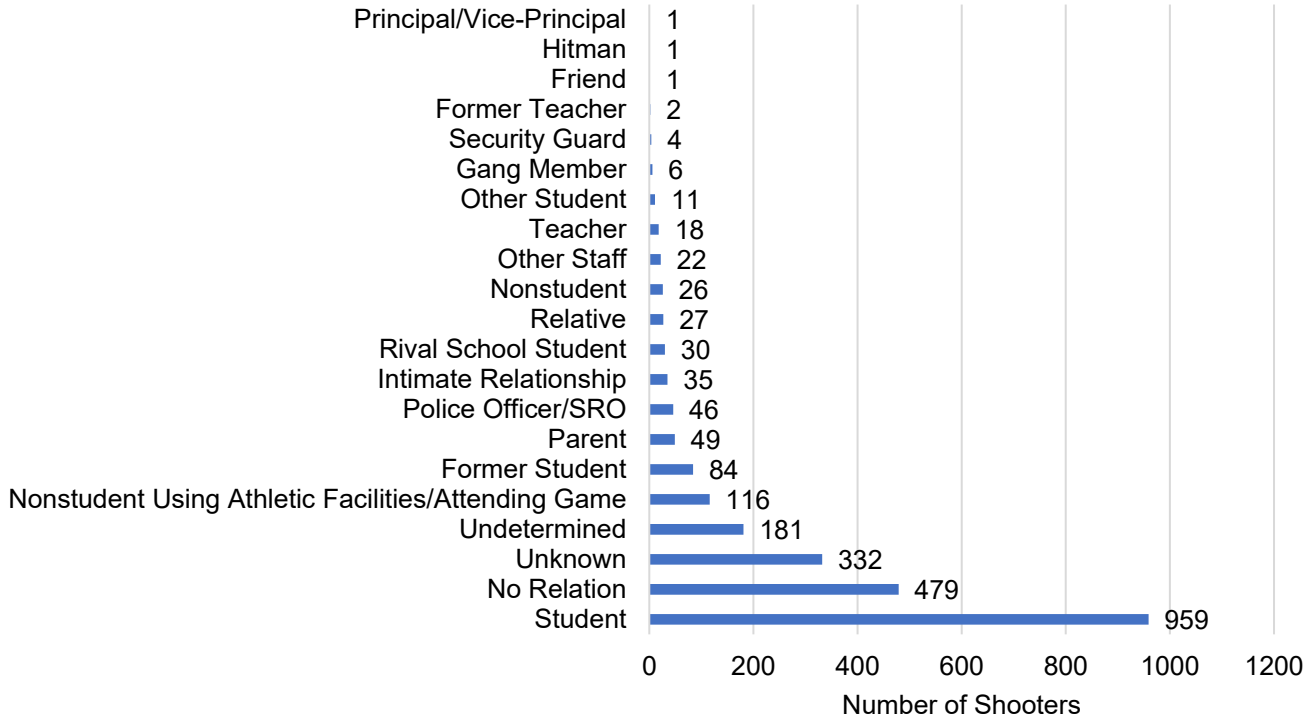
From 1970 until November 2022, there have been 2,184 school shootings across the United States. During that 52-year period, school shooting incidents increased some 1,400% and since 2011, have been increasing by 30% per year (Fig. 73). The first three years of the 2020s have already seen more school shootings than the entire preceding decade. As of November, 2022 had already become the deadliest year yet for school shootings, with 60 deaths across 269 events.

Figure 73. Deaths, Injuries, and Incidents of School Shootings in the U.S., 1970-2022



The K-12 School Shooting Database has tracked 2,430 shooters for 2,184 shootings (in some cases, there is more than one perpetrator for a shooting), of which 78.9% have known affiliations (or lack thereof) to the school in question. As seen in Figure 74, the majority of school shooters are current students (42.6%) or have no relation to the school (21.3%).

Figure 74. Affiliation of U.S. School Shooters to the School January 1970 to November 2022



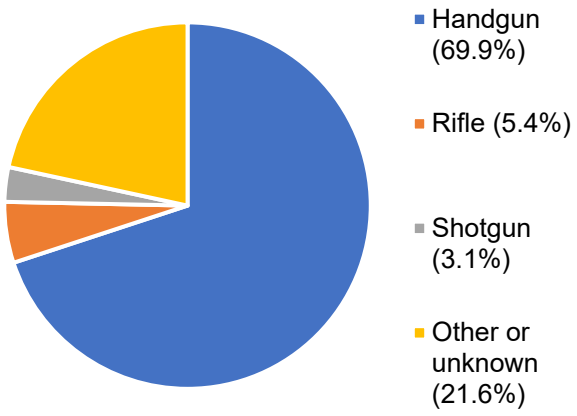
As shown in Table 19, the most common circumstances surrounding a school shooting were an escalation of a dispute (34.5%), and accidental firing of the weapon (9.9%). Indiscriminate shootings make up 4.8% of school shootings, including shootings such as those at Robb Elementary School in Uvalde, Texas (2022); Sandy Hook Elementary School in Newtown, Connecticut (2012); and Columbine High School in Littleton, Colorado (1999).

When they occurred, these indiscriminate shootings represent the deadliest types of school shootings, with 147 victims killed in 105 shootings. The next deadliest types of school shootings are murder-suicides (18 victims killed in 25 shootings), psychosis (25 victims killed in 35 shootings), and bullying (21 victims killed in 35 shootings). 12.8% of entries lacked a categorization of the type of situation.

Table 19. Circumstances of U.S. School Shootings 1970 – June 2022

Circumstances	Incidence	Percent
Escalation of Dispute	753	34.5%
Accidental	216	9.9%
Undetermined	201	9.2%
Drive-by Shooting	155	7.1%
Suicide/Attempted	148	6.8%
Illegal Activity	142	6.5%
Indiscriminate Shooting	105	4.8%
Domestic w/ Targeted Victim	94	4.3%
Unknown	78	3.6%
Anger Over Grade/Suspension/Discipline	58	2.7%
Intentional Property Damage	55	2.5%
Hostage/Standoff	50	2.3%
Bullying	35	1.6%
Psychosis	35	1.6%
Murder/Suicide	25	1.1%
Racial	14	0.6%
Self-defense	11	0.5%
Officer-Involved Shooting	9	0.4%

Figure 75. Type of Weapon Used in U.S. School Shootings, January 1970 - November 2022



As seen in Figure 75, the most common type of weapon used during school shootings in the U.S. were handguns, but 17% of the entries were categorized as "No Data," "Unknown," "Undetermined," or "Multiple Unknown," signaling the need for more comprehensive research funding, which is important to better categorize the details of school shootings. Despite not being the most common weapon used in school shootings, a 2017 study found that assault weapons bans decreased the number of school shooting victims by 54.4%.[75] As the figure shows, the majority of school shootings are carried out with a handgun; another study found that an assault weapon was the confirmed gun in 9.0% of school shooting incidents, and that the average number of victims killed was higher with assault weapons.[76]

MASS SHOOTINGS

While definitions vary, mass shootings are most commonly defined as instances in which four or more individuals are shot. As with school shootings, mass shootings in the United States receive a significant amount of media attention even though they are not nearly as common as other types of gun violence. In fact, they represent just 1% of gun deaths in the country (Everytown, 2018). From 2014-2020, 2,015 Arizonans were killed in firearm homicides and 5,378 in firearm suicides; during the same period, 48 Arizonans died in mass shootings. Nevertheless, the impact of mass shootings, including school shootings, are far-reaching, not only due to the loss of human life, but also for the surrounding community's mental health and solidarity.

KEY POINTS

- There were 691 mass shootings (with four or more people injured or killed) in the United States in 2021, amounting to approximately 13 per week.
- Between 2014 and 2022, there were 47 mass shootings in Arizona, causing 78 deaths and 182 injuries.
- 67% of mass shootings occur in private homes, and many are linked to domestic violence.
- 2022 was one of the deadliest years on record for mass shootings in the U.S., with 647 events, 676 deaths, and 2,698 injuries.

Methodology

There are multiple definitions of mass shootings. The leading databases classify mass shootings in different ways, some classifying mass shootings by the number of people killed, others by the number shot. The four databases described below will be the primary sources used in this report for analyzing mass shootings in Arizona and the United States.

The Gun Violence Archive's (GVA) Mass Shooting Database focuses on shootings, both fatal and nonfatal, in the same general area that involve four or more individuals (not including the perpetrator). The database spans back to 2014 and is updated daily. The database does not exclude shootings related to underlying criminal activity and thus seeks to collate all circumstances in which there are at least four people shot in one general area. For this report, the database was exported in early December 2022, and has complete data through the end of November 2022. This database includes many more shootings than other similar mass shooting databases because it includes both fatal and nonfatal shootings. Nonfatal shootings are an important inclusion because, as is detailed in the economic analysis section of this report, survivors of gun violence face many obstacles—financial, medical, psychological, etc.—after living through such violence. Therefore, it will be used as the primary data source for analyzing national trends.

The Violence Project's Mass Shooter Database uses the Congressional Research Service's definition of a mass shooting:

> "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 commonplace circumstance (armed robbery, criminal competition, insurance fraud, argument, or romantic triangle)."

This database is particularly helpful in determining the deadliest mass shootings since the database only catalogues events which claim the lives of four or more victims, not just where four or more individuals are shot. Essentially, it captures mass murders, rather than only mass shootings. It is also particularly helpful in showing events with indiscriminate shootings rather than gang-related violence, domestic disputes, and other "underlying criminal activity." The database compiles all cases of mass public shootings from 1966, providing not only details of the shooting event, but also details about the community-level socio-ecological factors and the shooter's past mental health, intentions, and situational triggers. In this report, this database will only be used to characterize public mass shootings in Arizona spanning back 55 years, of which there are only three registered in the database.

The Associated Press (AP), USA Today, and Northeastern University (NU) mass killing database (AP/USATODAY/NU) catalogues all intentional mass killing events with four or more deaths (excluding an unborn child and the offender) by any method within a 24-hour period. This includes non-firearm mass killing events such as drownings, stabbings, smoke inhalation, blunt force, asphyxiation, and vehicle crashes. The database includes events in the U.S. from 2006. Data was initially collected through the FBI's Supplementary Homicide Reports and verified using other media and official supplemental sources. Use of this database will be reserved for analysis of specific characteristics of mass shootings, including demographic information about and relationships between the perpetrator and victims, weapons used, and the location of such shootings. Unless specified, data for this section were extracted on November 26, 2022.

Table 20. Summary of Definitions for Mass Shooting Databases

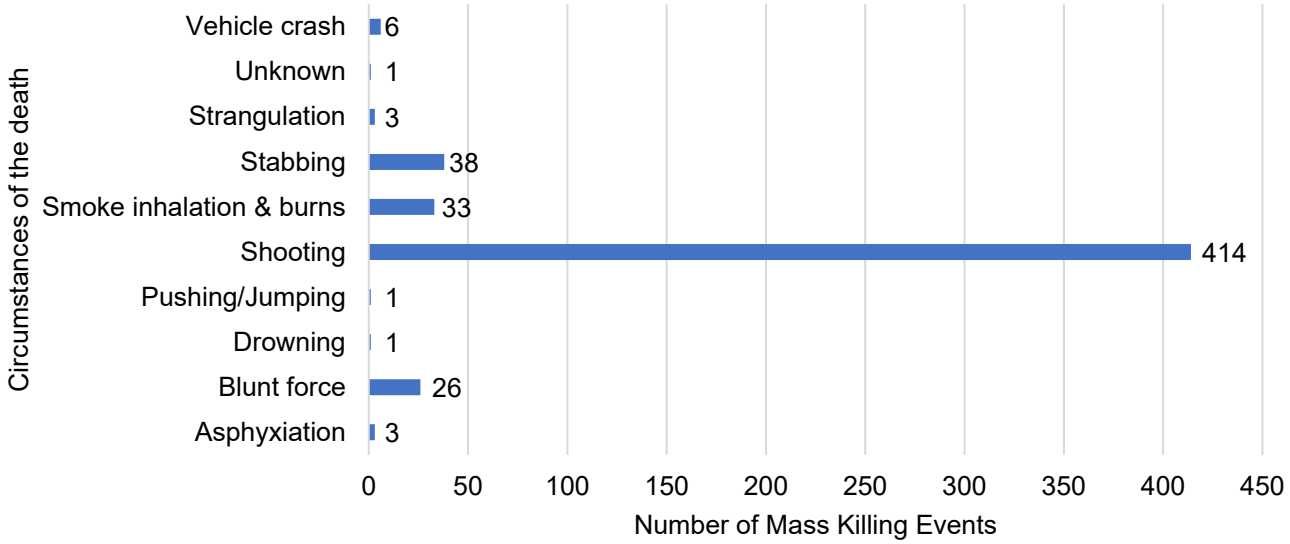
Database name	Fatal or Nonfatal	Method	Definitions
Gun Violence Archive (GVA) Mass Shooting Database	Fatal and Nonfatal	Firearm	**Mass shooting:** "Four or more shot and/or killed in a single event [incident], at the same general time and location not including the shooter." **Dates:** January 2014 to present
Violence Project Mass Shooter Database	Fatal only	Firearm	**Mass shooting**: "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 commonplace circumstance (armed robbery, criminal competition, insurance fraud, argument, or romantic triangle)." **Dates:** 1966 to present
Associated Press (AP), USA Today, and Northeastern University (NU) Mass Killing Database (AP/USATODAY/NU)	Fatal and Nonfatal	Any	**Mass murder**: "intentional killing of four or more victims—excluding the deaths of unborn children and the offender(s)—by any means within a 24-hour period." **Dates:** January 2006 to present

Table 20, above, provides a summary of the definitions used by the three databases used for this report. The majority of the analysis is derived from the GVA and AP/USATODAY/NU databases. Throughout this analysis, unless otherwise noted, a mass shooting will be defined as an instance during which four or more individuals (other than the perpetrator) are killed by a firearm.

Analysis of Mass Shootings in the United States

Between 2006 and 2022, there were 526 recorded mass killing events in the United States, 79% (414) of which were mass shootings (Fig. 76).

Figure 76. Type of Weapon Used in Mass Killings* in the United States, 2006-2022 (AP/USATODAY/NU)

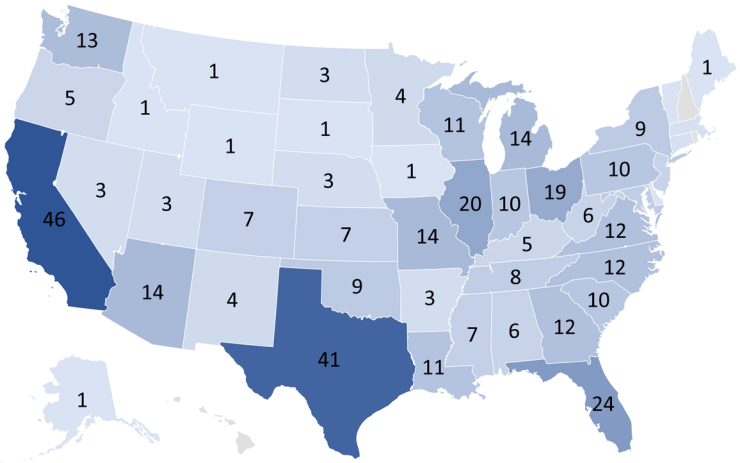


*Mass killing: intentional killing of four or more individuals (excluding the perpetrator) by any method

With the exception of Hawaii, New Hampshire, and Rhode Island, every state and the District of Columbia has had a mass shooting event with four or more individuals killed between 2006 and 2022 (Fig. 77). According to Everytown for Gun Safety, Hawaii ranks second in the nation for gun law strength. The state has a low firearm ownership rate (9%), requires background checks, concealed carry permits, and secure storage (locked and unloaded).

Figure 77 shows the concentration of deadly mass shooting events across the country.

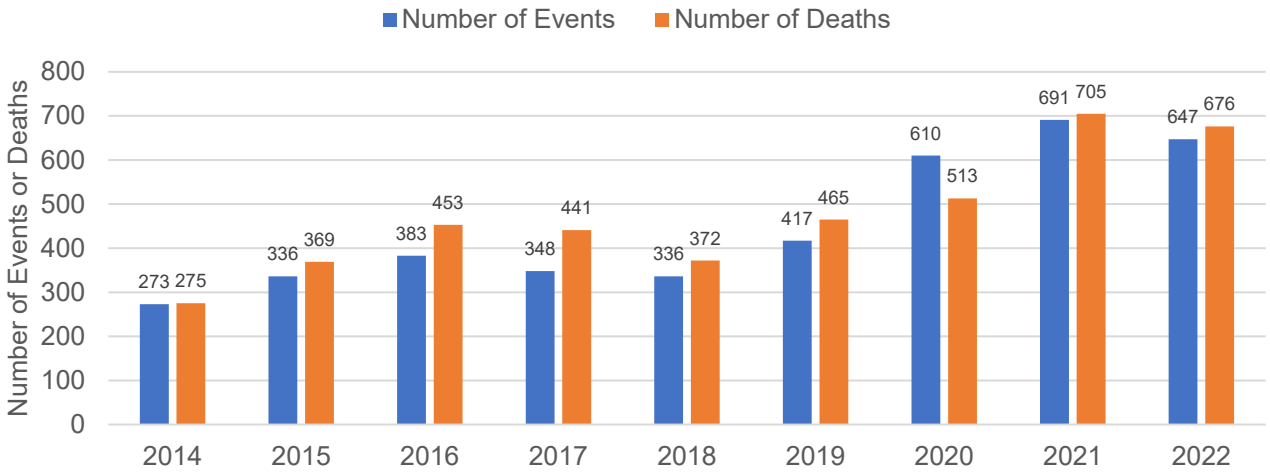
Figure 77. Concentration of Mass Shooting Events,*
2006-2022 (AP/USATODAY/NU)



Not shown: HI 0, MA 2, VT 1, CT 2, RI 0, NJ 6, NH 0, MD 8, DE 1, DC 2
*Mass shooting event: four or more individuals (excluding the perpetrator) are **killed** by a firearm

As shown in Figure 78, mass shootings are increasing nationally. Between 2014 and 2022, mass shootings have increased by 153%. Additionally, even though the data for 2022 only includes the first 11 months of the year, it has surpassed all other years in the number of deaths from mass shooting events.

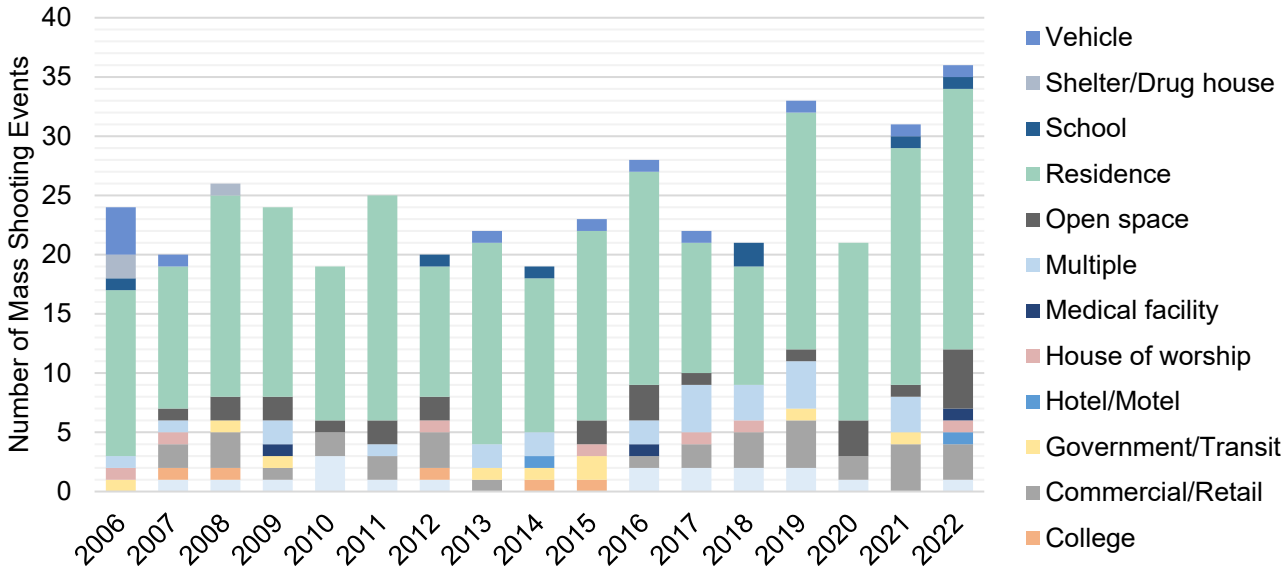
Figure 78. Mass Shooting Events and Deaths,
2014-2022 (Gun Violence Archive)



*Mass shooting event: four or more individuals (excluding the perpetrator) are **injured or killed** by a firearm

An analysis of all mass shootings with more than four deaths from January 2006 until November 2022 highlights the fact that the vast majority (67.3%) of deadly mass shootings occur in a private residence (Fig. 79).

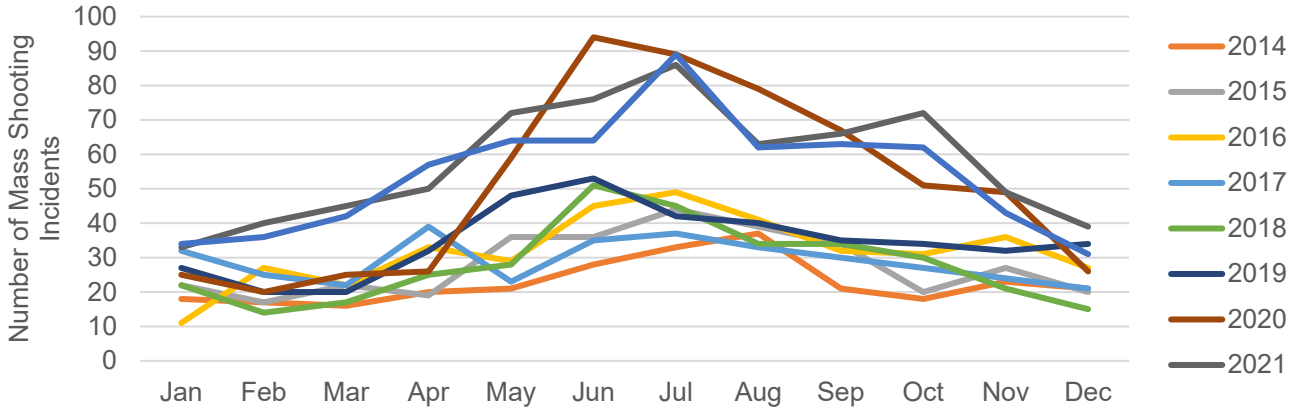
Figure 79. Mass Shooting Events in the United States by Location Type, 2006-2022 (AP/USATODAY/NU)



*Mass shooting: four or more individuals (excluding the perpetrator) are **killed** by a firearm

As seen in Figure 80, mass shootings between 2014 and 2020 tended to peak in the summer months (June-August) while the fewest shootings always occurred in the winter months (December-March). An analysis by the New York Times (2018) found that approximately twice as many individuals in Chicago are shot when it is hot outside than when it's cold. One potential explanation may be that people spent more time outside when it's warm, creating more social interactions. Furthermore, children are typically not in school during the summer, removing the refuge that is typically afforded to them during the school year.

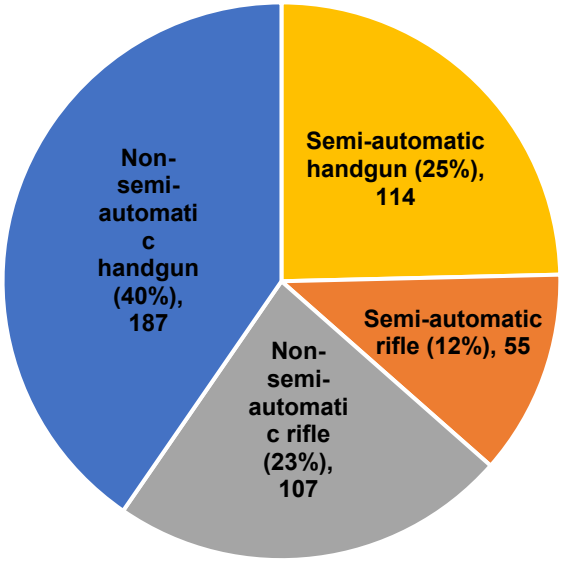
Figure 80. Mass Shootings* in the United States, January 2014 to November 2022 (Gun Violence Archive)



*Mass shooting event: four or more individuals (excluding the perpetrator) are **injured or killed** by a firearm.

Mass shootings are not inevitable. Semi-automatic weapons are used in 37% of mass shootings where the type of gun was identified (Fig. 81). Some of these semi-automatic firearms include assault weapons, which cause an outsized death toll in mass shootings. The Federal Assault Weapons Ban (FAWB), which was in effect from 1994 until 2004, had a significant impact on mass shootings during the time in which it was in effect. The federal law banned the manufacture and sale of specific assault semiautomatic firearms and specific large-capacity magazines. In doing so, the FAWB led to a significant drop in public mass shootings, gun deaths, and gun injuries.[77] The same study estimates that if it hadn't expired in 2004, the FAWB could have prevented 30 public mass shootings, 339 deaths, and 1139 injuries. Another study found that state assault weapon bans significantly reduced mass shooting deaths.[78]

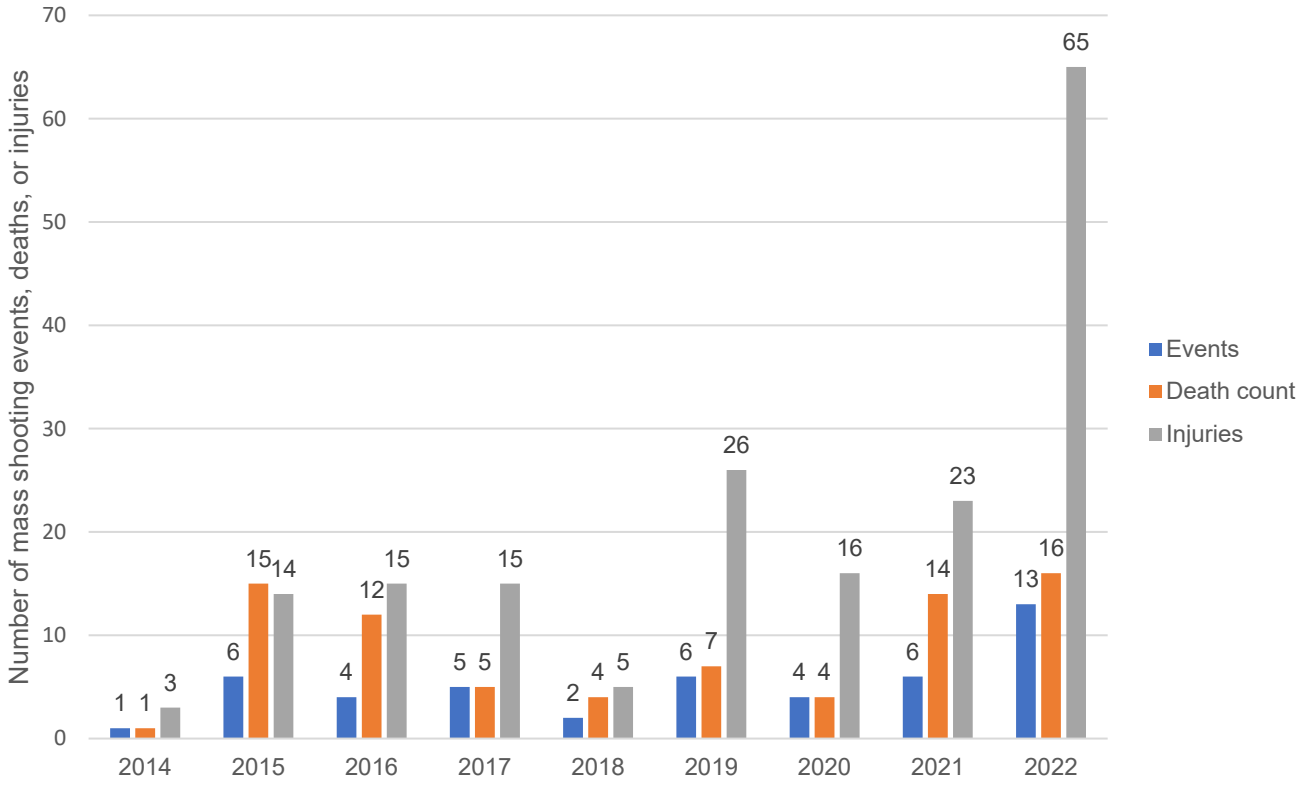
Figure 81. Weapon Types* Used in Mass Shootings in the U.S., 2006 - 2022 (AP/USATODAY/NU)



Analysis of Mass Shootings in Arizona

Between 2014 and 2022, there were 47 mass shootings in Arizona, causing 78 deaths and 182 injuries. To put this into perspective, there were 7,673 firearm-related deaths in Arizona from 2014-2020. This means that mass shootings represented just 1% of all firearm deaths. This suggests that the ever-present media reports of deaths in Arizona due to mass shootings just begin to scratch the surface of the scope of firearm violence. Mass shootings in Arizona have appreciably risen in 2022 (Fig. 82). In 2022, there were 13 mass shootings in the state, which surpasses the total number of mass shootings in the previous two years combined (6 in 2021, 4 in 2020).

Figure 82. Mass Shooting Events, Deaths, and Injuries in Arizona from 2014 - 2022 (Gun Violence Archive)



According to the Violence Project's Mass Shooter Database, Arizona has had three *public* mass shootings with four or more deaths since 1966. This includes one shooting in 1966 at the Rose-Mar College of Beauty in Mesa, AZ (5 deaths, 2 injuries); a 1992 shooting in Phoenix (4 deaths, 0 injuries); and a 2011 shooting at a constituent meeting with Representative Gabby Giffords (6 deaths, 13 injuries). All three perpetrators used a handgun and were either sentenced to death or life in prison without the possibility of parole.

However, these public shootings do not paint the full picture of mass shootings in Arizona because most mass shootings occur in private homes where the victims are known by the shooter. The number of private shootings is far greater than the aforementioned public shootings, but data for private shootings only spans back to 2006 (Fig. 83). The AP/USATODAY/NU database compiles information on not only mass shootings, but also mass death situations by lethal means other than a firearm.

Figure 83. Mass Shootings by Location in AZ, 2006 - 2022 (AP/USATODAY/NU)

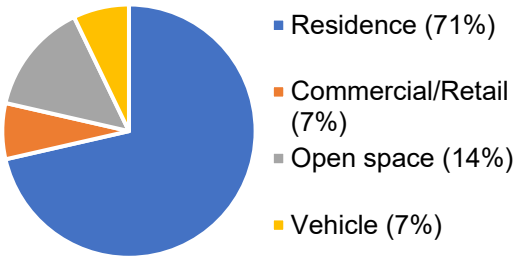


Table 21. Relationship Between Mass Shooters and their Victims, 2006 – 2022 (AP/USATODAY/NU)

Relationship between Shooter and Victim	Deaths in AZ	Deaths in U.S.
Acquaintance	6	93
Child or stepchild	3	345
Co-worker or employer	3	110
Dating relationship	1	30
Ex-dating relationship	1	34
Ex-spouse	2	25
In-law	1	56
Individual with some non-blood/marriage relationship to a known person	10	114
Neighbor	4	118
Niece/Nephew	1	44
Other	1	64
Parent or stepparent	5	90
Random bystander/stranger	8	708
Relative of a known person	4	184
Sibling	5	74
Spouse	1	72
Undetermined	7	231
Total	**63**	**2863**

Of the 17 mass killing events identified in Arizona between 2006 and 2022, 82% (14) were shootings. 50% (7) of the shootings were family-related and 71% (10) took place at a residence. 57% (8) were murder-suicides and 100% (12) of the known shooters were males (two cases remain unsolved). The most commonly used weapon was a handgun, which was used in 64% (9) of the mass shootings; five of these handguns were known to be semiautomatic weapons. 71% (10) of mass shootings in Arizona were at a residence, which is comparable to the national percentage of deaths at a residence (67%) (Fig. 83).

As seen in Table 21, a majority of victims knew and/or had a relationship with their shooter. This is in line with an Everytown Research & Policy report, which found that intimate partner or family violence was involved in 72% of the instances in which children and teens were killed in mass shootings.

FINANCIAL COST OF FIREARM VIOLENCE

As detailed in previous sections, firearm injury and mortality in Arizona cause a tremendous loss of human life resulting in tragedy for many individuals and family members. The loss of human life cannot truly be quantified, but it is possible to estimate some of the costs associated with severe injury and loss of life.

Two sources of data will be utilized in this section to characterize the economic burden of firearm violence: CDC estimates of the cost of firearm mortality in 2020 and estimates by Everytown Research & Policy of the cost of both firearm injury and mortality in 2019, which use CDC mortality data from 2019.

KEY POINTS

- The statewide cost of fatal and nonfatal gun injury was almost $16 billion in 2019.
- The financial cost of fatal and nonfatal gun violence in Arizona was $2,180 per capita in 2019.
- Homicides cost Arizona $4.45 billion in 2020.
- Suicides cost Arizona $8.03 billion in 2020.
- In 2019, the cost of fatal and nonfatal firearm injuries in Arizona was over 4% of the state's annual GDP.

CDC Estimates of the Costs of Fatal Firearm Violence

CDC WISQARS publishes a cost of injury analysis which estimates, among other things, the cost of fatal firearm injuries via medical costs and the value of a statistical life. Figure 84 shows the value of a statistical life lost due to firearm deaths in Arizona. The value of a statistical life (VSL) is the cost of death prevention. VSL estimates vary by decedent age, ranging from several hundred thousand dollars to more than 15 million dollars. These data show that Arizonans pay a particularly large economic cost due to firearm mortality, specifically due to suicide and homicide firearm deaths. In 2020, the value of statistical life due to firearm suicide was over $8 billion. When comparing the per capita estimations of the cost of firearm suicide VSL in Arizona and the United States, it becomes clear that Arizona had a 50% increase in financial burden when compared to the national average ($1,080.87 in AZ vs. $724.09 in the U.S.).

Figure 84. Total Value of Statistical Life due to Firearm Mortality in Arizona, 2020 (Source: CDC WISQARS)

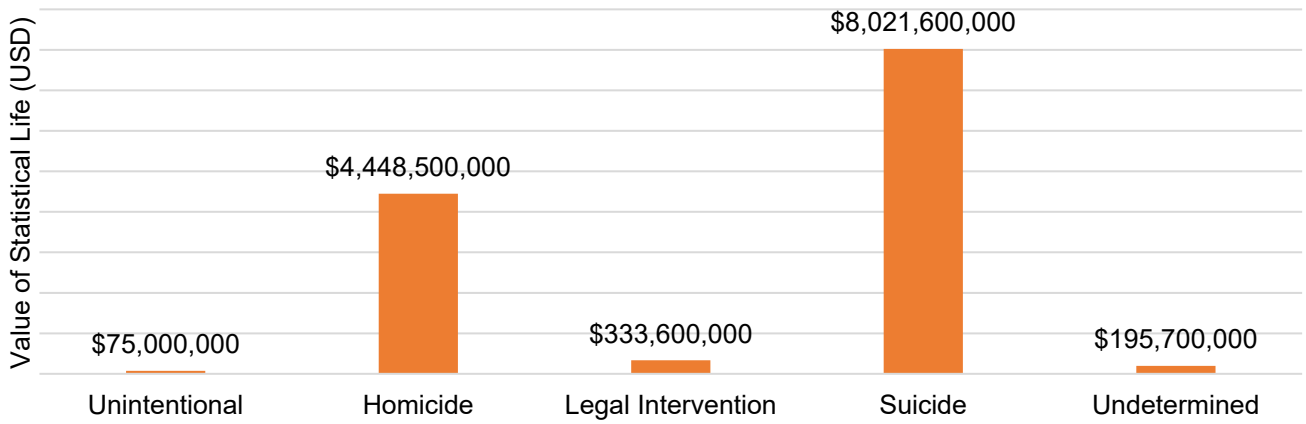
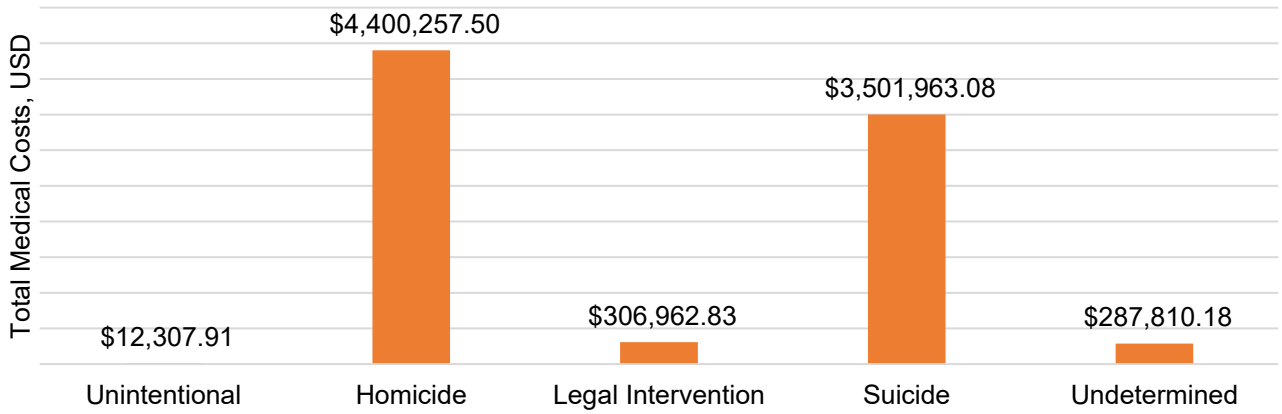


Figure 85 shows the 2020 medical costs in Arizona due to firearm mortality. These costs reflect the medical care provided due to a fatal gunshot. The highest contributors were from homicides ($4.4 million) and suicides ($3.5 million). Cumulatively, in Arizona in 2020, these medical costs totaled over $8.5 million.

Figure 85. Total Medical Costs due to Firearm Deaths in AZ, 2020
(Source: CDC WISQARS)



Everytown Research & Policy Estimated Costs

While the CDC also estimates the economic cost of nonfatal firearm injuries, it is important to note that these costs are underestimates because costs do not include non-medical costs such as property damage and proceedings in the criminal justice system.[79] Alternatively, Everytown provides estimates for both fatal and nonfatal firearm injuries, the latter of which includes significant loss of work costs. These may include non-medical costs due to firearm injury, including absenteeism. While data at the state level are not available, Everytown has estimated that "injuries and deaths from gun violence lead to $53.8 billion in work loss for victims, their families, and, in the case of assaults or homicides, for perpetrators."

The economic consequences of fatal and nonfatal firearm injuries permeate into the whole of society through direct, indirect, and intangible costs (Everytown, 2022). Direct costs include factors such as emergency transport costs, employer costs due to productivity loss, mental healthcare costs, medical care costs, and police costs, and criminal justice costs. Indirect costs include work-loss costs due to loss of work, caregiving, housekeeping for both perpetrators and survivors. Finally, intangible costs include the lost quality of life, which measures the economic losses due to permanent disability or premature death. Drawing from these three categories, Everytown calculated the national cost of gun violence by multiplying the cost of injury (based on age, sex, and severity) by the number of injuries and deaths. This figure was estimated to be $557 billion a year, which is equivalent to $35 million per day. According to Everytown Research and Policy, Arizona ranks 17th for cost of gun violence (fatal and nonfatal injuries). In 2019, this cost totaled $15.9 billion or $2,180 per capita.

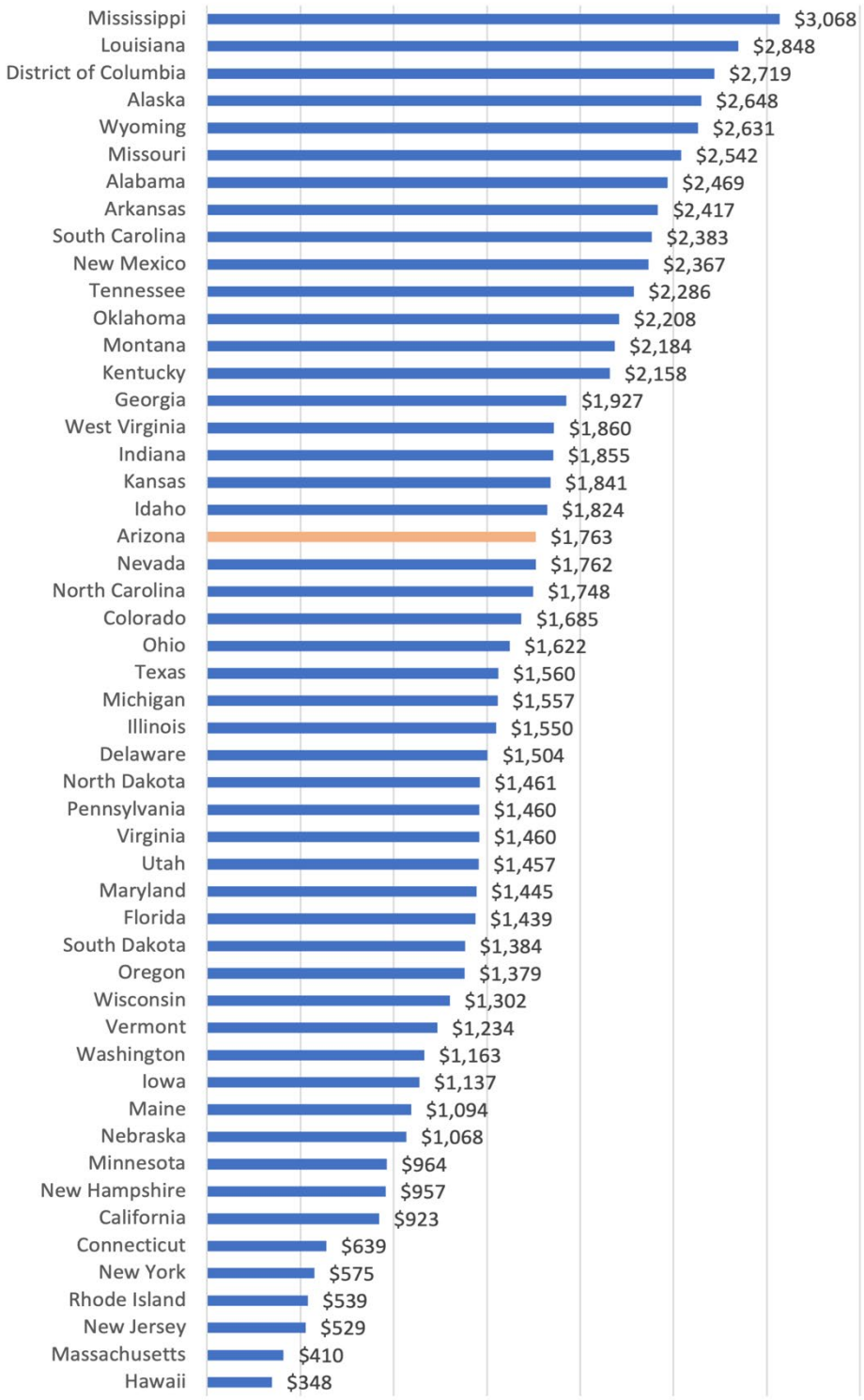
In 2019, Everytown for Gun Safety completed an evaluation of the economic costs of gun violence nationally and for every state, providing estimates for the share paid for by the government and society as well as the injury intent (i.e., all firearm injuries, firearm homicide and assault (including shooting by police), firearm suicide and attempts, and firearm injuries with no known intent). Table 22 shows the estimates for the economic cost of gun violence by intent and payer.

Table 22. Economic Cost of Fatal and Nonfatal Gun Violence in 2019, Arizona and the U.S. (Source: Everytown)

Location	Intent	Payer	Total Cost	Per Capita
Arizona	Firearm Homicide and Assault (including Shooting by Police)	Govt	$224,711,378	$31.00
	Firearm Suicide and Attempts	Govt	$19,294,711	$3.00
	Firearm Injuries with No Known Intent	Govt	$9,225,185	$1.00
	All Firearm Injuries	Govt	$253,231,274	$35.00
	Firearm Homicide and Assault (including Shooting by Police)	Society	$3,882,728,298	$533.00
	Firearm Suicide and Attempts	Society	$11,351,393,081	$1,560.00
	Firearm Injuries with No Known Intent	Society	$634,598,558	$87.00
	All Firearm Injuries	Society	$15,868,719,937	$2,180.00
United States	Firearm Homicide and Assault (including Shooting by Police)	Govt	$11,491,732,754	$35.00
	Firearm Suicide and Attempts	Govt	$591,101,215	$2.00
	Firearm Injuries with No Known Intent	Govt	$542,163,273	$2.00
	All Firearm Injuries	Govt	$12,624,997,241	$38.00
	Firearm Homicide and Assault (including Shooting by Police)	Society	$195,476,587,731	$596.00
	Firearm Suicide and Attempts	Society	$336,509,322,115	$1,025.00
	Firearm Injuries with No Known Intent	Society	$25,255,054,151	$77.00
	All Firearm Injuries	Society	$557,240,963,997	$1,698.00

Overall, the economic impact of firearm injury and mortality in Arizona is tremendous. Figure 86 puts into perspective these costs. CDC analyses report that Arizona is ranked 20th for the per capita burden of medical costs due to firearm mortality. Analyses from Everytown suggests that Arizona experienced a total societal cost of almost $16 billion in 2019, which totals about 4.3% of Arizona's total GDP (Federal Reserve Economic Data, 2019). Addressing firearm injury would save the Arizona government and taxpayers from paying for the deaths and injuries of over one thousand Arizonans every year.

Figure 86. Per Capita Costs of Fatal Firearm Injuries in 2020 by State (Source: CDC WISQARS)



GUN VIOLENCE PREVENTION LAWS & POLICIES

As previously noted in this report, there have been over 30,000 articles published over the past four decades that referred to guns or firearms during which time over 1.4 million Americans (as well as 35,000 Arizonans) lost their lives due to firearms. Unfortunately, rigorous methodological research on specific policies to prevent or reduce firearm violence has been limited (Smart, 2020), largely due to a lack of federal funding. A rider to the 1996 federal omnibus spending bill (Dickey Amendment) supported by the NRA mandated that "none of the funds made available for injury prevention and control at the CDC may be used to advocate or promote gun control."[80] As a result, CDC funding for research on gun violence declined by 96% which also resulted in fewer researchers entering or remaining in this field.[9] In 2012, the Dickey Amendment was extended to the National Institutes of Health (NIH). A compromise wasn't reached until the passage of a 2018 federal spending bill that allowed federal funding for research on the causes of gun violence, but restrictions still remain regarding advocacy for or promotion of gun control.[81,82] The FY2020 federal spending bill included $25 million for CDC and NIH for research on preventing firearm deaths, the first such funding since 1996.

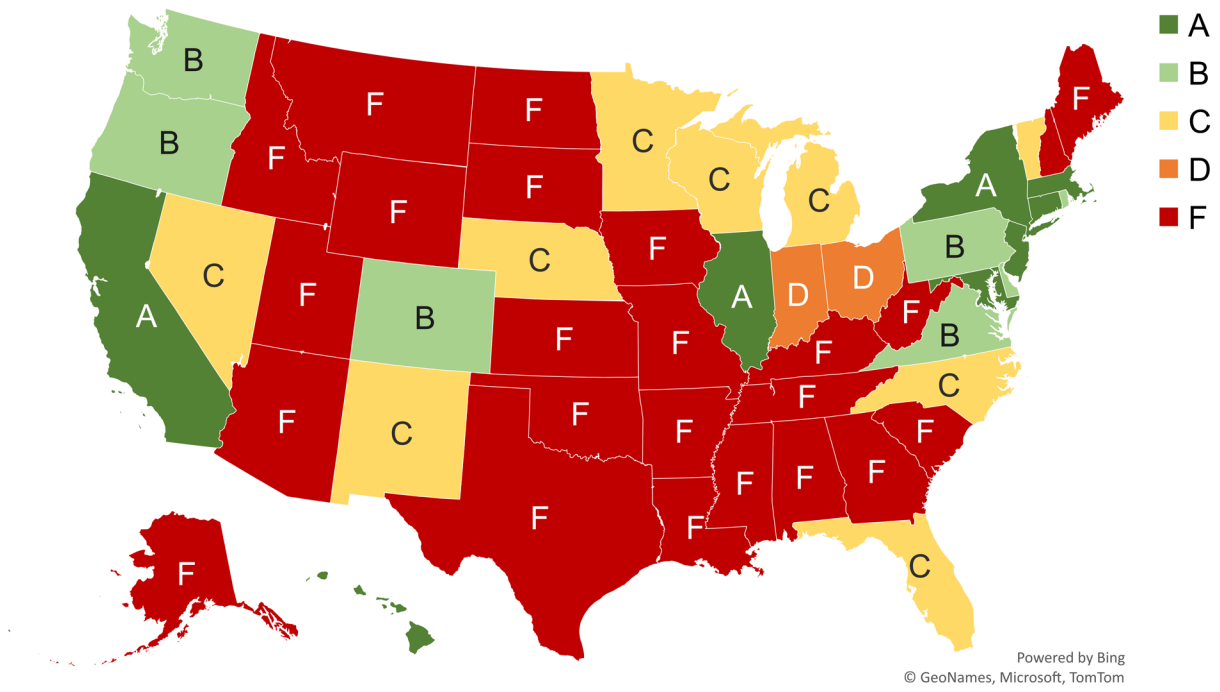
This section will address three aspects of gun violence prevention laws: (a) how states compare in their gun law policies; (b) how firearm mortality rates compare among states with the least restrictive gun laws versus the most restrictive gun laws; and (C) most importantly, findings from research and reviews on the effectiveness of specific categories of gun laws.

Evaluations, Rankings, and Numbers of Gun Laws Among States

Multiple organizations have evaluated, categorized, and/or listed key gun law policies in every state. Here we will focus on three organizations: the Giffords Law Center, Everytown Research & Policy, and the Boston University School of Public Health State Firearm Laws database.

Giffords Law Center has ranked states on key gun laws since 2010. A letter grade (A through F) is assigned to each state based on the strength of its gun laws using multiple criteria. In 2013, four states received an A rating while 25 received an F rating. In 2021, eight states received an A grade and 24 states an F grade. Giffords notes that 27 states and DC passed 75 gun safety bills such as improved background checks, while 19 states passed laws that weakened gun safety such as allowing permitless carry. In 2021, Giffords ranked California 1st in the nation on the strength of its gun laws and Arkansas 50th. Among the 50 states, Arizona has consistently ranked at or near the bottom of states with a failing grade, ranking between 42nd (in 2021) and as low as 50th depending on the year. Figure 87 and Table GL1 show the letter grade rating of each of the states.

Figure 87. Giffords Ratings of State of Gun Laws from Strongest (A) to Weakest (F), 2021 (Giffords Law Center)



Everytown develops a composite score for each state based on 50 key gun safety measures. States are then further categorized into five groups in descending order of the strength of their gun laws: National Leaders (8 states), Making Progress (10 states), Missing Key Laws (9 states), Weak Systems (9 states), and National Failures (14 states, including Arizona). Figure 88 shows Everytown's rating score and category for each state. Ratings scores varied from 86.5 (California) to a score of 3.0 (Mississippi, which also has the distinction of having the highest total firearm mortality rate and the highest firearm homicide rate). Arizona earned a score of 8.5. Everytown presents its ranking along with rates of firearm deaths during 2016-2020 for each state as well as for each of the five categories of gun laws.

Table 23 shows a comparison of which states fall into each of the five ratings categories for both Giffords and Everytown based on the collective strength and weakness of their gun laws according to their specified criteria. Both organizations give their highest ratings to the same eight states, and both assign their two lowest categories to almost half the states. Both organizations provide evaluations of each state's laws and make legislative recommendations.

Figure 88. Everytown State Gun Law Rating Scores Based on 50 Key Gun Policies (Everytown Research)

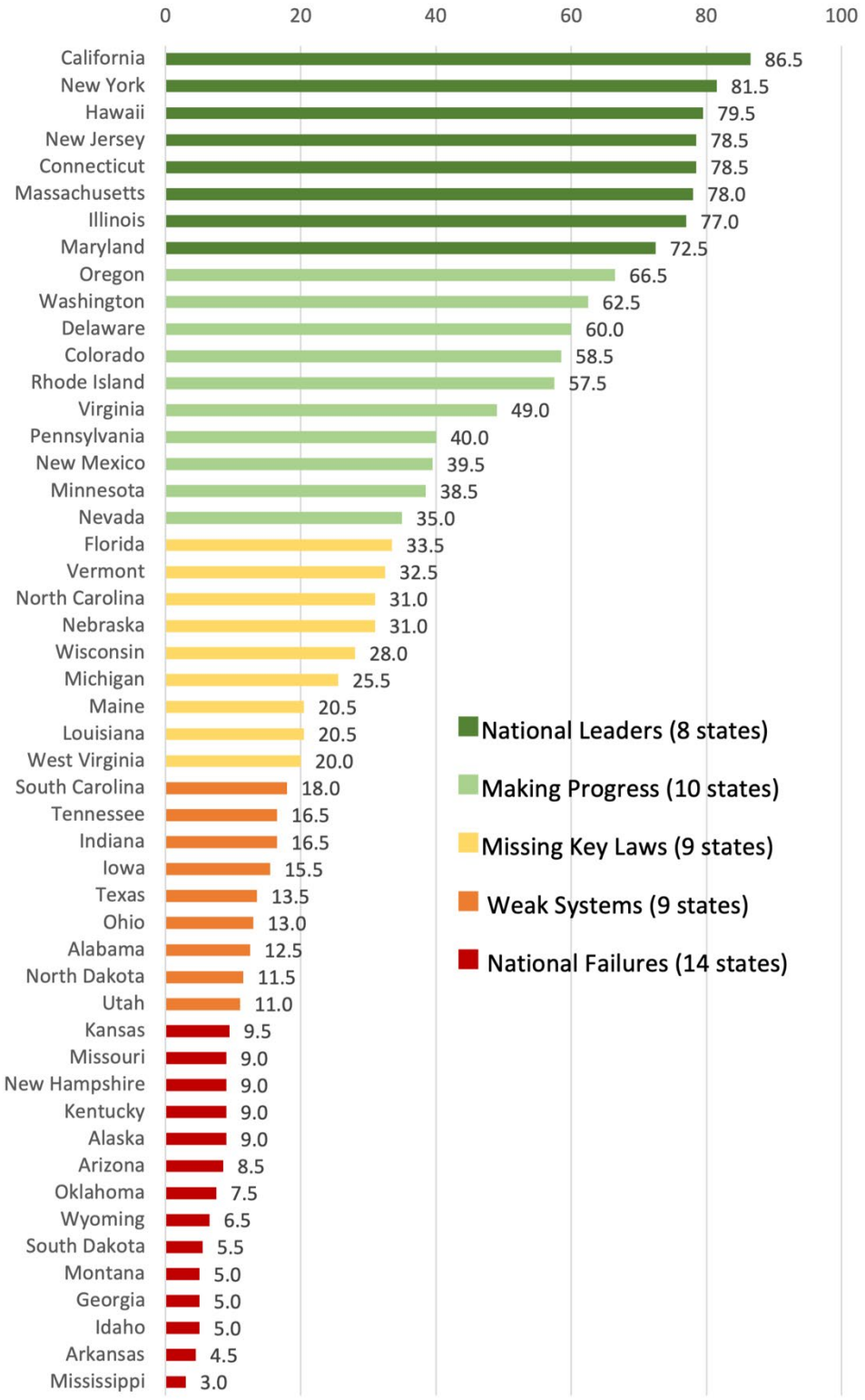
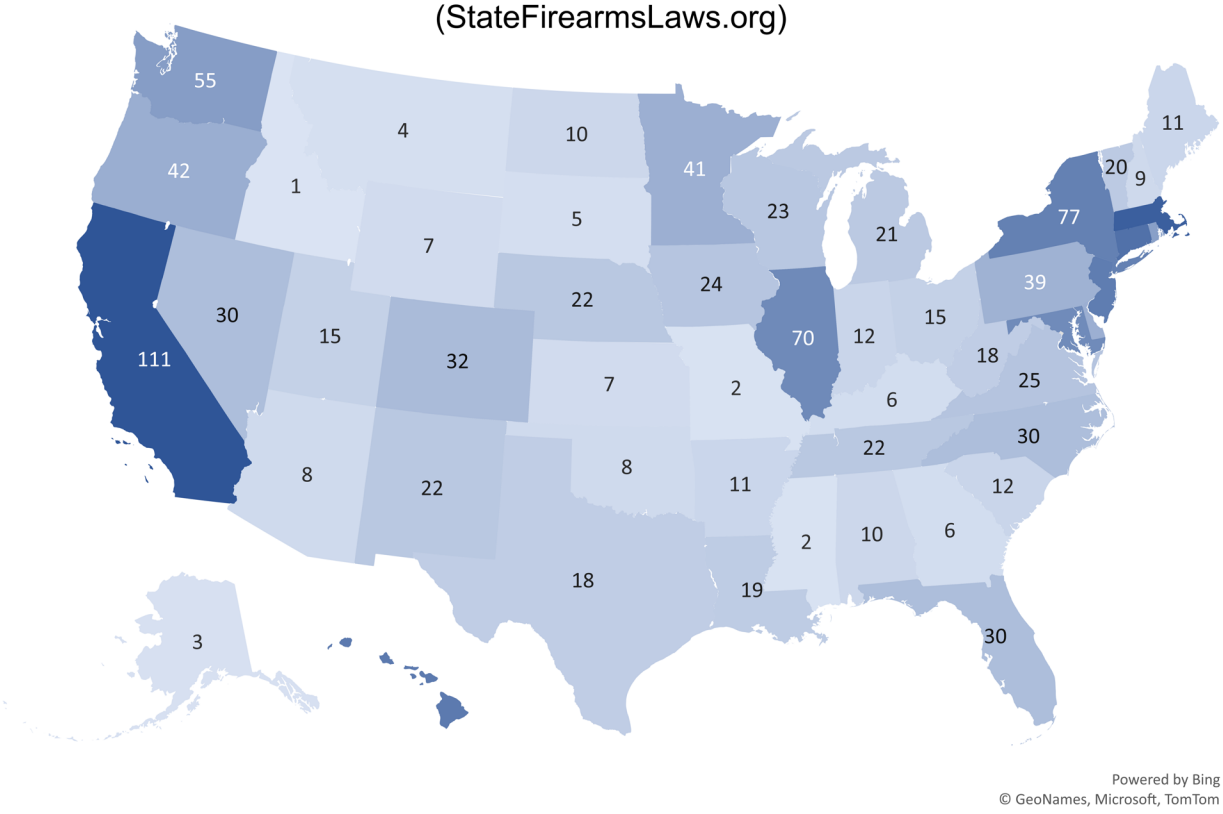


Table 23. State Ratings of the Strength of Gun Laws by Two Organizations: Giffords Law Center and Everytown Research & Policy.

Giffords Law Center (2021)			Everytown Research & Policy (2023)		
Gun Law Rating	**State**		**Gun Law Rating**	**State**	
A	California Connecticut Hawaii Illinois	Maryland Massachusetts New Jersey New York	**National Leaders**	California Connecticut Hawaii Illinois	Maryland Massachusetts New Jersey New York
B	Colorado Delaware Oregon Pennsylvania	Rhode Island Virginia Washington	**Making Progress**	Colorado Delaware Minnesota Nevada New Mexico	Oregon Pennsylvania Rhode Island Virginia Washington
C	Florida Michigan Minnesota Nebraska Nevada	New Mexico North Carolina Vermont Wisconsin	**Missing Key Laws**	Florida Louisiana Maine Michigan Nebraska	North Carolina Vermont West Virginia Wisconsin
D	Indiana Ohio		**Weak Systems**	Alabama Indiana Iowa North Dakota Ohio	South Carolina Tennessee Texas Utah
F	Alabama Alaska Arizona Arkansas Georgia Idaho Iowa Kansas Kentucky Louisiana Maine Mississippi	Missouri Montana New Hampshire North Dakota Oklahoma South Carolina South Dakota Tennessee Texas Utah West Virginia Wyoming	**National Failures**	Alaska Arizona Arkansas Georgia Idaho Kansas Kentucky Mississippi	South Dakota Wyoming Missouri Montana New Hampshire Oklahoma

The comprehensive gun law database developed by Siegel and colleagues at Boston University School of Public Health includes 133 potential gun law provisions in 14 categories for each state for each year from 1991 to 2020.[7] Figure 89 shows a map with the number of firearm law provisions (out of 133) in each state as of 2020. They range from 1 (Idaho) to 111 (California). Arizona has eight gun law provisions, down from 13 during the years 2000-2009.

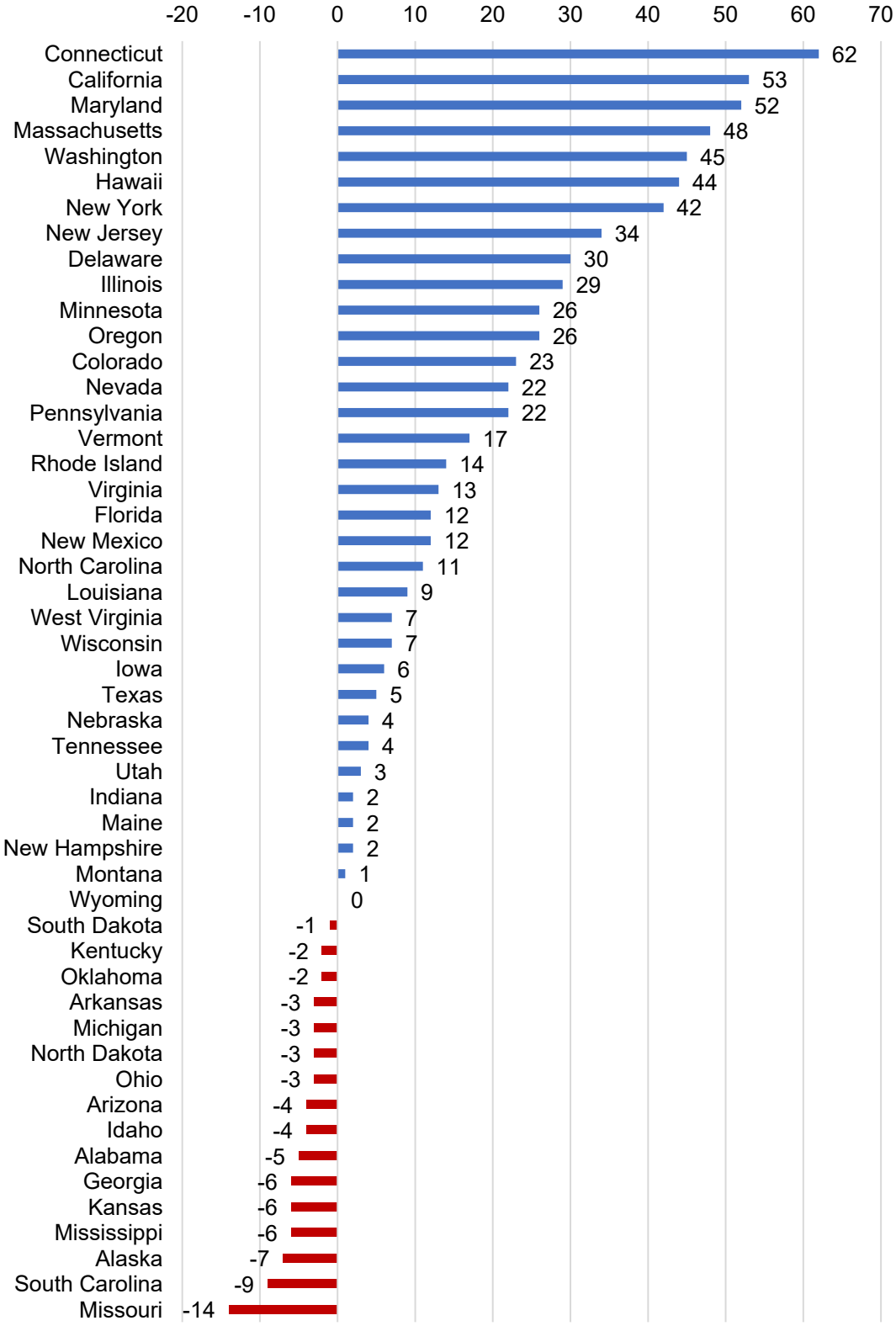
Figure 89. Number of State Firearm Laws Out of Possible 133 Laws, 2020 (StateFirearmsLaws.org)



Not shown: MA 103, CT 89, NJ 80, RI 53, MD 69, HI 82.

As in Arizona, the number of gun law provisions among the states has changed over the 30 years covered in the database. As shown in Figure 90, most states have added new laws over time, while 16 states (including Arizona) have eliminated gun laws.

Figure 90. Change in the Number of State Firearm Law Provisions From 1991 to 2020 (StateFirearmsLaws.org)



Firearm Mortality Rates Based on Gun Law Ratings

Below are three Figures comparing age-adjusted rates of overall firearm mortality by gender and race based on gun law ratings by separate organizations: Giffords, Everytown, and the Boston University database of firearm laws.

Figure 91. Overall Firearm Mortality Rates Among Giffords Law Center's 24 States with F-Grades vs. 8 States with A-Grades for Gun Laws, by Gender, Race/Ethnicity, 1999-2020

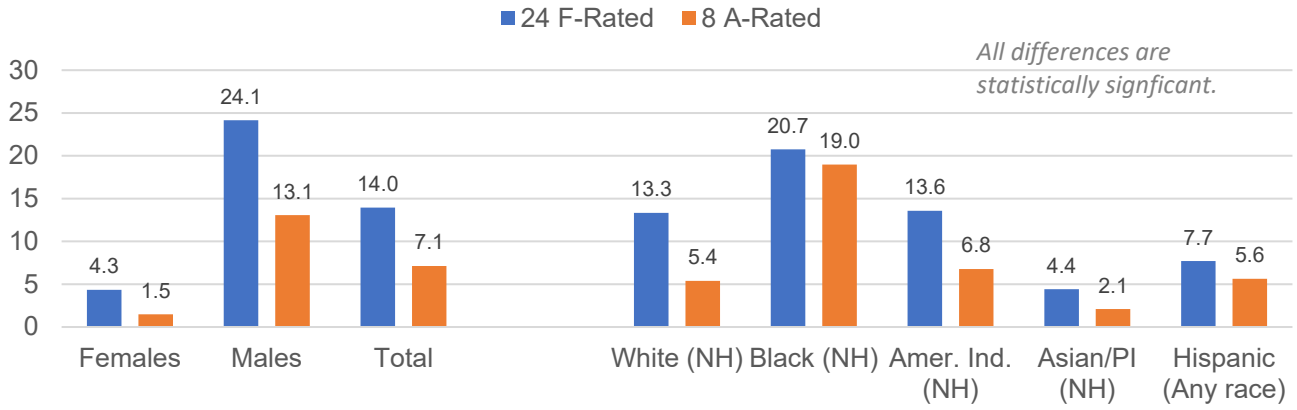
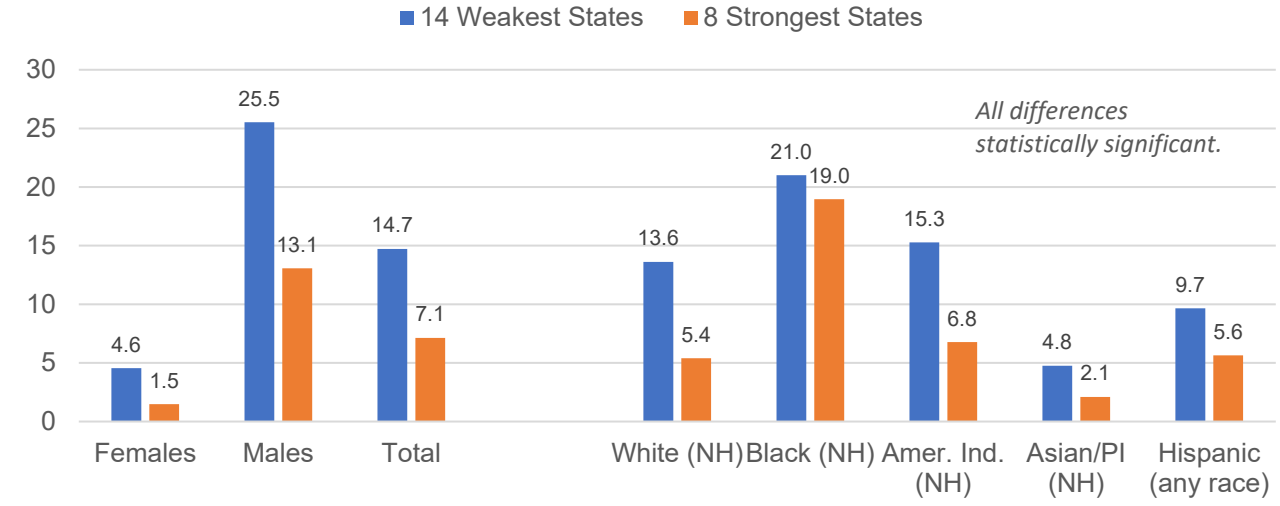
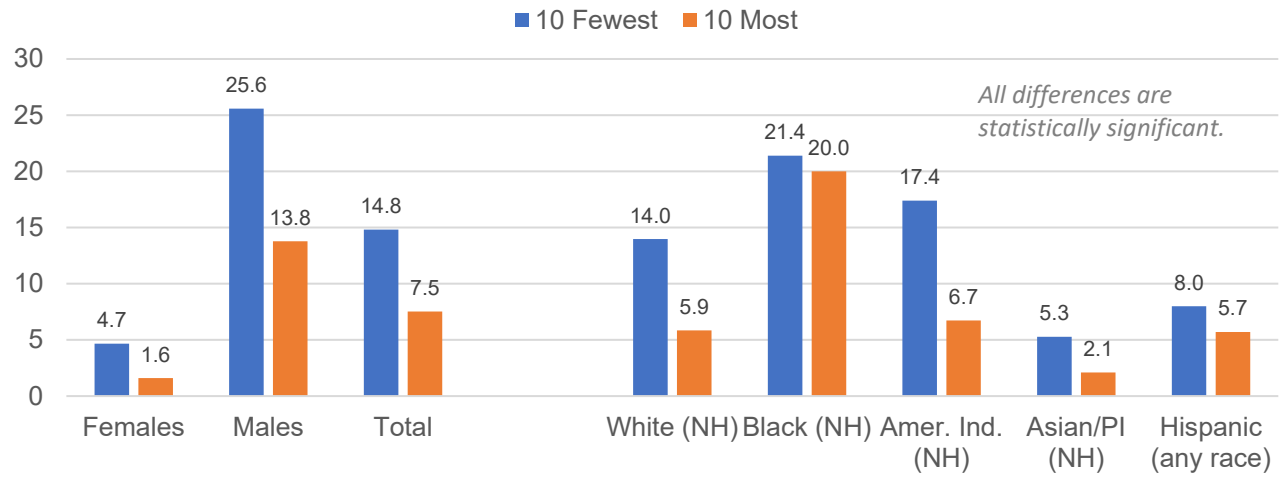


Figure 92. Overall Firearm Mortality Rates Among Everytown's 14 States with the Weakest Gun Laws vs. 8 States with the Strongest Gun Laws by Gender, Race/Ethnicity, 1999-2020



For all demographic categories, overall firearm mortality rates were significantly higher in states with weaker/fewer gun laws. For total firearm deaths, states with weaker/fewer laws had twice the rate of firearm deaths compared to states with stronger or more laws.

Figure 93. Overall Firearm Mortality Rates Among 10 States That had the Fewest Gun Laws vs. 10 States with the Most Gun Laws, 1991-2020 (Boston University School of Public Health)

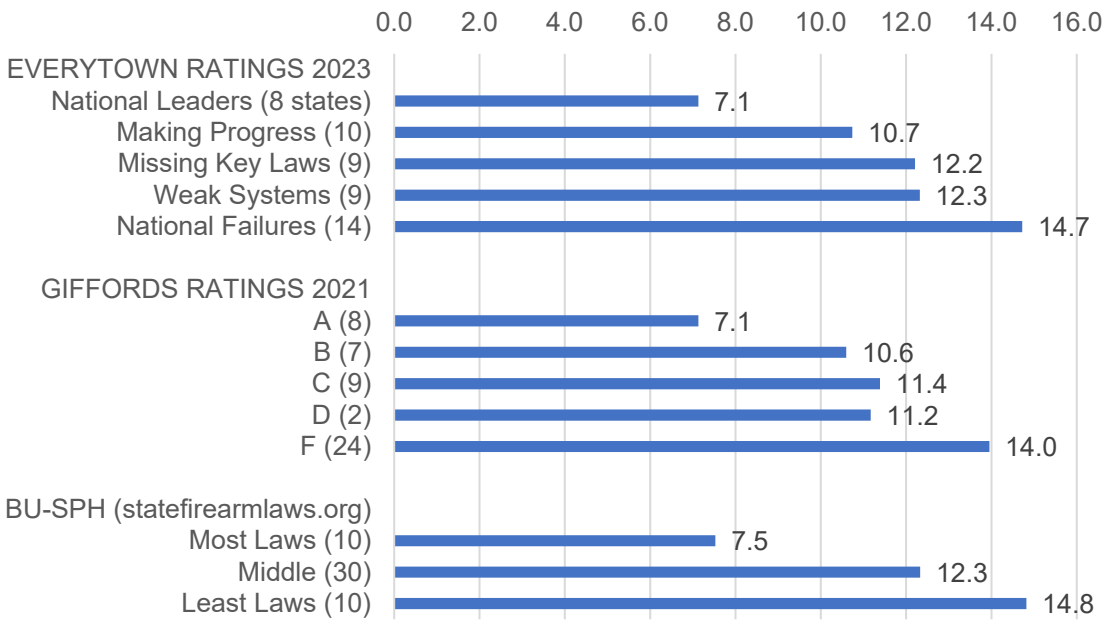


More detailed comparisons of firearm mortality rates based on Giffords ratings are presented in the Firearm Suicide (pages 33-34) and Firearm Homicide (pages 40-41) sections of this report.

These group comparisons based only on gun law ratings or numbers must be viewed with caution since multiple factors in addition to state gun laws can significantly impact firearm mortality rates. For example, in a 50-state multiple regression model with firearm homicides as the dependent (outcome) variable and three independent (predictor) variables—Giffords rankings, household gun ownership, and the percentage of Blacks in the population—only the percentage of Blacks remained significant when all three predictors were included in the model. However, when examining *female* firearm homicides, both race and household gun ownership were significant. The same result was found when Everytown's ratings were used instead of Giffords Law Center's ratings.

Figure 94 shows the total firearm mortality rates for each of the gun law rating categories from Everytown and Giffords and for the number of gun laws based on the Boston University database. The rates show a similar progression upwards in association with weaker/fewer gun laws. Although these analyses are correlational and as previously noted, do not account for other risk factors, they are consistent with findings from analytic research (presented below) and provide a clear indication that stronger gun laws are associated with reduced gun violence.

Figure 94. Total Firearm Mortality Rates (1999-2020) by State Gun Law Categories, Everytown, Giffords, Boston SPH



POLICY RECOMMENDATIONS

Everytown for Gun Safety produces an annual report of each state's progress toward enacting a set of 50 key policies that aim to reduce gun violence. The report sorts the 50 policies into six categories: foundational laws, gun industry and product safety, guns in public, keeping guns out of the wrong hands, policing and civil rights, and sales and permitting. This section will highlight Arizona's progress towards legislative change for firearm safety as well as outlining the five foundational laws and domestic violence-related evidence-based policies with the highest possible strength of evidence demonstrating efficacy at reducing the burden of firearm violence.

Foundational Law 1: Background Checks and/or Purchase Permit
Already enacted in 21 states and Washington, D.C.

These laws require a background check for handgun purchases at the point of sale and/or require a background check for a permit to purchase a handgun. Not only is this an evidence-based policy, but it is highly popular among Americans across the political spectrum. In fact, a January 2021 memo from Giffords and Everytown found that 93% of those surveyed supported "requiring background checks on all gun sales" (from a national sample of voters in the 2020 election and voters in battleground House districts).[83]

Presently, federal law requires background checks for gun sales by licensed sellers, but does not address sales by unlicensed sellers, which includes private sales, online sales by non-dealers, and gun show sales. This creates a loophole, sometimes known as the "gun show loophole" that gives access to a firearm to people who would not be able to purchase a firearm from a licensed dealer, including people who have felony convictions, domestic abuse restraining orders, and specific mental health concerns. This loophole is large; a 2017 study reported that 22% (95% CI: 16-27%) of Americans purchased their most recent gun without a background check.[62]

A possible way to close this loophole is to use a point-of-sale background check law, which requires private sellers to meet the buyer at a licensed gun dealer's store to run a background check through their system. This is convenient, given that 99% of Americans live within just 10 miles of a licensed firearm dealer and 96.7% of Arizonans live within 10 miles of a gun dealer (Everytown, 2020).

A RAND review of background check policies on firearm violence found that there is evidence to support the assertion that background checks specifically reduce firearm homicide rates.[6] The review did not publish an overall effect size, but several individual studies have estimated significant declines in homicide, suicide, and gun trafficking. For instance, one study reviewed the effects of four state purchaser licensing laws, which extend the provisions in the federal background check system by requiring buyers to first obtain a license or permit from state or local officials before purchasing a gun.[84] These laws differ in their exact requirements, but they typically require prospective gun buyers to apply for a license, pass a background check, submit fingerprints, and sometimes also provide evidence of completion of a firearm safety training. This study found that these state purchaser licensing laws, which include comprehensive background

checks, were associated with lower firearm homicide and suicide rates.[84] Another study found that universal background checks were significantly associated with 9.6% lower total homicide rates.[85]

Finally, the "default proceed" measure, also known as the "Charleston loophole" is a gap in federal law that allows the completion of a gun sale if a background check has not been completed within three days (18 U.S.C. § 9229 (t)(1)(B)(ii)). It has been named as such because the gap in legislation let a shooter in Charleston, South Carolina illegally obtain the gun he used to kill 9 people at a church in June 2015. According to an Everytown report, about 10% of firearm federal background checks cannot be completed at the point of purchase, and about 3% take longer than three days; those that take longer time are much more likely to be denied the ability to purchase a firearm. Out of the 76,693 background checks that were completed within 90 days in the federal background check system, 81% of those requests were denied and approximately 5% were transferred to a prohibited person and were referred to the Bureau of Alcohol, Tobacco, Firearms and Explosives for firearm retrieval (Everytown). Given this dangerous gap in legislation, closing the Charleston Loophole is vital to create a comprehensive background check system.

Foundational Law 2: Concealed Carry Permit Required
Already enacted in 25 states and Washington, D.C.

While it is legal to carry a handgun in public in every state, most states require a permit for carrying a loaded and concealed handgun in public. In the past several years, there has been a movement towards making it easier to carry a firearm in public without a permit; in fact, 20 states have eliminated the concealed carry permit requirement since 2015 (Everytown).

According to a 2021 survey of gun owners and non-gun owners, requiring a permit for concealed carry is a popular policy, with only 20% of Americans supporting permitless concealed carry.[86] The same study showed that 74% of respondents also agreed that conceal carry permit applicants should also have to "pass a test demonstrating that they can safely and lawfully handle a gun in common situations they might encounter."[86]

There are two types of classifications when it comes to concealed carry permits:

- "May Issue" laws: give the permitting authority full discretion to accept or reject a concealed carry permit application. As such, even if the requirements are met, a permit may not be issued if there are concerns outside the scope of the application that are flagged by the permitting official.
- "Shall Issue" (right-to-carry) laws: require the permitting authority to accept or reject a concealed carry permit application based solely on the state requirements, which are typically proof of residency, fingerprints, a background check, a minimum age, no history of disqualifying mental conditions, and no prior felony convictions.

Permitting for concealed carry of a weapon for adult citizens was repealed in Arizona in 2010, allowing gun owners to carry a firearm without a previously-required permit or training course (SB-1108). A retrospective cohort study that looked at the 24 months before and after the

passage of SB-1108 found that firearm purchases increased in the two years post-SB-1008 and that the proportion of gun-related homicides increased by 27%.[87]

According to the RAND Corporation's 2023 synthesis of evidence about gun policies, there was supportive evidence that shall-issue concealed carry laws may increase total and firearm homicide rates and limited evidence that these laws may increase violent crimes.[6] The RAND report highlighted several possible routes through which concealed carry laws may impact gun violence, noting that:

> "by increasing the number of people carrying guns in public, permitless carry and shall-issue laws that make it easier for citizens to carry concealed weapons **could lead to increased crime and violence if disagreements, perceived threats, and conflicts are more likely to result in casualties when a handgun is readily available**…If more permissive concealed carry laws increase public carrying of firearms, these laws could **increase criminal access to guns through theft**, which may subsequently increase the use of guns in criminal activity…Furthermore, by changing officer perceptions about the likelihood of encountering an armed person during officer-civilian interactions, **concealed carry laws may directly affect police shootings**" (Emphasis added).

A working paper published in 2018 reports that right-to-carry shall-issue concealed carry laws are associated with 13-15% higher violent crime rates 10 years after adoption of the law.[88] Another study found that states which have shall-issue permitting laws have almost 11% higher handgun homicide rates.[89] Yet another found that adoption of a shall-issue concealed carry law was associated with a 9.5% increase in rates of firearm assaults in the first 10 years after the law was adopted.[90] These studies and others demonstrate the lethality that is associated with the concerning trend in permitless and shall-issue concealed carry laws.

Foundational Law 3: Extreme Risk (Red Flag) Law
Already enacted in 19 states and Washington, D.C.

Extreme Risk Laws allow immediate family members and law enforcement to contact local authorities to petition a civil court for an extreme risk protection order (ERPO) to temporarily restrict access to guns for someone who is seriously at-risk of harming themselves or others. Current law prohibits certain individuals from having guns if they have been involuntarily committed to a psychiatric hospital, if they have been convicted of certain felonies, or if they have received a final restraining order for domestic abuse. Thus, there are gaps in this legislation for individuals displaying signs of suicide or "other acts of violence" (Everytown, 2022).

Two states in particular that have implemented Extreme Risk laws found substantial reductions in firearm suicide rates: 13.7% in Connecticut and 7.5% in Indiana.[91] Importantly, removing firearms for people who are considering suicide is an important measure to save lives—firearm suicide attempts are substantially more deadly than suicides by other methods (89.6% firearm suicide fatality rate vs. 56.4% for drowning, 52.7% for hanging, 30.5% for gas, 27.9% for jumping, 26.8% for moving object, 1.1% for nondrug poisoning, 1.9% for drug poisoning, and 0.7% for cutting/piercing).[22]

Anglemeyer and colleagues completed a pooled estimate from 14 observational studies and found that there was a 3.2-fold (95% CI, 2.4 to 4.4) increased odds of suicide among those who had access to a firearm.[36] The study also used pooled data from six studies to find that those with access to a firearm had a 2.0-fold (95% CI, 1.6 to 3.0) increased odds of homicide victimization when compared to those who did not have access to a firearm. Simply put, this is important in the context of ERPOs, since this study adds evidence to the assertion that access to firearms, a highly-lethal method of suicide especially, increases the odds of suicide. An important finding from Betz and colleagues was that people with firearms in the home are not more likely to be suicidal, but among those who had suicidal plans, an individual had 7-fold increased odds of using a firearm if they had a firearm in the home than those who did not.[37] In this context it is again important to recall that the lethality of firearms means that suicidal plans are carried out to fatal outcomes far more often when using a firearm than any other method.

Homicide, mass shootings, and school shootings are often carried out by shooters who show warning signs before a shooting. In an Everytown report on mass shootings in the U.S., it was found that 56% of mass shooters "exhibited at least one dangerous warning sign prior to the shooting." This figure is even more concerning for school shootings. The U.S. Secret Service's National Threat Assessment Center studied 35 school shootings from 2008 through 2017 and found that 100% of school shooters displayed concerning behaviors prior to the shooting. 77% of perpetrators "threatened their targets or shared their intentions to carry out an attack."[92] Had these concerning behaviors been reported to law enforcement in a state with an ERPO law, these shooters may have lost their access to firearms in an attempt to protect the community.

There have been a few notable instances of parents alerting law enforcement of dangerous behavior prior to deadly shootings, but no action could be taken by local authorities to remove firearms from the perpetrator. For instance, the mother of the shooter at Marjory Stoneman Douglas High School in Parkland, Florida had, on multiple occasions, talked to local law enforcement about her son's concerning behavior and the fact that he had firearms, but there was no ability for law enforcement to take the firearms away from him (Everytown, 2022). In a similar situation, authorities were contacted about concerning videos that were posted by the eventual shooter in a 2014 Isla Vista, California mass shooting. Police officers interviewed the shooter before the shooting spree, but determined that he "did not meet the criteria for emergency mental health commitment," thus allowing the shooter to keep his firearms and carry out a deadly shooting spree a few weeks later.[93]

An important note is that while Extreme Risk laws are meant to protect the community and individuals in suicidal distress, they also protect the due process rights of the individual being evaluated as a threat to themselves or others. To do this, only law enforcement officers, family, or household members can typically petition for an ERPO. Additionally, although emergency ERPOs can be issued in crisis situations (i.e., revoking access to firearms immediately), a full hearing is usually held within one to three weeks. Additionally, only after a hearing can a ERPO be issued (typically for about one year) once the respondent has been given a chance to respond to evidence. Furthermore, the petitioner has the burden of proof placed on them to prove the need for an ERPO to protect the individual or others. A judge then issues or denies an ERPO, generally for up to one year, a process which has been recognized by the Supreme Court as respecting due process rights (Everytown, 2022).

Finally, Extreme Risk laws are popular with Americans, with 85% of nationwide respondents indicating total support for the measures.[83]

Foundational Law 4: No Stand-Your-Ground/Shoot First Law
Already rejected by 21 states and Washington, D.C.

Stand-your-ground (SYG) laws (sometimes referred to as "Shoot First" laws) are currently in place in 21 states including Arizona. These laws "give people a license to kill, allowing those who shoot others to obtain immunity, even if they started the confrontation and even when they can safely de-escalate the situation by walking away" (Everytown, 2021). Other, safer, self-defense laws allow someone to use deadly force *only* if they cannot reasonably escape a pressing deadly threat. As such, SYG laws may promote shootings that may be avoided if the threatened individual fled the situation.

A 2022 cohort study by Esposti and colleagues of 41 states found that SYG laws were associated with an 8% to 11% national increase in monthly firearm homicide rates.[94] This translates to an additional 58 to 72 homicides every month, which, as pointed out by Esposti is higher than total homicides in most Western European countries. Additionally, according to the 2023 RAND policy analysis of gun legislation, stand-your-ground laws have been found to increase firearm homicide rates.[6] Notably, these SYG laws are a relatively recent addition to state-level legislation; the first such law was passed in Florida in 2005.[95] This Florida legislation has been linked to a 24.4% increase in overall homicide rates and a 31.6% increase in firearm homicide rates.[96]

In a 2014 altercation in Arizona, a man was acquitted of first-degree felony murder, drive-by shooting, and aggravated assault after fatally shooting an unarmed 22-year-old after they got into a verbal altercation on the road. The jury in the case was informed that:

> "The use of deadly physical force is justified if a reasonable person in the situation would have reasonably believed that immediate deadly physical danger appeared to be present. **Actual danger is not necessary to justify the use of deadly physical force in self-defense**" (emphasis added; Steller, 2017).[97]

Additionally, the burden of proof is on prosecutors to show that the defendant was not justified in their use of deadly physical force for self-defense. Cases like this are not uncommon. The same defense strategy was used to acquit George Zimmerman of murdering Trayvon Martin, an unarmed teenager, in 2012.

There is also a racial disparity in the impacts of SYG laws that is important to acknowledge. A 2013 study found that "a black-on-white homicide has barely half the odds of being ruled justifiable relative to white-on-white homicides," and this association is even more dramatic in states with SYG laws.[98] An Everytown analysis (2021) found that "[i]n Shoot First states, these homicides are deemed justifiable five times more frequently than when the shooter is Black and the victim is white." As stated by Everytown (2021):

> "[I]n this country, minorities are implicitly associated with crime and danger. Since Shoot First laws permit people to shoot and kill others based on a perceived threat, it follows

> that individuals in Shoot First states would be more likely to avoid culpability for murder if their victim was a person of color."

In short, SYG laws are associated with increases in homicide and should be repealed in favor of traditional self-defense laws that still allow people to protect themselves when threatened.

Foundational Law 5: Secure Storage Required
Already enacted in 23 states and Washington, D.C.

A study of the association between firearm laws and child and adolescent firearm injuries and mortality found that child access prevention (CAP) laws—which make adults criminally liable for negligently storing or recklessly providing children with access to firearms—were associated with reductions in unintentional firearm deaths and firearm suicide. A review of 130 studies in 10 countries found that safe storage laws, which also includes CAP laws, specifically reduced unintentional firearm deaths among children.[99] The RAND Corporation's synthesis of evidence on the effects of gun policies also found that CAP laws reduce both unintentional mortality and injury as well as suicide mortality and injury among young people and children.[6]

Everytown consistently updates the #NotAnAccident Index, which uses media reports to track instances in which a child under 18 unintentionally shoots themselves or someone else. The report compiled from the #NotAnAccident Index found that "shootings *by* children are most often also shootings *of* children" (Everytown, 2022). The same report also found that 70% of these shootings occur in the home. According to a 2021 survey, 40.4% of adults with a child 18 years and younger have a firearm in their home, making this policy's impact wide-reaching.[100]

As with most pieces of legislation, each state implements safe storage policies differently. The most comprehensive bills are those that require the person owning the gun to safely store the firearm when it is not in the person's immediate possession; this is the policy in two states. The next most comprehensive law, implemented in six states and Washington, D.C., applies when a child is likely to access a gun that is insecurely stored. An even less comprehensive law is in place in 15 states and applies when a child does access an insecurely stored firearm. Finally, the least comprehensive law applies only if the owner intentionally or recklessly gives a child firearm access; this applies in 10 states and is not considered a "secure storage" law because it is so limited. 17 states, including Arizona, have no such safe storage laws.

An example of strong legislation can be found in Massachusetts, which states:

> "It shall **be unlawful to store or keep any firearm**, rifle or shotgun including, but not limited to, large capacity weapons, or machine gun in any place **unless such weapon is secured in a locked container or equipped with a tamper-resistant mechanical lock or other safety device**, properly engaged so as to render such weapon inoperable by any person other than the owner or other lawfully authorized user. For purposes of this section, such weapon shall not be deemed stored or kept if carried by or under the control of the owner or other lawfully authorized user." (Mass. Gen. Laws Ch. 140, § 131L; emphasis added).

In summary, safe storage laws are focused on reducing the burden of firearm injury and mortality in the child and adolescent population. These laws are among the most successful and evidence-backed legislation shown to reduce firearm mortality and help protect some of the most vulnerable members of the community.

Domestic Violence Laws

Out of the 50 pieces of legislation included in Everytown's Gun Law Checklist, 10% (5 laws) are about prohibiting domestic abusers from gaining access to firearms. These five laws include:

- **Emergency Restraining Order Prohibitor**: These laws prohibit people under temporary restraining orders for domestic abuse from having firearms.
- **Prohibition for Convicted Domestic Abusers**: People with a *misdemeanor domestic abuse conviction* are prohibited from having a gun under federal law. This additional legislation goes beyond the federal prohibition (which only applies to spouses, partners who have children together, and partners who live together) by closing the "boyfriend loophole" and applying the law to cover abusive dating partners.
- **Prohibition for Domestic Abusers Under Restraining Orders**: People with a *domestic violence restraining order* are prohibited from having a gun under federal law. This additional legislation goes beyond the federal prohibition (which only applies to spouses, partners who have children together, and partners who live together) by closing the "boyfriend loophole" and applying the law to cover abusive dating partners.
- **Relinquishment for Convicted Domestic Abusers**: These laws require people convicted of domestic abuse to relinquish their guns.
- **Relinquishment for Domestic Abusers Under Restraining Orders:** These laws require people under a domestic abuse restraining order to relinquish their guns.

It is crucial to note that most mass shootings occur in private residences, with domestic violence being involved in at least 53% of mass shootings between 2009 and 2020 (Everytown, 2021). Research has shown that states adopting laws that require people under an ex parte (i.e., emergency or temporary) domestic violence restraining order were linked to a 16% decrease in intimate partner homicide.[101] The "boyfriend loophole" is a troubling gap in legislation, considering that over 80% of all intimate partner violence is committed by dating partners (i.e., non-marital relationships).[102] This means that many Americans, including Arizonans are not protected by current domestic violence protection laws that attempt to keep guns out of the hands of abusers.

Preventing School Shootings

The K-12 School Shooting Database indicates that school shooting incidents have increased by 1,410% between 1970 and 2022 and have been increasing by 29% per year since 2011. While reactive and controversial actions such as arming teachers or having armed guards have been proposed, those measures can actually be counterproductive. A comprehensive multifaceted evidence-based plan will need to be adopted by elected officials, schools, and communities.

Fortunately, a 2022 report with over 100 references, How to Stop Shootings and Gun Violence in Schools, by Everytown Research & Policy in collaboration with the American Federation of Teachers and the National Education Association provides such a plan to address firearm violence in schools.

The key evidence-based recommendations from this report are as follows:

1. Enact and Enforce Secure Firearm Storage Laws
2. Pass Extreme Risk Laws
3. Raise the Age to Purchase Semi-automatic Firearms
4. Require Background Checks on All Gun Sales
5. Foster a Safe and Trusting School Climate
6. Build a Culture of Secure Gun Storage
7. Create Evidence-Based Crisis Assessment/Prevention Programs in Schools
8. Implement Expert-Endorsed School Security Upgrades: Entry Control and Locks
9. Initiate Trauma-Informed Emergency Planning
10. Avoid Practices That Can Cause Harm and Traumatize Students

Brady's Comprehensive Approach

In addition to Giffords and Everytown, the Brady Center to Prevent Gun Violence is another organization seeking to reduce the burden of firearm violence. The organization has been in the field of gun violence prevention for nearly 50 years, and out of this experience, the Center has developed a "Comprehensive Approach to Prevent Gun Violence," also known as "The Brady Plan," to promote 12 policies, which are written below directly from their list:

1. Expand background checks to all gun sales and transfers with very narrow exceptions
2. Expand the categories of persons prohibited from purchasing guns
3. Prevent access to assault weapons and high-capacity magazines
4. Ban accessories like bumpstocks which enhance lethality
5. Outlaw the manufacture of bumpstocks which enhance lethality
6. Outlaw the manufacture of ghost guns and 3D printed guns
7. Fully fund gun violence research at the CDC
8. Fund local community-based programs to break the cycle of gun violence in urban areas
9. Promote safe storage and responsible gun ownership
10. Repeal the Protection of Lawful Commerce in Arms Act (PLCAA)*
11. Hold the ATF accountable for meaningful gun industry oversight
12. Eliminate Tiahrt†

* PLCAA: "a federal law that provides the gun industry with special protections from civil lawsuits, at the expense of victims of gun violence who would otherwise be entitled to compensation for the damages they have suffered" (Brady Center to Prevent Gun Violence)
† Tiahrt: an amendment which "has been interpreted to shield the most negligent gun dealers from the light of public scrutiny, while also depriving the public of access to key data to develop effective policy solutions to stem the flow of illegal guns" (Brady Center to Prevent Gun Violence).

A Final Note on Gun Legislation Literature and Research Funding

Firearm safety research has been significantly and deliberately underfunded for decades, and lack of evidence to evaluate many policies should not at face value be taken to mean that the policies are ineffective. As stated in the 2023 RAND Gun Policy in America review,

> "…**even when the available evidence is limited, the actual effect of the policy may be strong**. Presumably, every policy has some effect on a range of outcomes, however small or unintended…Moreover, **even a policy with a small effect may nevertheless be beneficial to society or worth its costs.** For instance, a policy that reduces firearm deaths by just a few percentage points could save more than 1,000 lives per year. This kind of 'small' effect might be very difficult to detect with existing study methods but could represent an important contribution to public health and safety."

According to a recent study, research publications and funding for firearm violence were significantly less than would be expected based on the burden of mortality in the United States. The study reported that firearm violence had only 1.6% of the funding and 4.5% of the publications that would be expected based on regression analyses based on the leading causes of death in the U.S.[103] In the end, more research, funding, and dedication to the cause of firearm mortality is necessary to reduce the emotional, physical, economic, and societal burden of gun violence on communities across Arizona and the United States.

Furthermore, it is important to consider the strength of evidence that lawmakers require before implementation of a law. As mentioned in the aforementioned RAND report,

> "…**requiring scientific evidence before passing a law would be an impossible standard to meet**. Laws typically have to be implemented *before* they can be rigorously evaluated. Second, **it is an unreasonable standard that shows undue favor to the status quo**. Even if there is no statistically significant evidence that a new policy improves on the existing one, there is also no statistically significant evidence that the current policy is better than the new one."

In a country where the "status quo" includes the murder and suicide of thousands of individuals every month, it remains a threat to public health to accept the current situation. Arizonans deserve to be and feel safe in their communities, and passing firearm safety legislation plays a key role in saving the lives and livelihoods of tens of thousands of Arizonans for generations to come.

Where Arizona Stands on 50 Key Gun Safety Laws by Everytown Research

Foundational laws

⊗Background Check and/or Purchase Permit
Requires Background checks for handgun purchases at point of sale and/or for permit to purchase

⊗Concealed Carry Permit Required
Requires any person who carries a concealed firearm in public to first obtain a permit

⊗Extreme Risk Law
Allows law enforcement (and often family members) to petition for a court order to temporarily prevent someone in crisis from accessing guns.

⊗No Shoot First Law
Does not have a dangerous Shoot First law in place

⊗Secure Storage Required
Requires that firearms be stored locked, unloaded, and separate from ammunition in certain circumstances

Gun industry and product safety

⊗Assault Weapons Prohibited
Bars purchase of certain assault-style weapons originally designed for military use

⊗Consumer Safety
Requires new handgun models sold in the state to have childproofing features

⊗Ghost Guns Regulated
Regulates ghost gun parts, ensuring they cannot be sold without serial numbers and a background check

⊗High-Capacity Magazines Prohibited
Bars purchase of gun magazines larger than a prescribed size

⊗Microstamping for New Handguns
Requires new handgun models sold in the state to include microstamping technology

⊗No Special Immunity for Gun Industry
Does not have a dangerous legal immunity law in place

Guns in public

⊗Crime Gun Tracing
Requires officials to trace all guns recovered at crime scenes, using the federal tracing system

⊗No Carry After Violent Offense
Bars concealed carry by people with assault or other violent misdemeanor convictions

●No Guns Mandate on College Campuses
Does not force colleges and universities to allow concealed carry

⊗No Guns at State Capitols and/or Demonstrations
Blocks the public carry of guns on state capitol grounds and/or political protests

⊗No Guns in Bars
Blocks the concealed carry of guns in bars

✔ No Guns in K-12 Schools
Does not have a law allowing carry in K–12 schools by staff or other permit holders

⊗ Open Carry Regulated
Regulates how guns may be carried visibly in public, either requiring a permit or else barring open carry altogether

⊗ Strong Concealed Carry Authority
Allows officials to bar concealed carry by people who pose a danger

Keeping guns out of the wrong hands

⊗ Emergency Restraining Order Prohibitor
Bars domestic abusers from having guns while subject to short-term emergency orders

✔ *Felony Prohibitor*
Bars gun possession by people with felony convictions

⊗ Fugitive from Justice Prohibitor
Bars gun possession by fugitives

⊗ Gun Removal Program
Requires officials to identify and seek removal of illegal guns

⊗ Hate Crime Prohibitor
Bars people from having guns after a hate crime conviction

✔ Mental Health Prohibitor
Bars gun possession by people who have been involuntarily committed or found to be a danger to self or others

⊗ Minimum Age to Purchase
Requires handgun buyers to be 21+ and rifle and shotgun buyers to be 18+

⊗ No Gun Purchases After Violent Offense
Bars gun purchases by people with assault or other violent misdemeanor convictions

⊗ Prohibition for Convicted Domestic Abusers
Bars domestic abusers from having guns after a misdemeanor conviction

⊗ Prohibition for Domestic Abusers Under Restraining Orders
Bars domestic abusers from having guns while subject to restraining orders

⊗ Relinquishment for Convicted Domestic Abusers
Requires domestic abusers to turn in guns after a misdemeanor conviction

⊗ Relinquishment for Domestic Abusers Under Restraining Orders
Requires domestic abusers to turn in guns when a restraining order is placed

⊗ School Threat Assessment Teams
Requires threat assessment programs to identify students at risk of violence

✔ Stalker Prohibitor
Bars gun possession by convicted stalkers

Policing and civil rights

⊗ Funding for Services for Victims of Gun Violence

Issues targeted solicitations to use federal Victims of Crime Act (VOCA) funds to assist victims of gun violence or for gun violence intervention

⊗Local Gun Laws Allowed
Does not preempt towns and cities from making their own gun safety policy

⊗No Law Enforcement Officers Bill of Rights
Does not impede efforts to hold police accountable for excessive force and other misconduct

⊗Office of Violence Intervention
Has a dedicated office for gun violence prevention

⊗Police Use of Deadly Force Standard
Bars deadly force unless necessary to prevent serious bodily injury, does not make exception for felony suspects fleeing arrest

✔Police Use of Force Incident Data Collection and Reporting
Requires law enforcement agencies to collect and report data on use of force incidents

⊗Qualified Immunity Limited
Limits qualified immunity, a legal shield for police officers accused of civil and constitutional violations

⊗Violence Intervention Program Funding
State budget includes funding for community violence intervention programming

Sales and permitting

⊗Authority to Deny Gun Purchase for Public Safety
Allows officials to deny sales if buyer poses a danger

⊗Charleston Loophole Closed or Limited
Ensures gun sales can't proceed while a background check is still ongoing

⊗Dealer License Required
Requires all gun dealers to obtain a state license

⊗Lost and Stolen Reporting
Requires gun owners to notify law enforcement if their guns are lost or stolen

✔Mental Health Record Reporting
Requires or allows officials to report prohibiting records into the background check system

⊗Notification of Failed Background Checks
Requires notice to law enforcement when a prohibited person tries to buy a gun

⊗Sales Records Sent to Law Enforcement
Requires all handgun sale information be recorded by officials

⊗Training Required to Purchase Guns
Requires certain gun buyers to take a training course before their purchase

⊗Waiting Periods
Requires gun buyers to wait a prescribed time before completing a purchase

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ADDENDUM: 2021 UPDATE

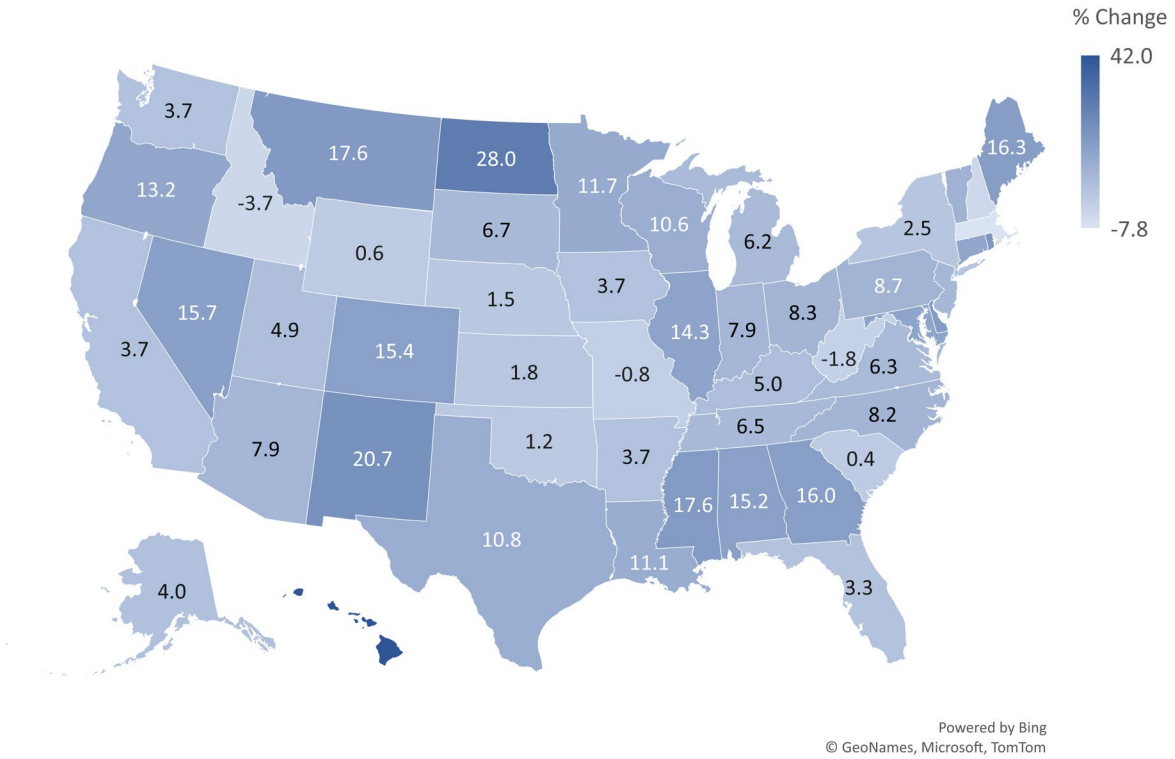
CDC released final 2021 firearm mortality data in January 2023 after completion of this report. Table 24 shows how 2021 firearm deaths compared to 2020 deaths for each intent for the U.S. and Arizona. U.S. rates of firearm deaths increased significantly in 2021 for total firearm deaths, firearm suicides, and firearm homicides, but decreased for police shootings. Arizona rates increased significantly only for total firearm deaths. Figure 95 shows the percent change in total firearm deaths from 2020 to 2021 by state.

Table 24. Changes in Firearm Deaths Between 2020 and 2021, U.S. and Arizona.

	US Deaths 2020	US Deaths 2021	US Change	AZ Deaths 2020	AZ Deaths 2021	AZ Change
Total Firearm	45,222	48,830	8.0%*	1,265	1,365	7.9%*
Firearm Suicide	24,292	26,328	8.4%*	830	879	5.9%
Firearm Homicide	19,384	20,958	8.1%*	382	430	12.6%
Police Shootings	611	537	-12.1%*	30	26	-13.3%
Unintentional	535	549	2.6%	<10	<10	N/A
Undetermined	400	458	14.5%	17	22	29.4%

*Statistically significant change.

Figure 95. Percent Change in the Number of Firearm Deaths from 2020 to 2021.



CT 13.2, HI 42.0, MA -7.8, MD 13.9, NH -3.9, NJ 7.2, RI 18.5, VT 9.2

As described elsewhere in this report, police shootings are undercounted in death certificate data, particularly in Arizona where about one-third of police shootings were recorded in 2015-2019 compared to other sources. However, those sources also showed similar declines in police shootings in Arizona from 2020 to 2021 ranging from 15-20%.

Table 25 shows how 2021 age-adjusted firearm mortality rates for Arizona compared to 2021 U.S. rates. Arizona rates were significantly higher for total firearm mortality, firearm suicide, firearm homicide and police shootings.

Table 25. Comparison of 2021 Firearm Mortality Rates by Intent, U.S. vs Arizona.

	US Rate	US 95% CI	AZ Rate	AZ 95% CI	Rates Differ?
Total Firearm	14.6	14.5-14.8	18.3	17.3-19.3	AZ↑*
Firearm Suicide	7.5	7.4-7.6	11.2	10.5-12.0	AZ↑*
Firearm Homicide	6.7	6.6-6.8	6.2	5.7-6.8	No
Police Shootings	0.17	0.15-0.18	0.35	0.23-0.52	AZ↑*
Unintentional	0.17	0,15-0.17	N/A	N/A	N/A
Undetermined	0.14	0.13-0.15	0.30	0.19-0.45	AZ↑*

*Statistically significant difference. N/A data suppressed due to <10 deaths.

No significant changes were found in Arizona rates of total firearm-related mortality in 2021 versus 2020 for any racial category or for children aged 1-19; however, a statistically significant increase of 27.6% was found for Hispanics, over double the increase seen nationally.