

Gun Violence in Arizona: Data to Inform Prevention Policies

March 2023

Julia Jackman, BA, BS, MSc Candidate in Global Health
Fulbright Study & Research Grantee, Norwegian University of Science & Technology

Allan N. Williams, MPH, PhD
Adjunct Faculty, University of Minnesota School of Public Health
Retired, Chronic Disease & Environmental Epidemiology, MN Dept. of Health



AZPHA
Arizona Public Health Association

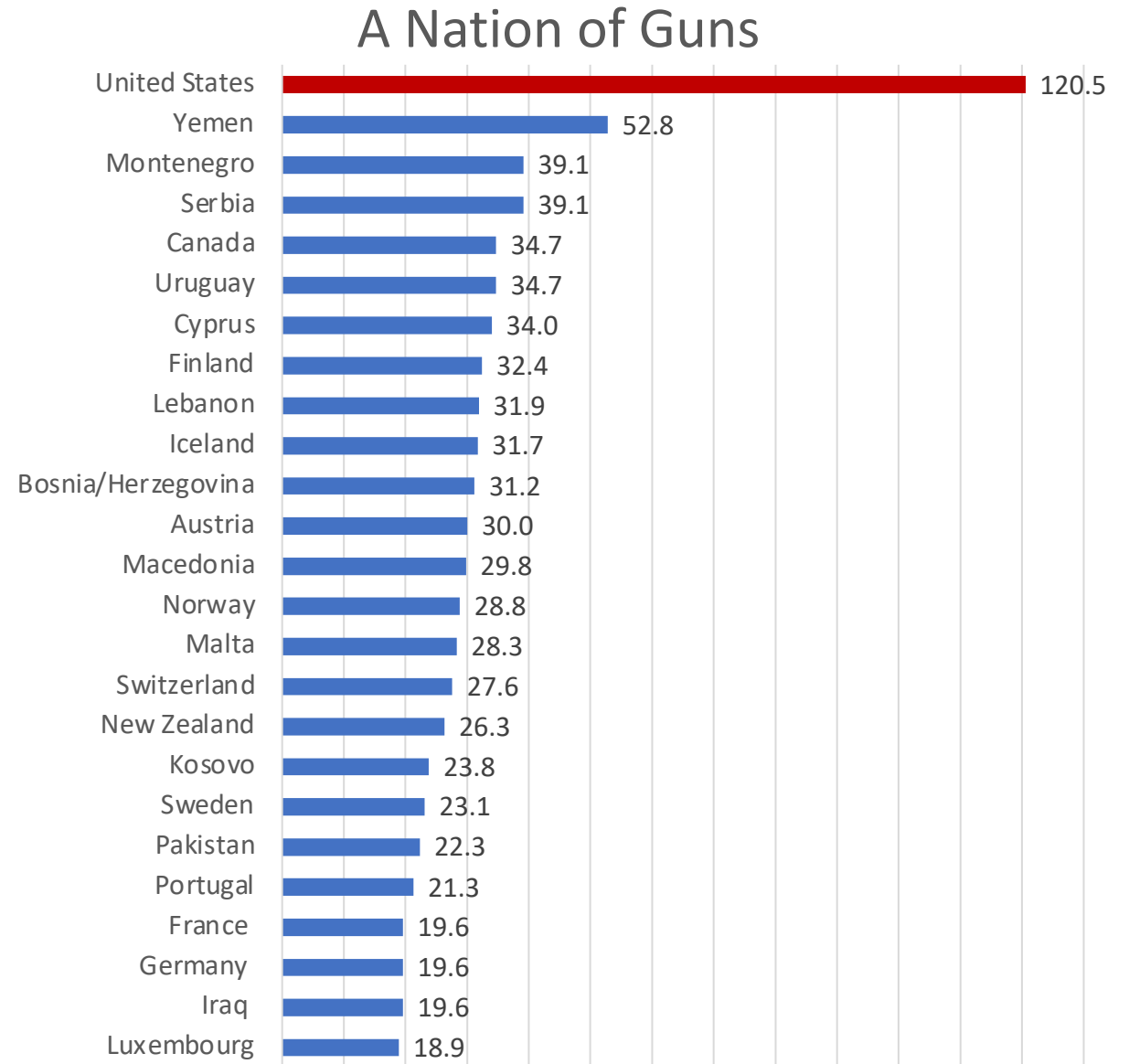
Man killed in Tucson
shooting after physical
altercation at nearby bar



The daily headlines...

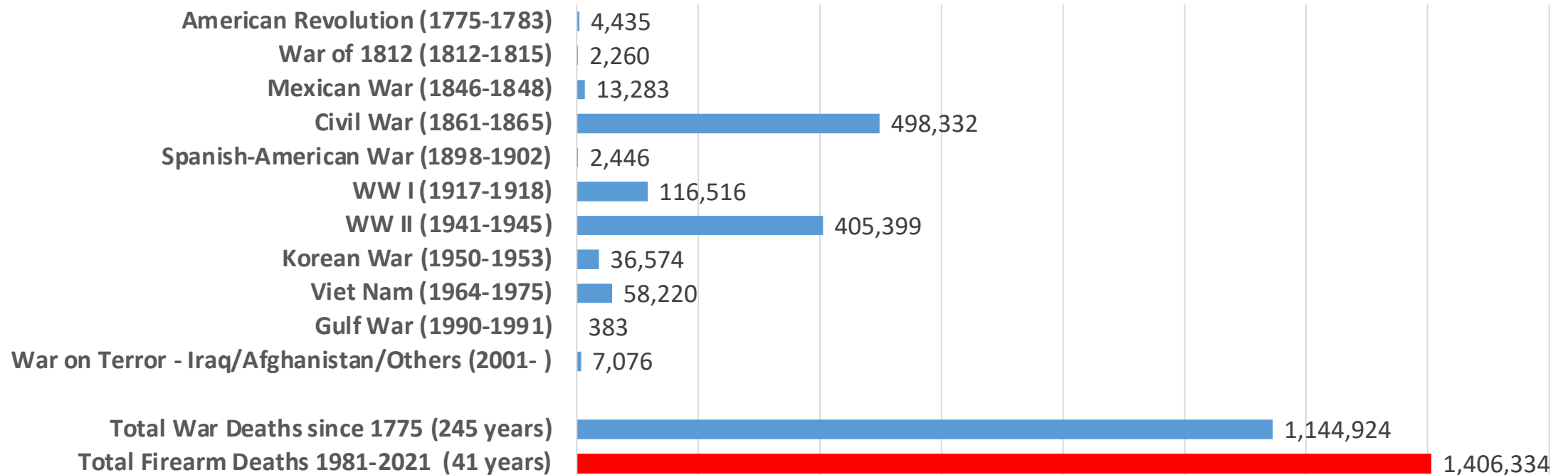


Estimated Number of Civilian Firearms per 100 Residents in 2017, Top 25 Countries



.....and Gun Deaths

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)



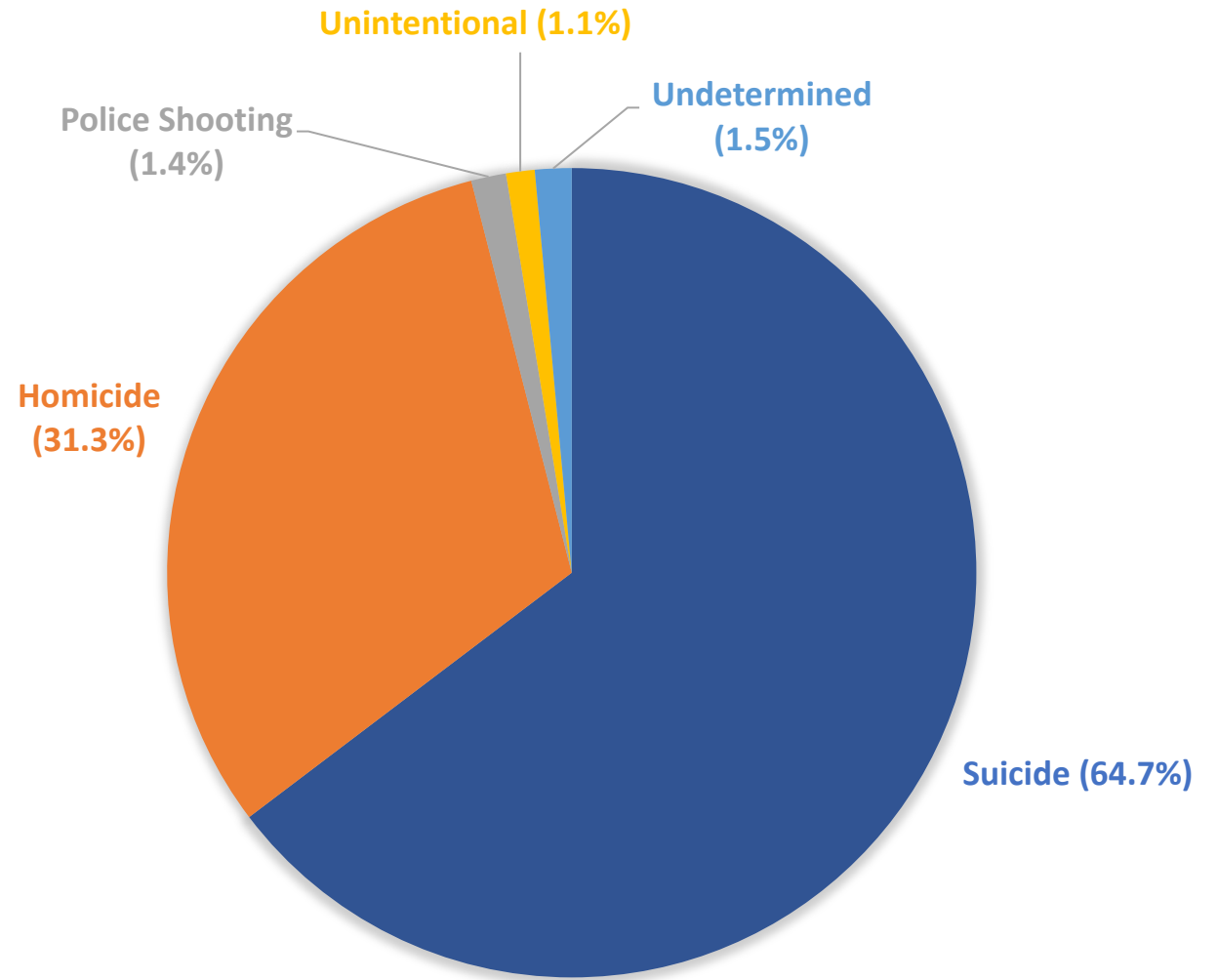
Total Fatal and Nonfatal Firearm Injuries

	Arizona	US
Total Firearm Deaths in 2020	1,265	45,222
Total Nonfatal Firearm Injuries in 2020	2,572	117,128
Ave Deaths/Day 2020	3.5	124
1 Firearm Death Every	7 hours	12 minutes
Ave Nonfatal Firearm Injuries /Day 2020	7.0	321

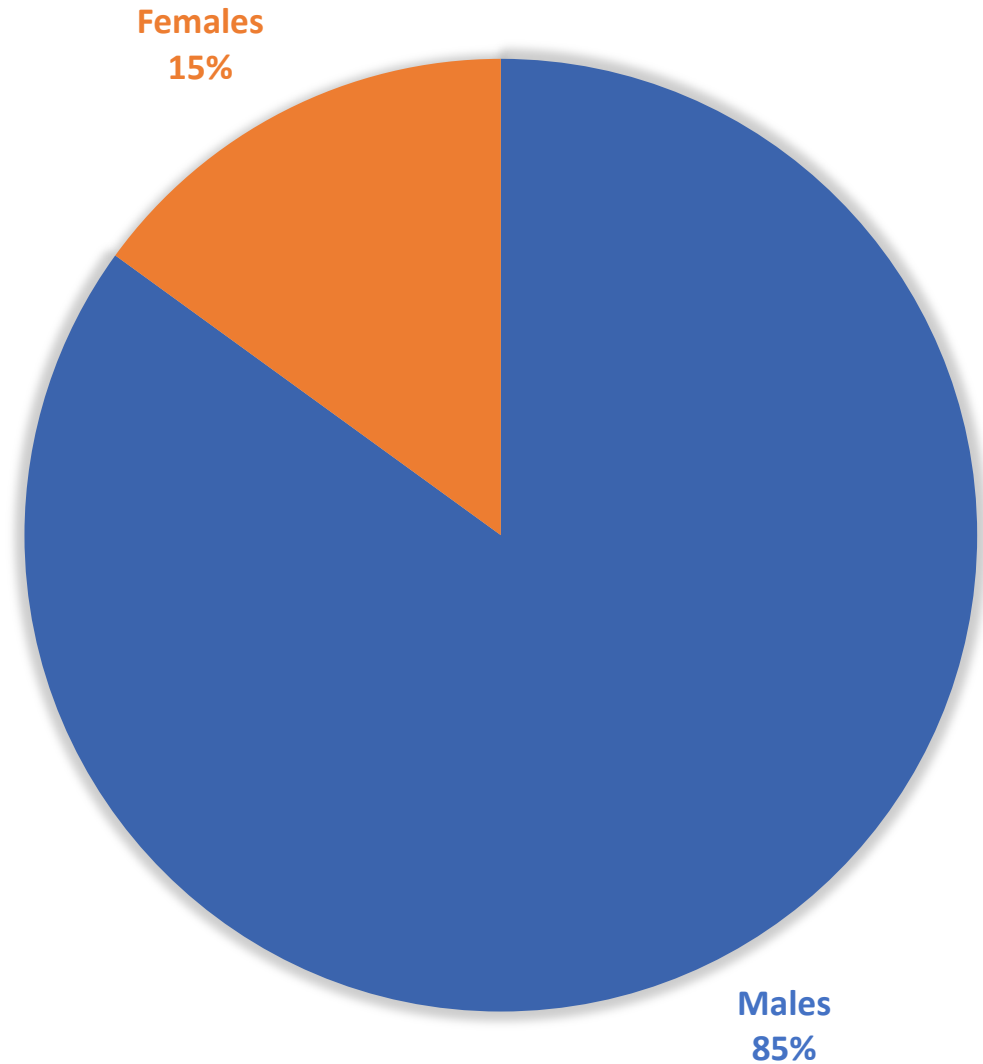


Sack, Minneapolis StarTribune

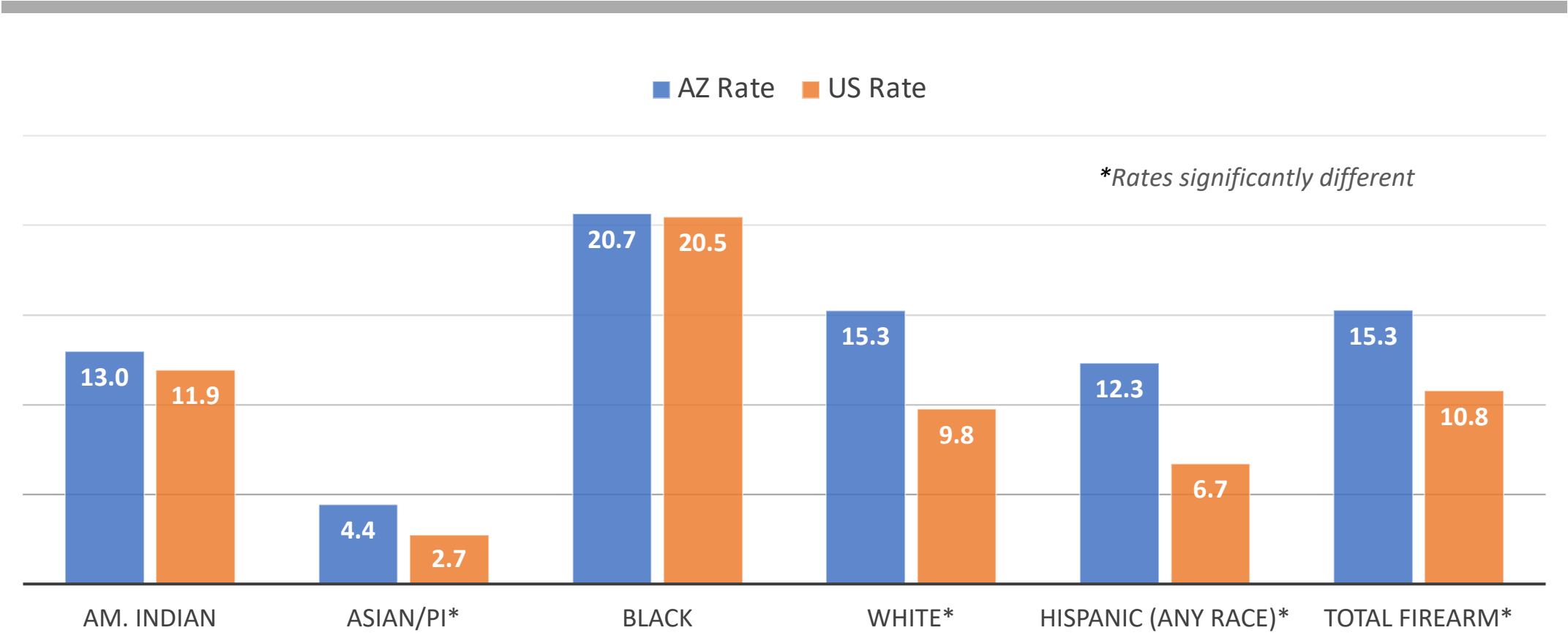
Percent of Firearm Deaths by Intent, Arizona, 1999-2020



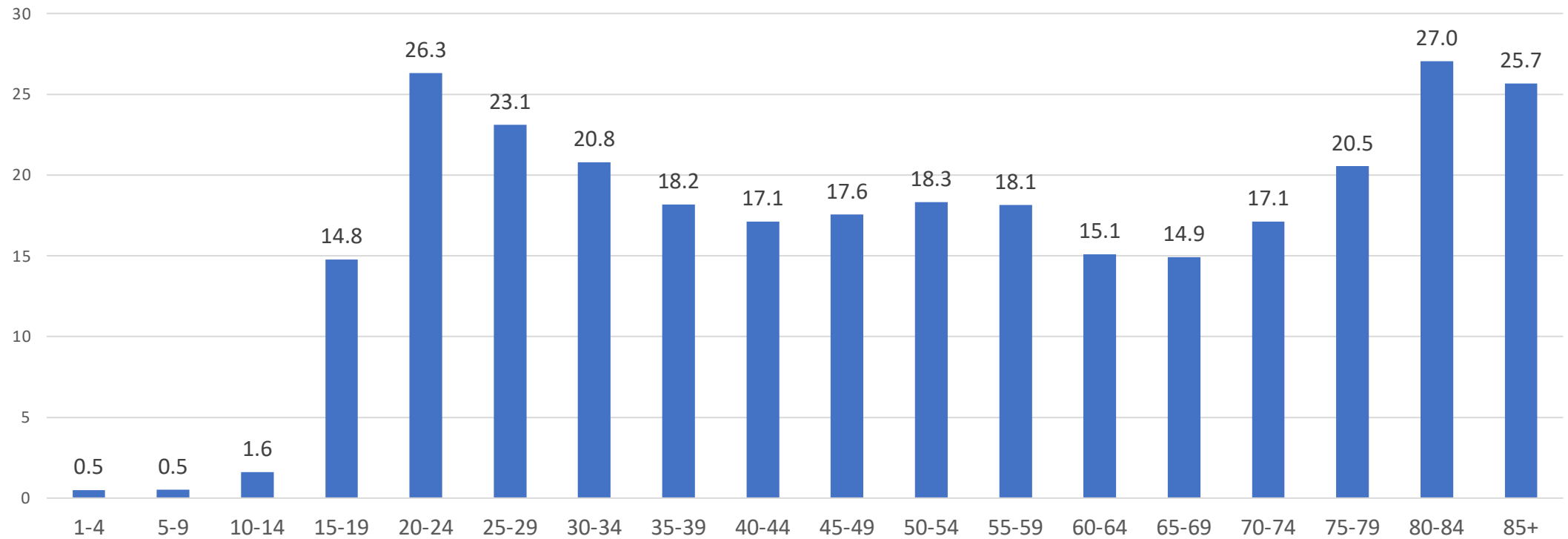
Total Firearm Deaths by Gender, AZ, 1999-2020



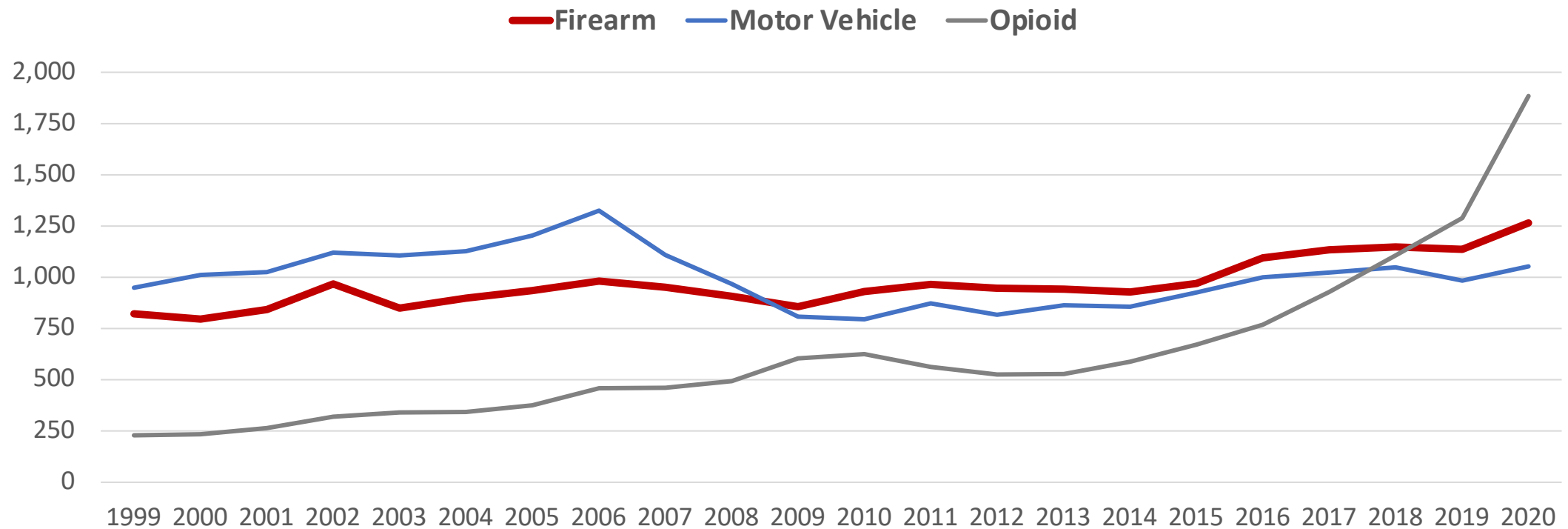
Total Firearm Rates by (NH) Race & Ethnicity, AZ vs US, 1999-2020



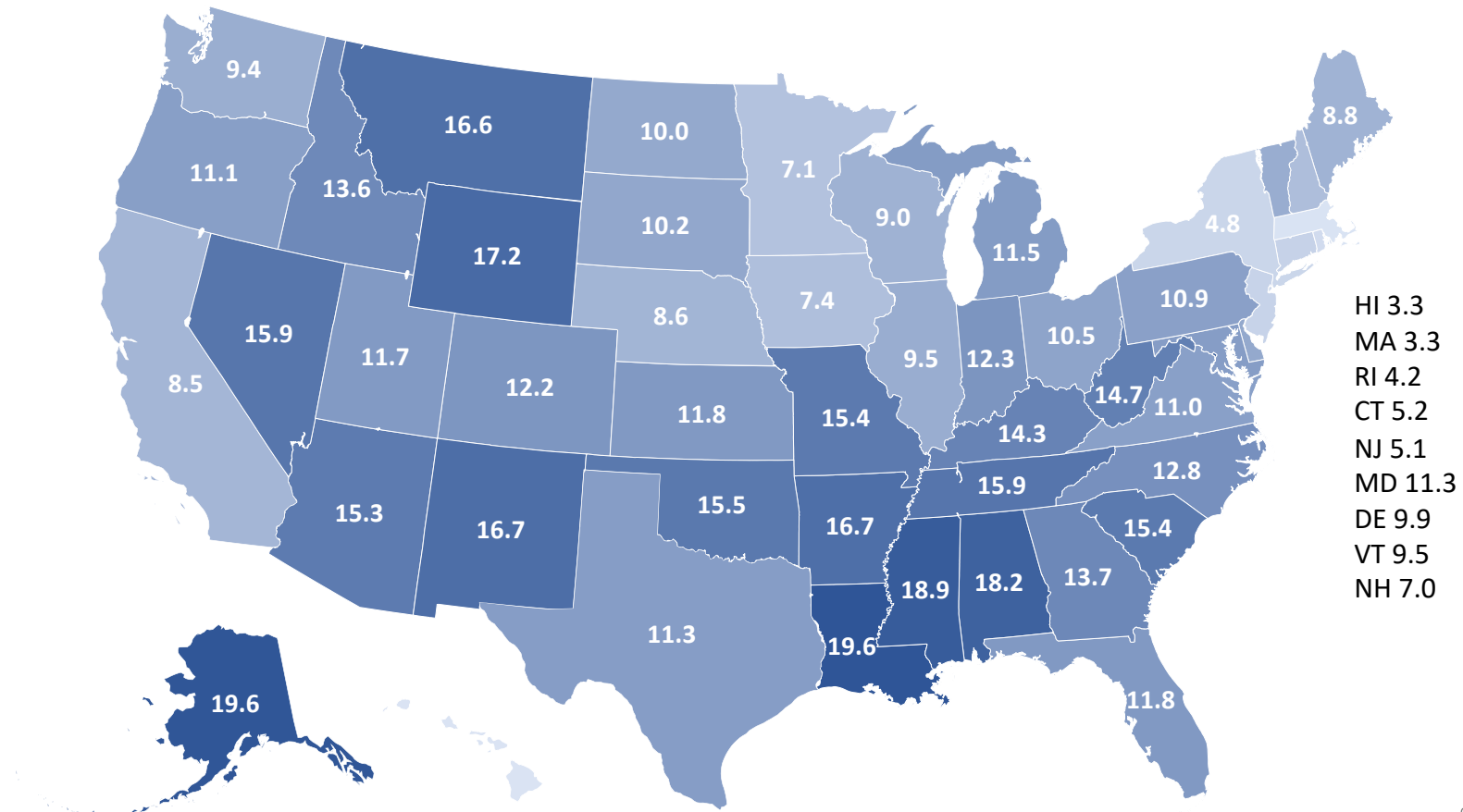
Total Firearm Mortality Rates by Age, AZ 1999-2020



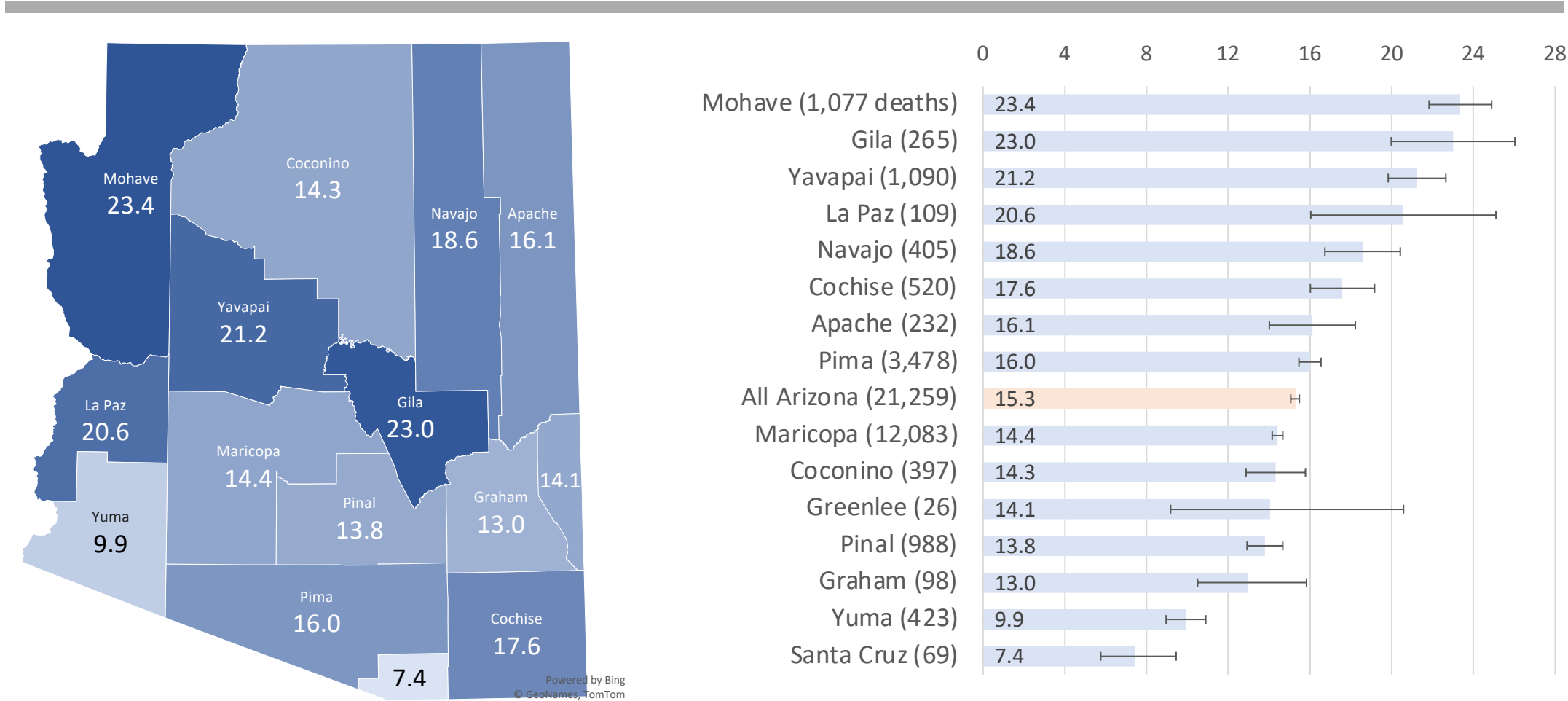
Arizona Deaths from Firearms, Motor Vehicle Accidents, & Opioids, 1999-2020



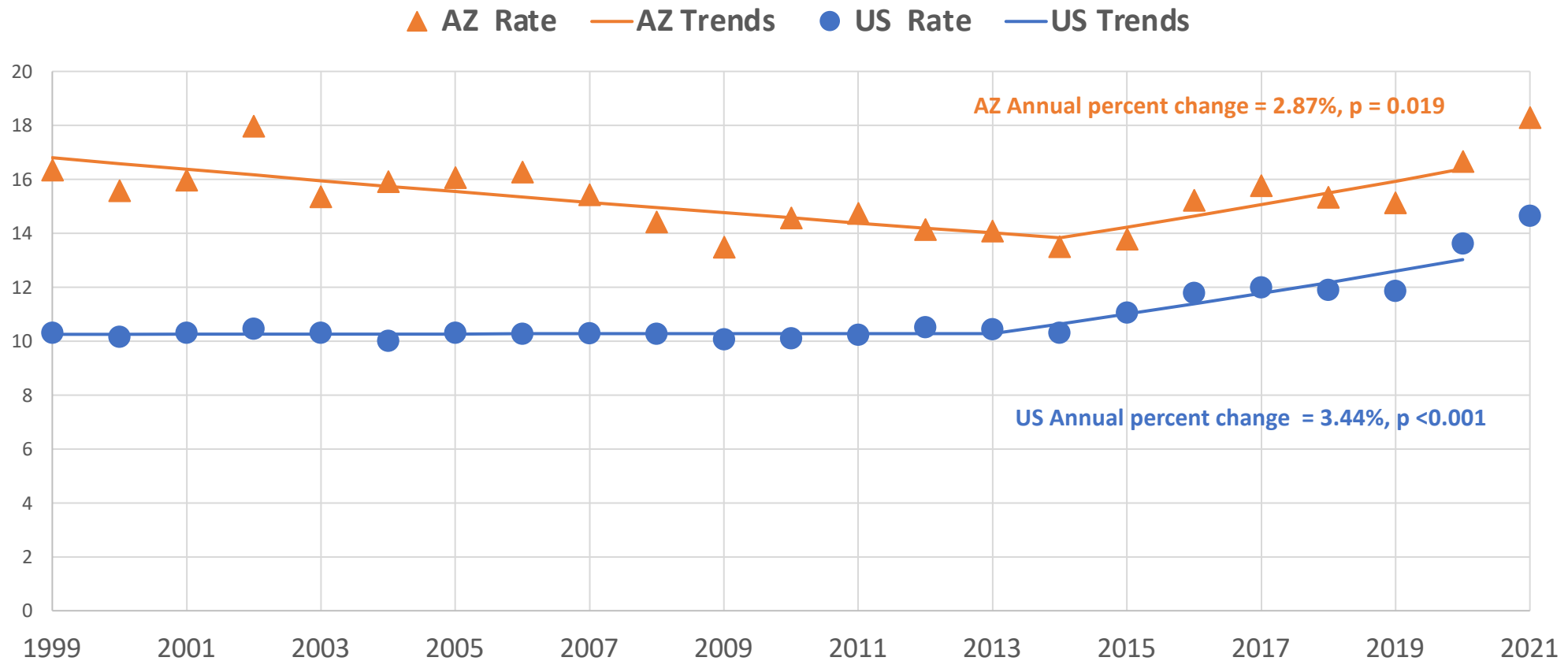
Age-Adjusted Rates of Total Firearm Deaths, 1999-2020



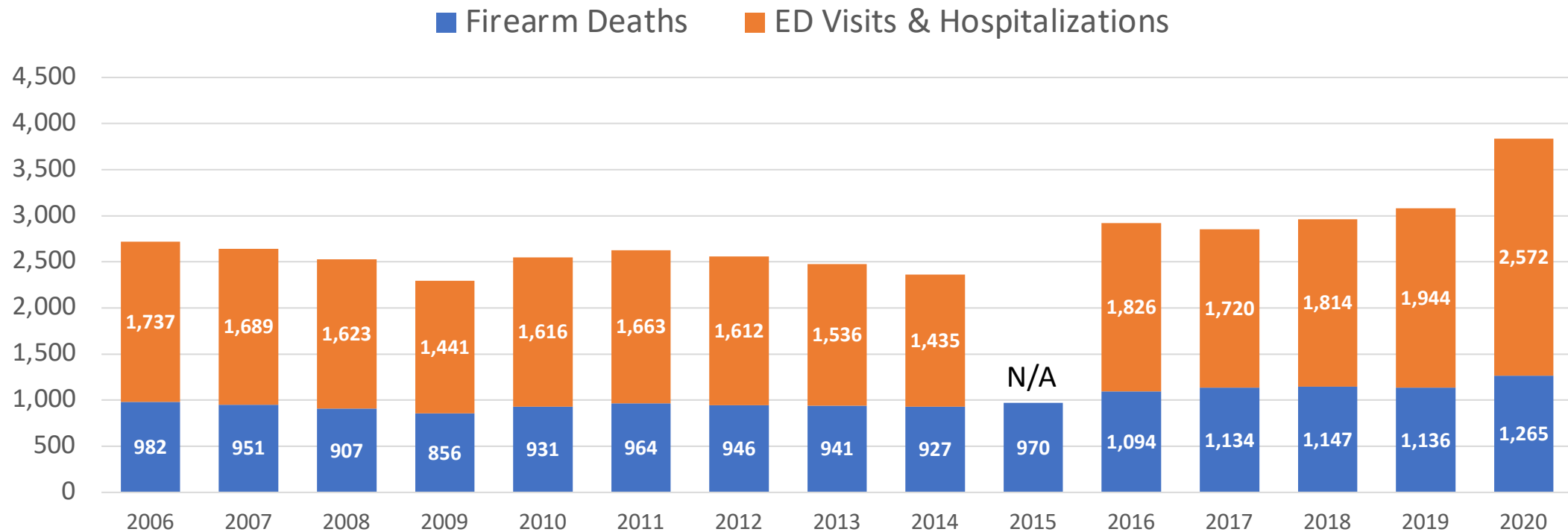
Numbers & Rates of Total Firearm Deaths per 100,000 by County, 1999-2020



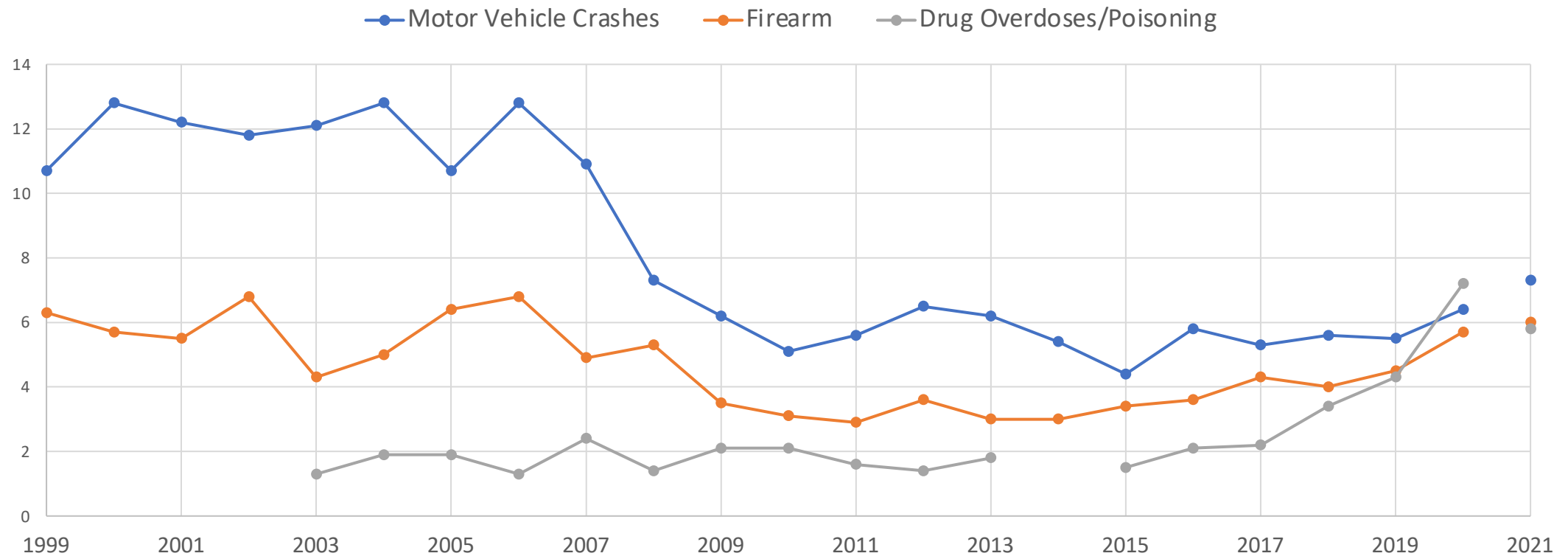
Age-Adjusted Rates & Trends, Total Firearm Mortality



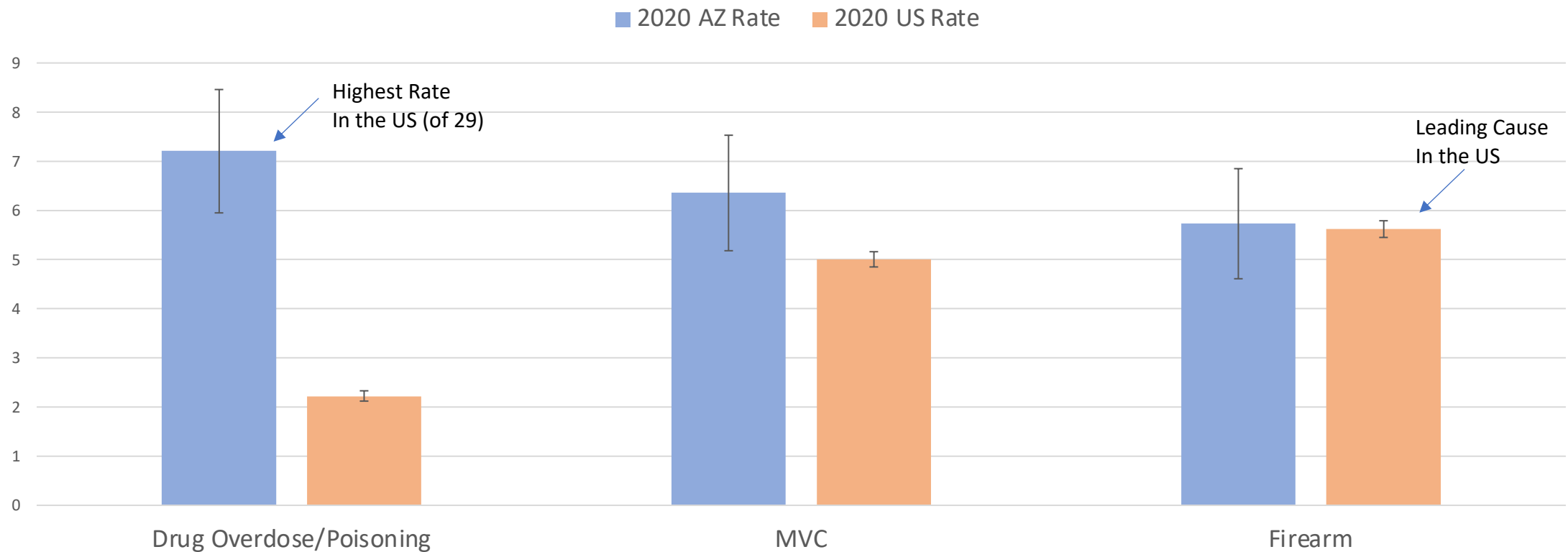
Numbers of Fatal and Nonfatal Firearm Injuries, Arizona, 2006-2020



Trends – Three Leading Causes of Death, Age 1-19, Arizona



Three Leading Causes of Death in 2020, Age 1-19, AZ vs US



From a legislative hearing in Colorado in support of
“Second Amendment Preservation Act” 2/6/23

Gun Lobbyist Says Child Shooting Death Stats Would Be Lower 'If You Remove Black Males'

Later during Monday’s hearing, when Colorado state Rep. Kyle Brown (D) cited recent statistics that show [guns are now the leading cause of death among children and adolescents](#) in the U.S., Lorusso said those stats wouldn’t look as alarming if you didn’t count “Black males” in the numbers.

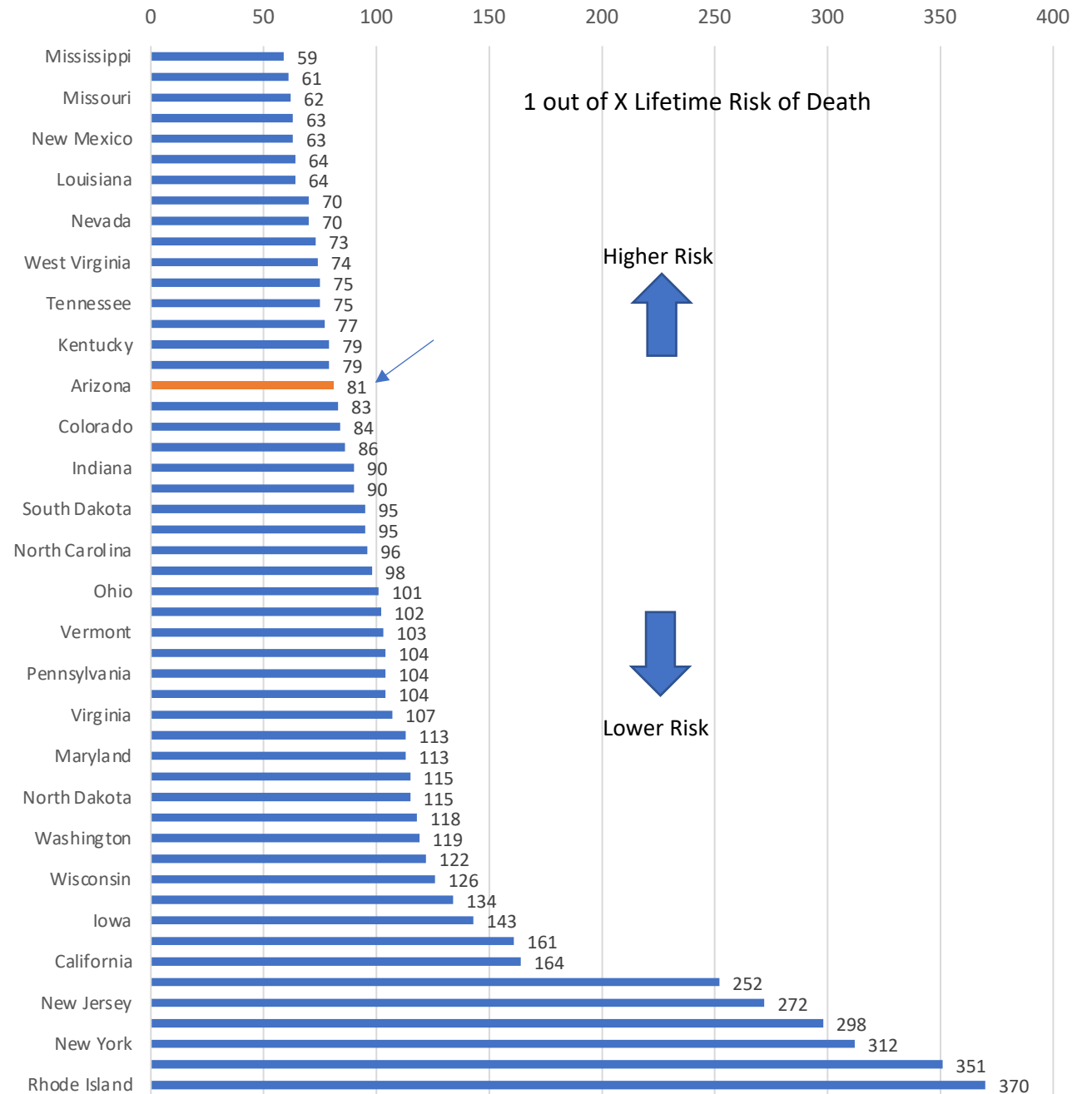
“If you remove Black males in that age group from that, it is not true,” Lorusso said, according to [Denver7](#). “That is a symptom of a different issue.”



ANTJE DRIESENS
The Washington Post
1/30/2022

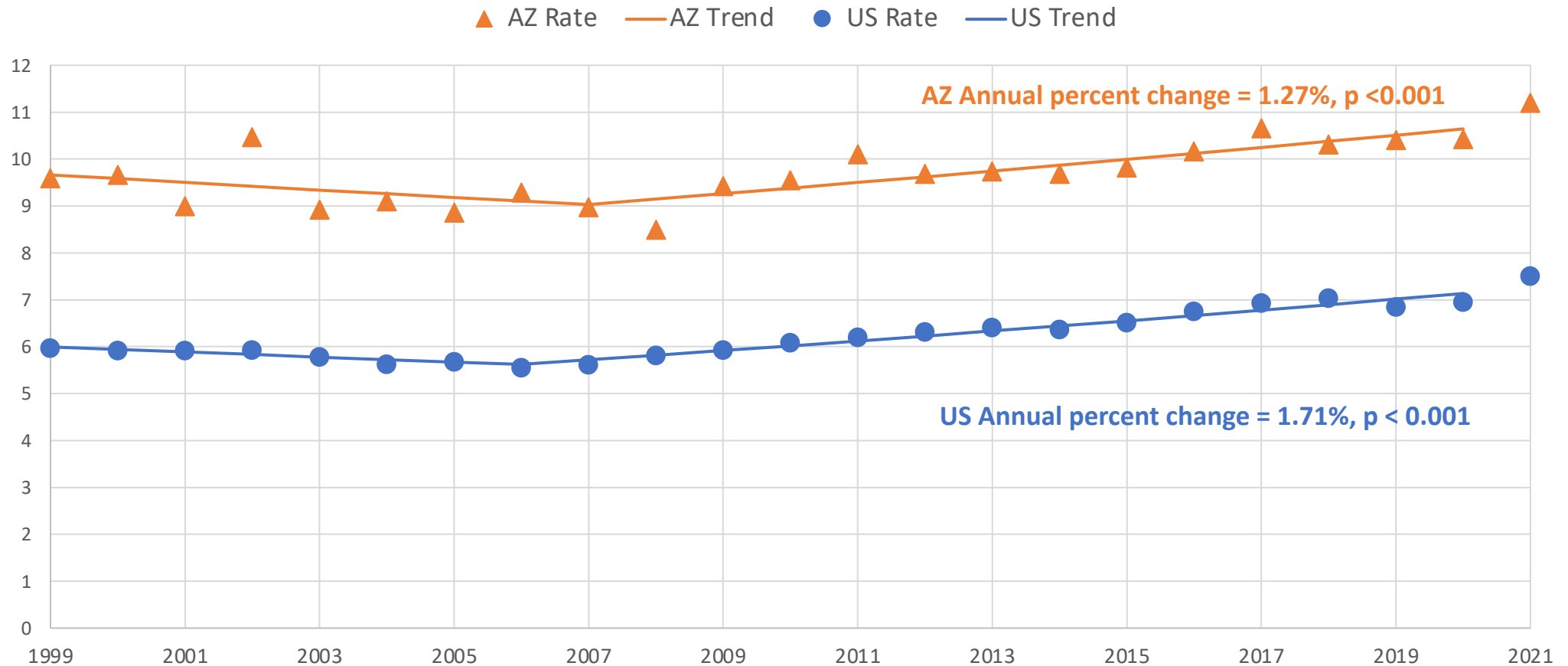
Estimated Lifetime Risk of Death by Firearm

(Sehgal, 2020)

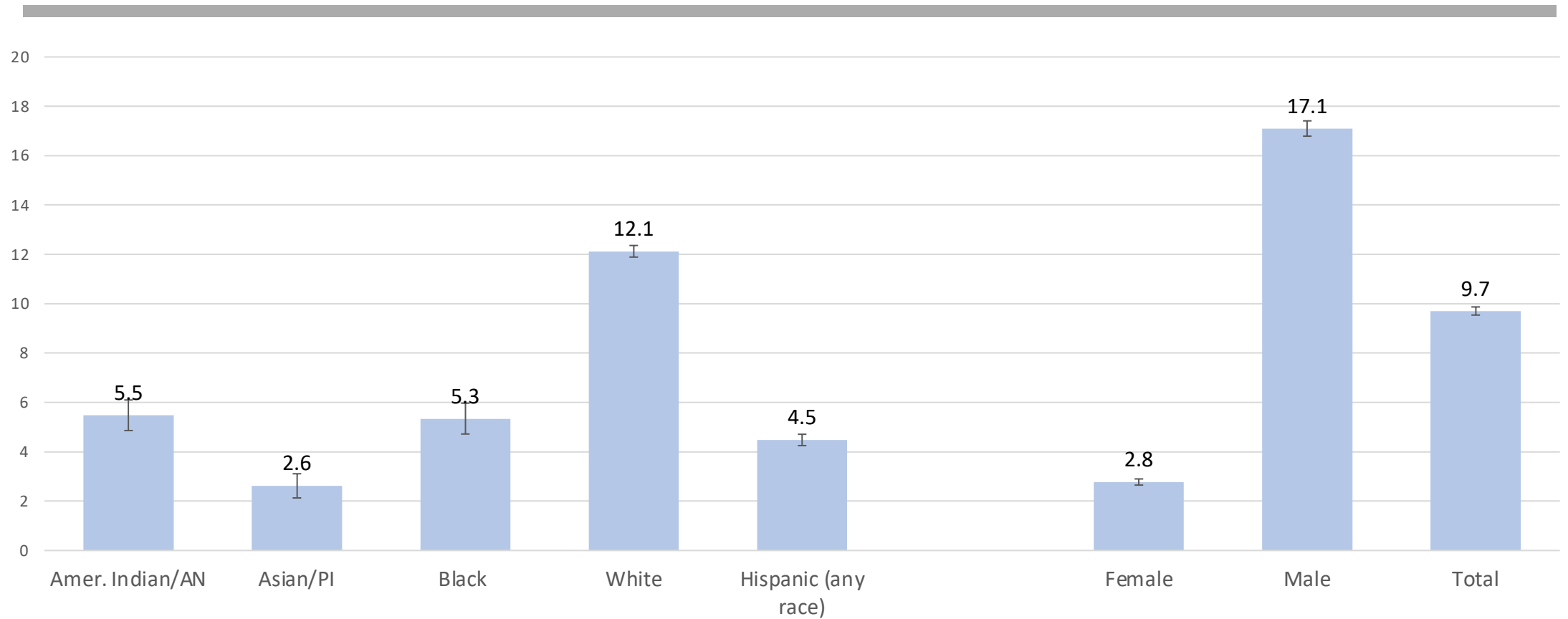


Firearm Suicides

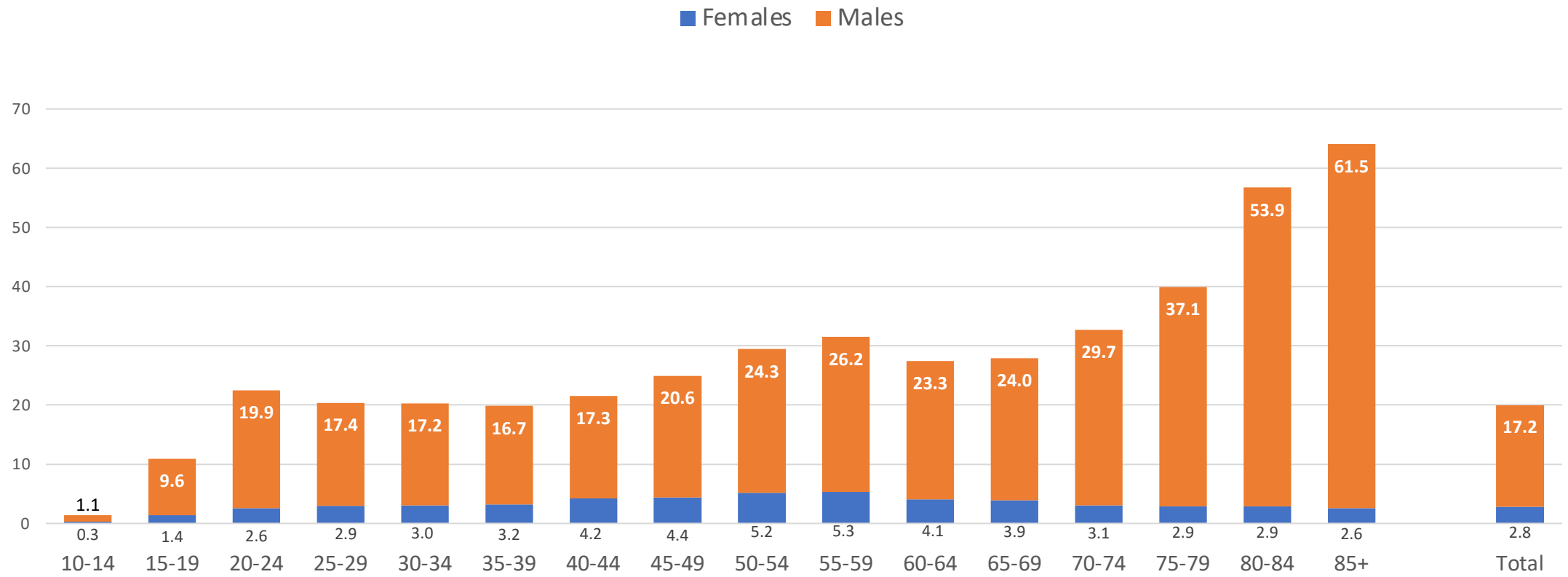
Rates & Trends of Firearm Suicides, AZ vs US



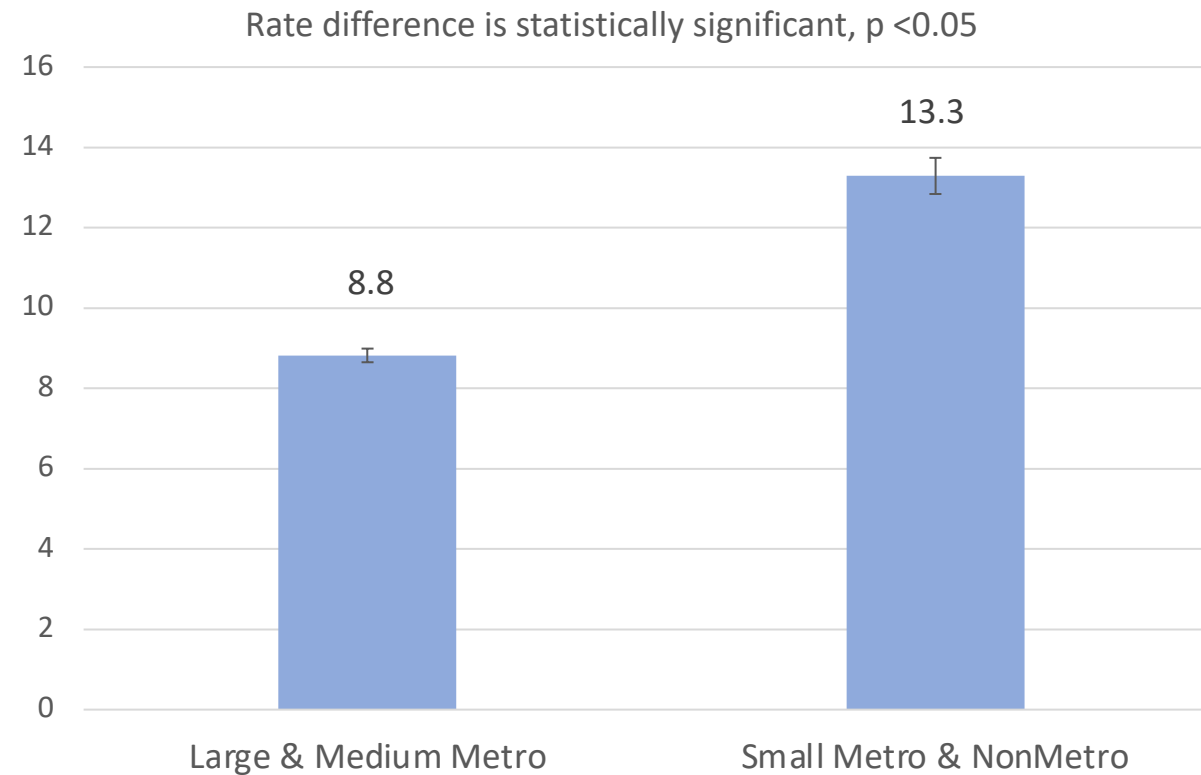
Firearm Suicide Rates by NH-Race, Ethnicity & Gender, Arizona 1999-2020



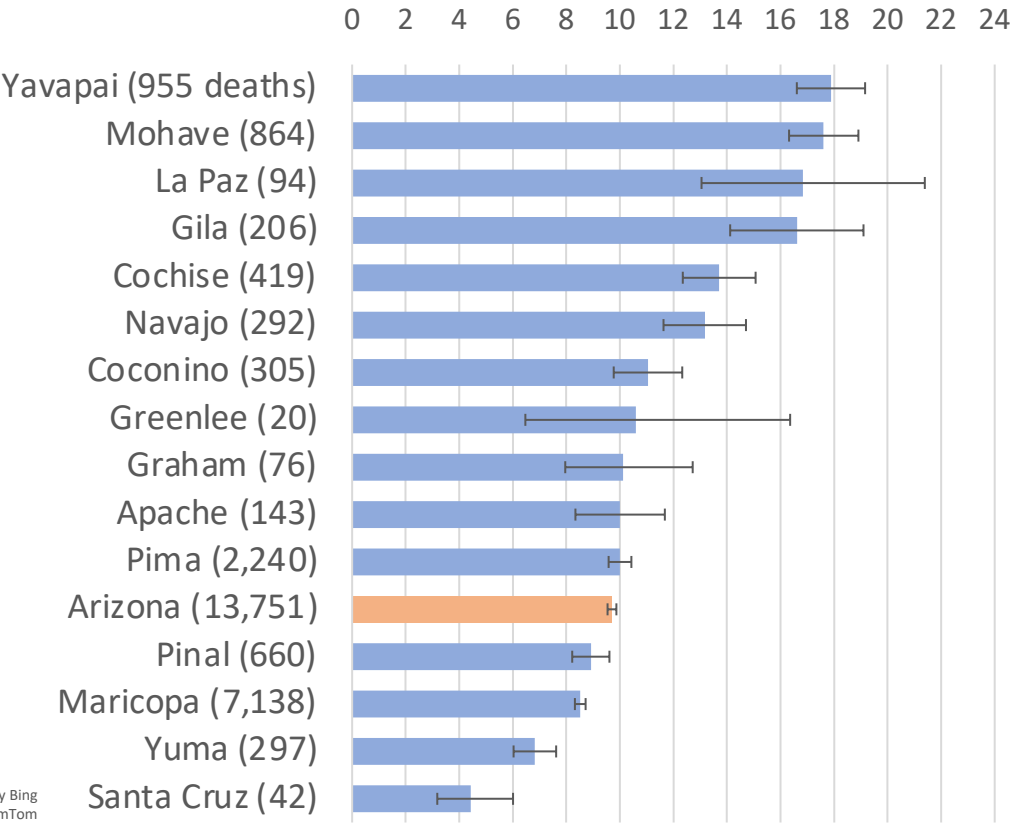
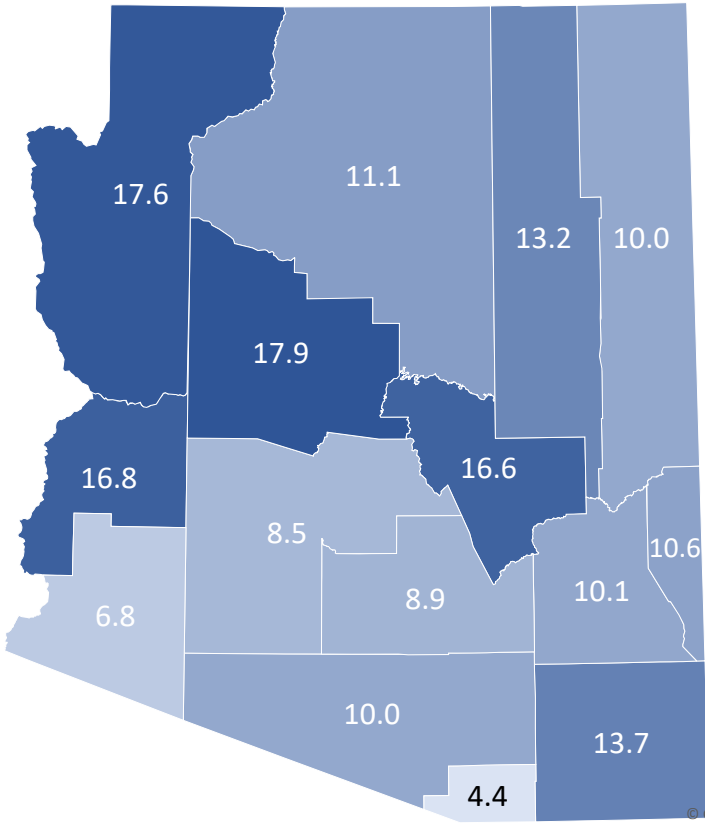
Rates of Firearm Suicide by Age, Arizona, 1999-2020



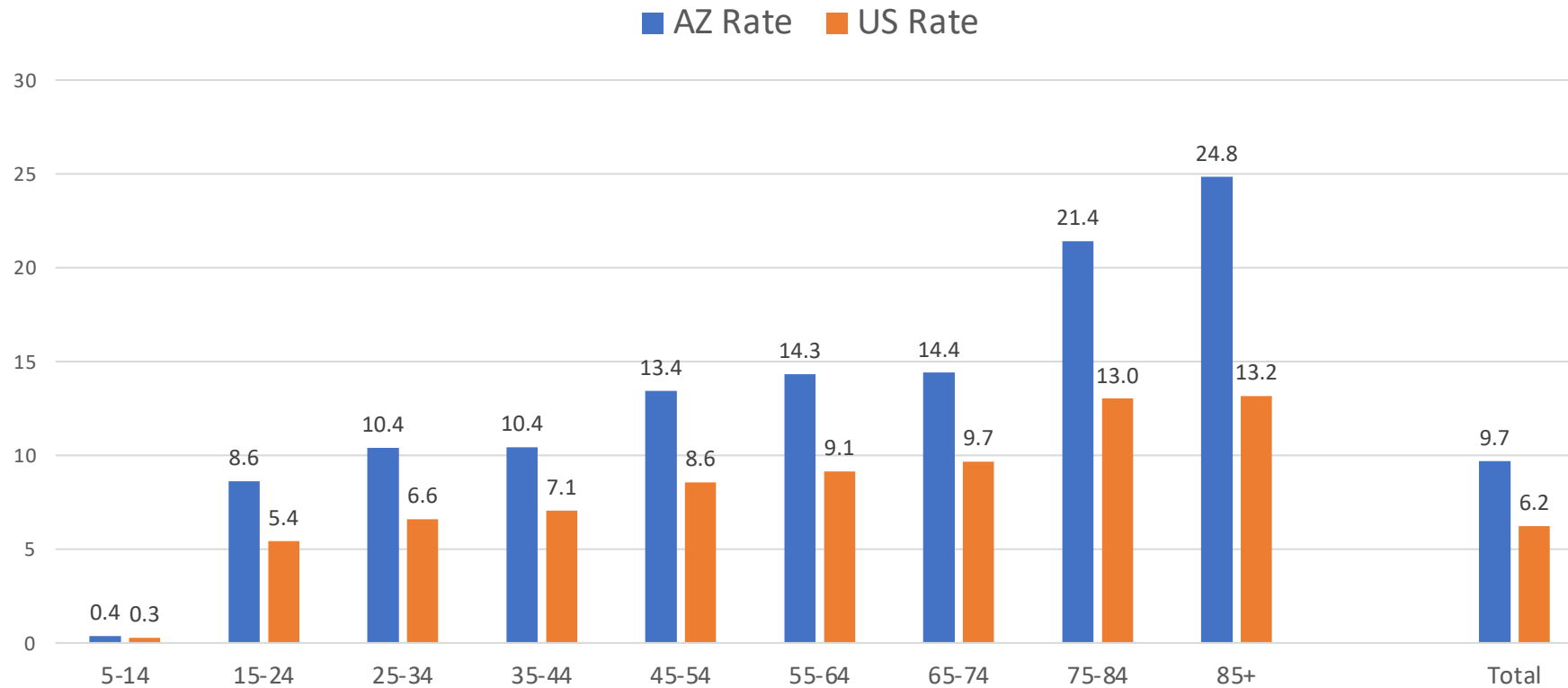
Urban-Rural Rates of Firearm Suicide, Arizona, 1999-2020



Firearm Suicide Rates by County, 1999-2020



Firearm Suicide Rates by Age, 1999-2020, AZ vs US



Percent of Suicides Due to the Three Main Means of Injury, by Race/Ethnicity, Arizona, 1999-2020

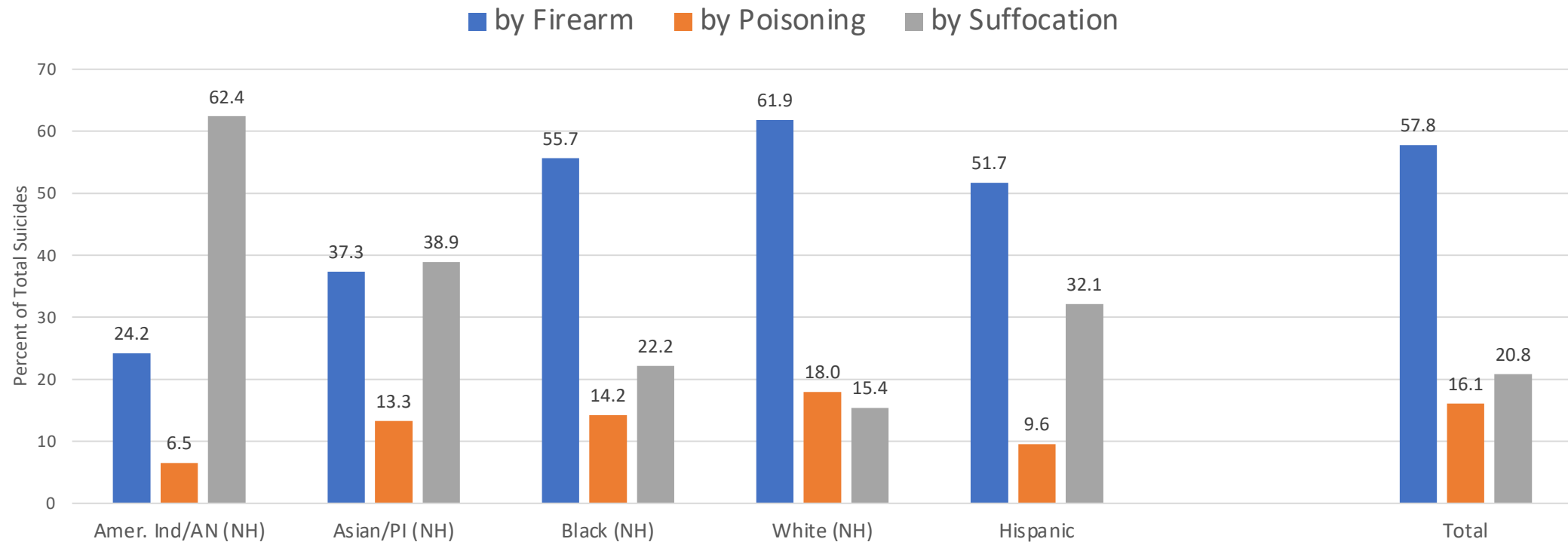


Figure 66. Firearm Suicide Rates vs Household Gun Ownership, 1999-2016, 50 States

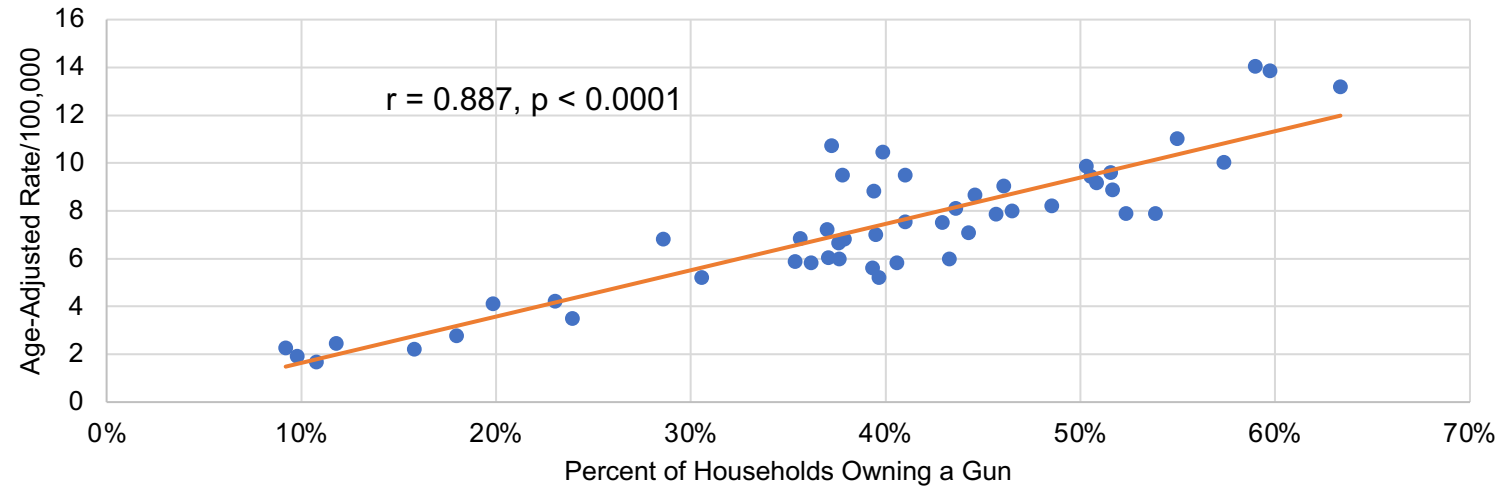
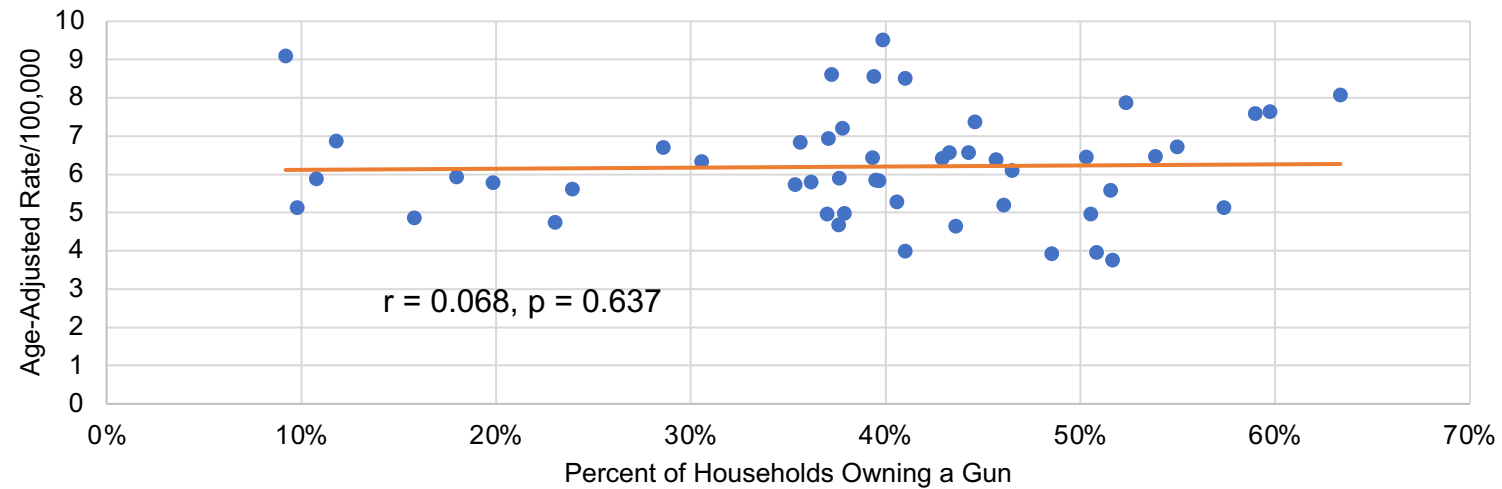


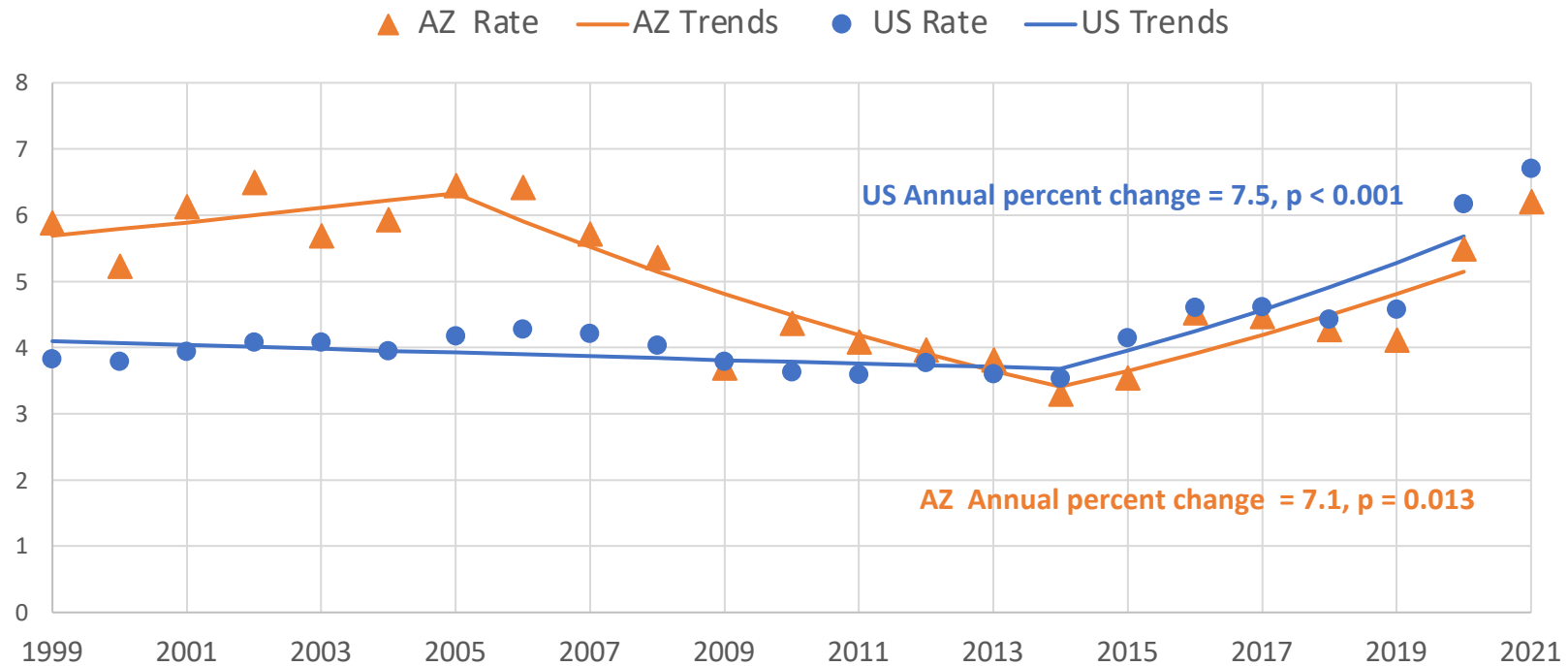
Figure 67. Non-Firearm Suicide Rates vs Household Gun Ownership, 1999-2016, 50 States



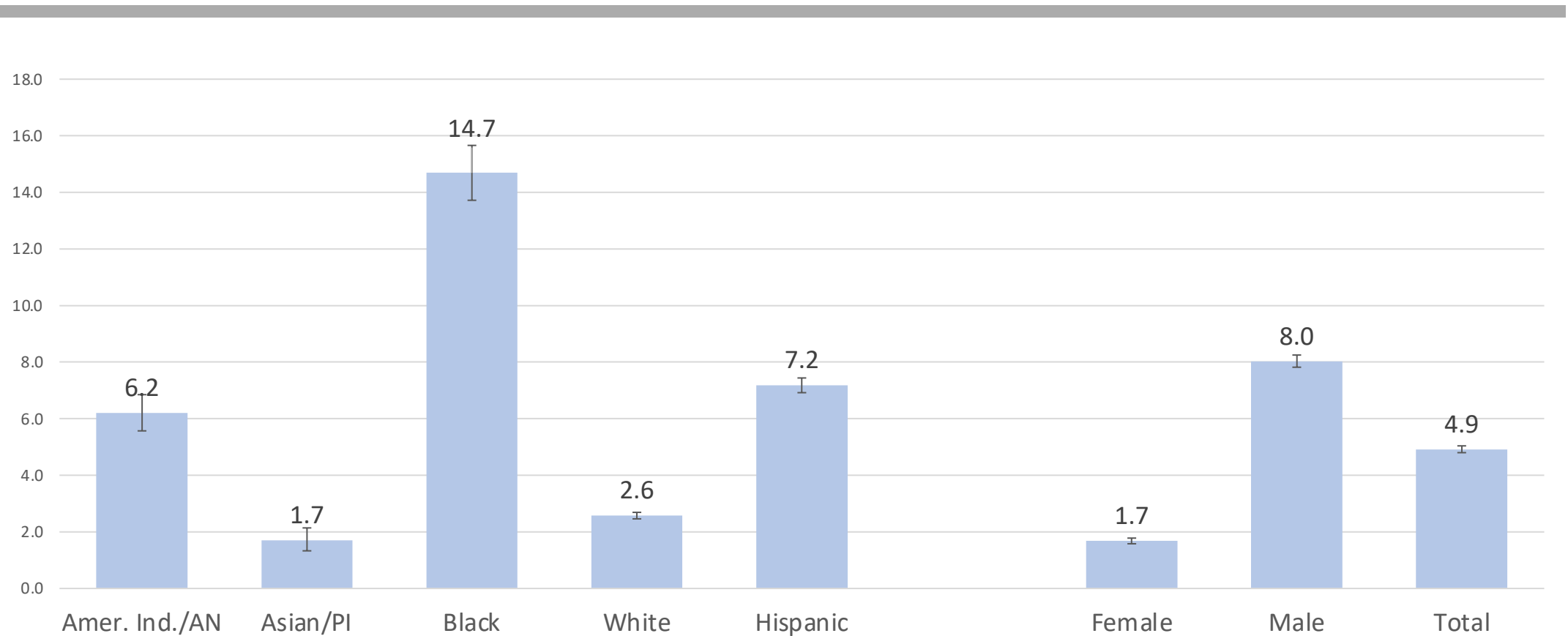
Firearm Homicides



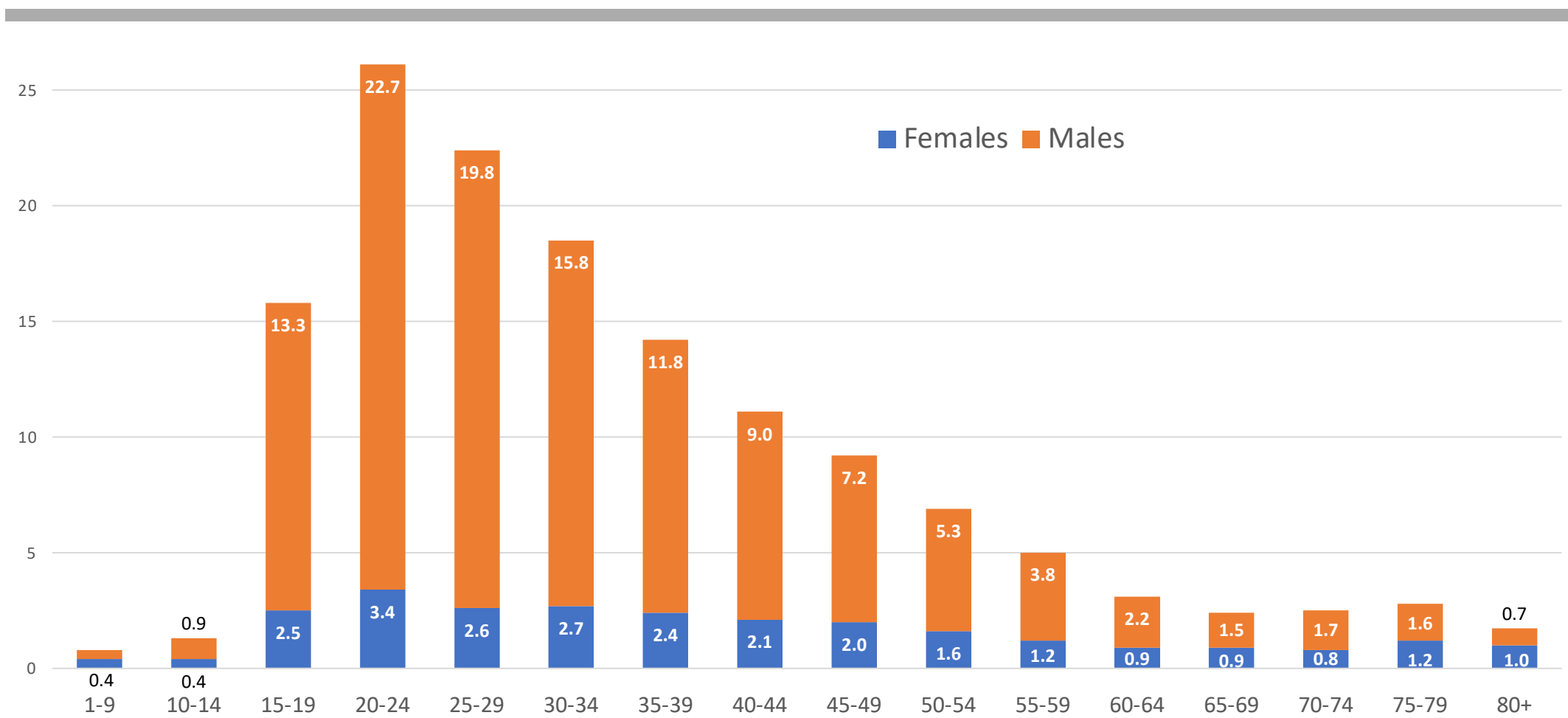
Rates & Trends of Firearm Homicides, AZ vs US



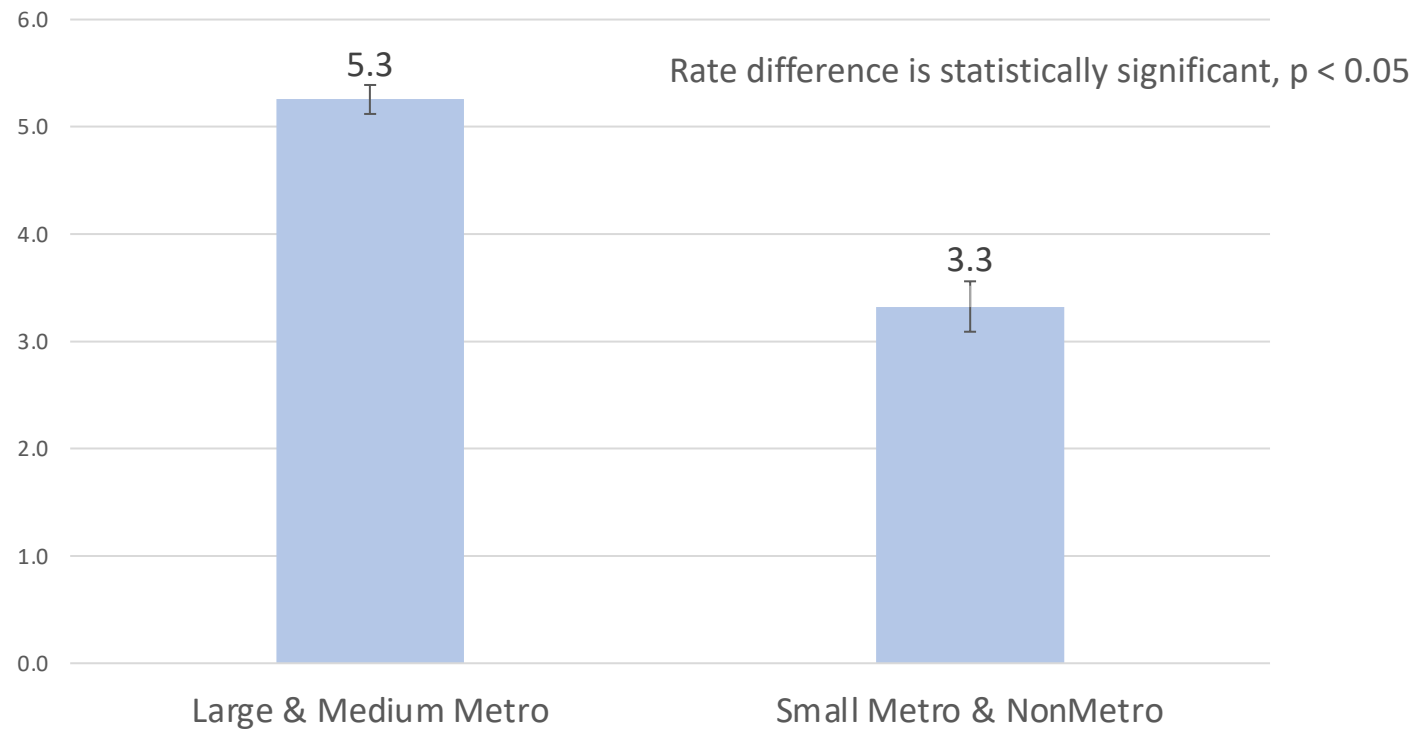
Firearm Homicide Rates by NH-Race, Ethnicity & Gender, Arizona 1999-2020



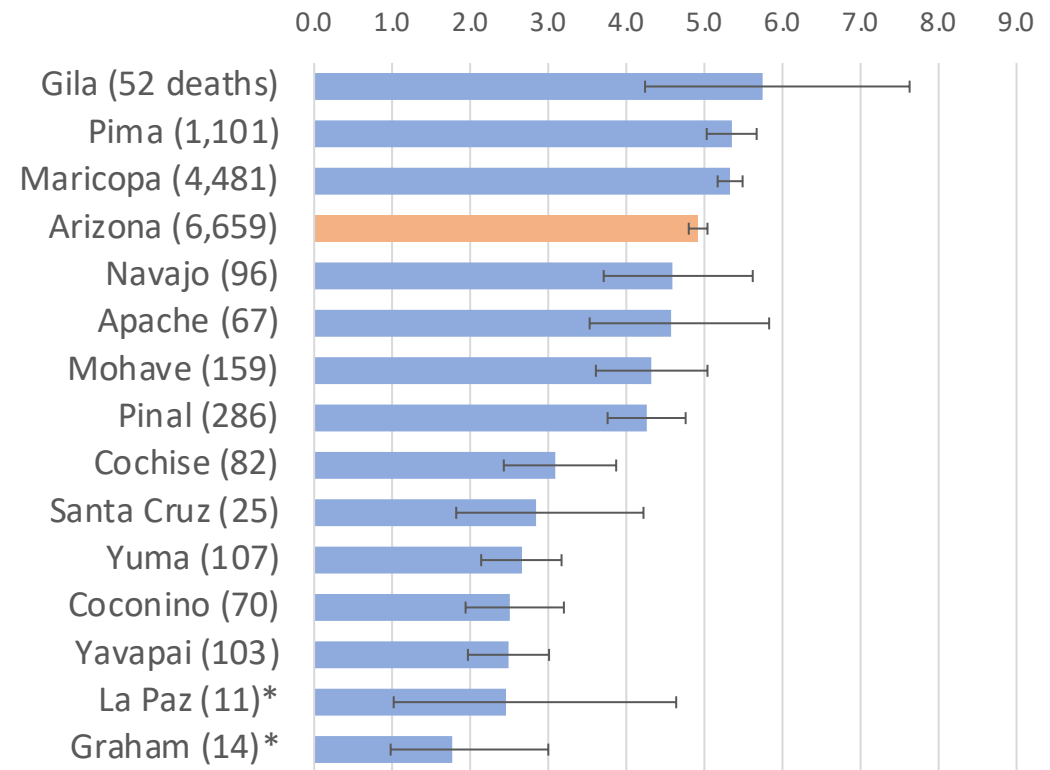
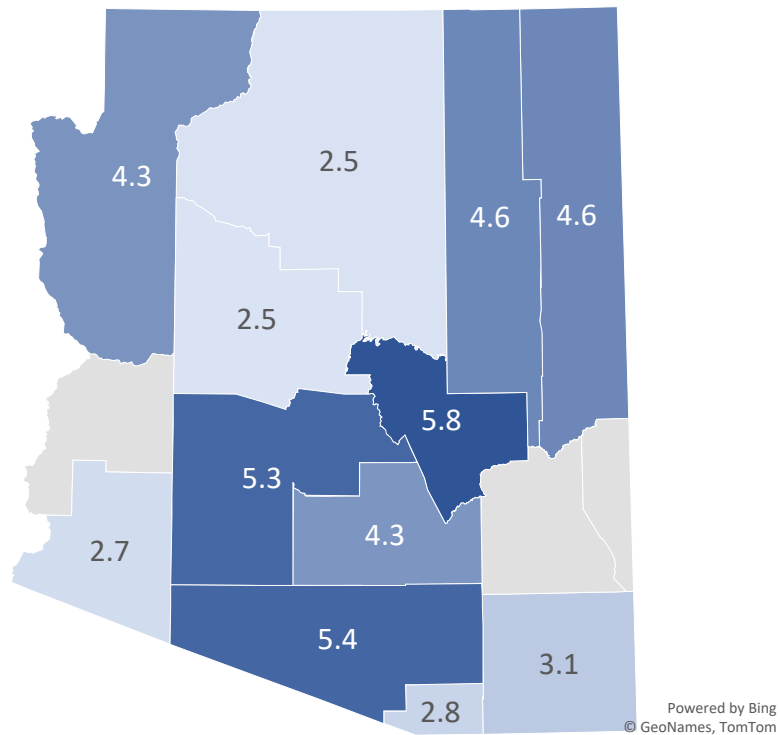
Firearm Homicide Rates by Age, AZ, 1999-2020



Urban-Rural Rates of Firearm Homicides, AZ, 1999-2020

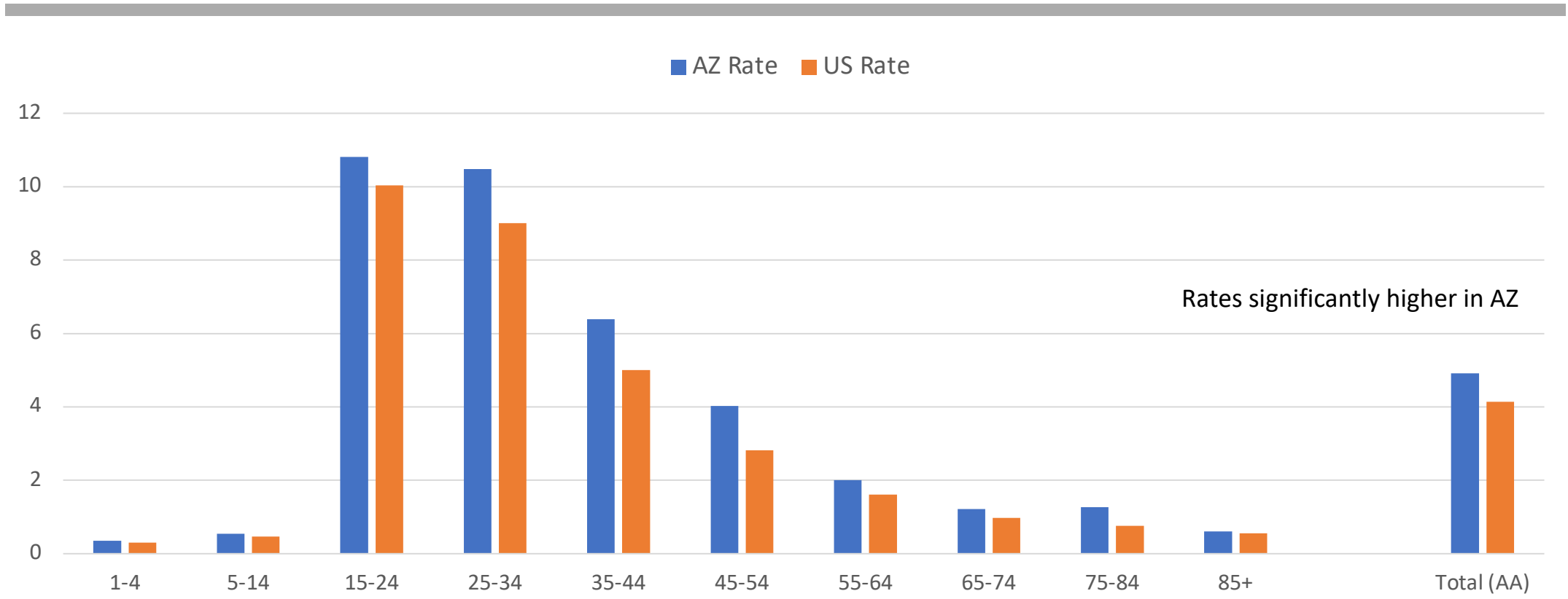


Firearm Homicide Rates by County, 1999-2020



**Unreliable Rates; Greenlee data suppressed*

Firearm Homicide Rates, AZ vs US



Mass Shootings



Two examples of deadliest mass shootings...

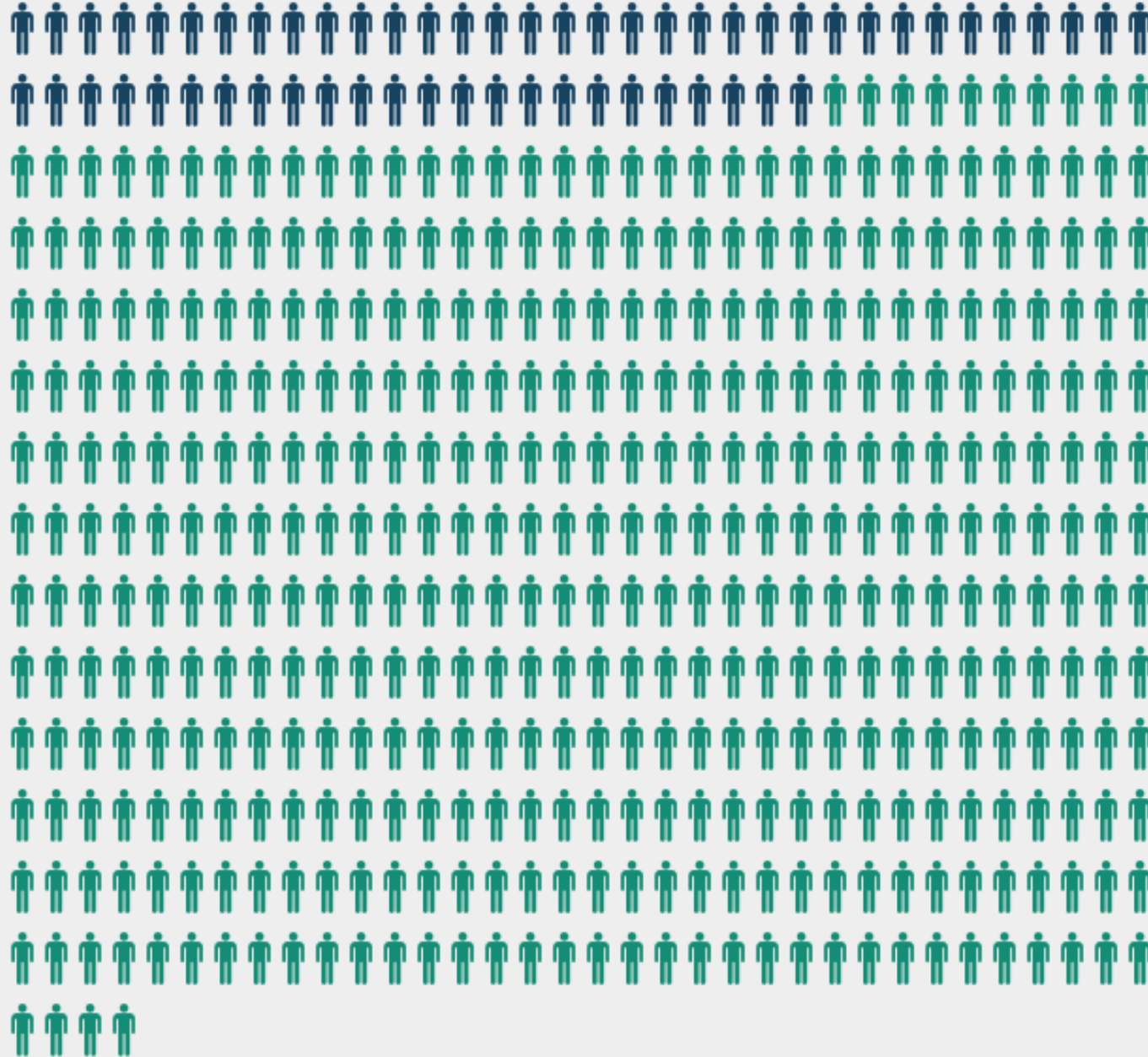
Pulse nightclub shooting in 2016: 49 dead, 53 wounded, deadliest mass shooting as of that time.

Orlando, Fla., Jun. 12



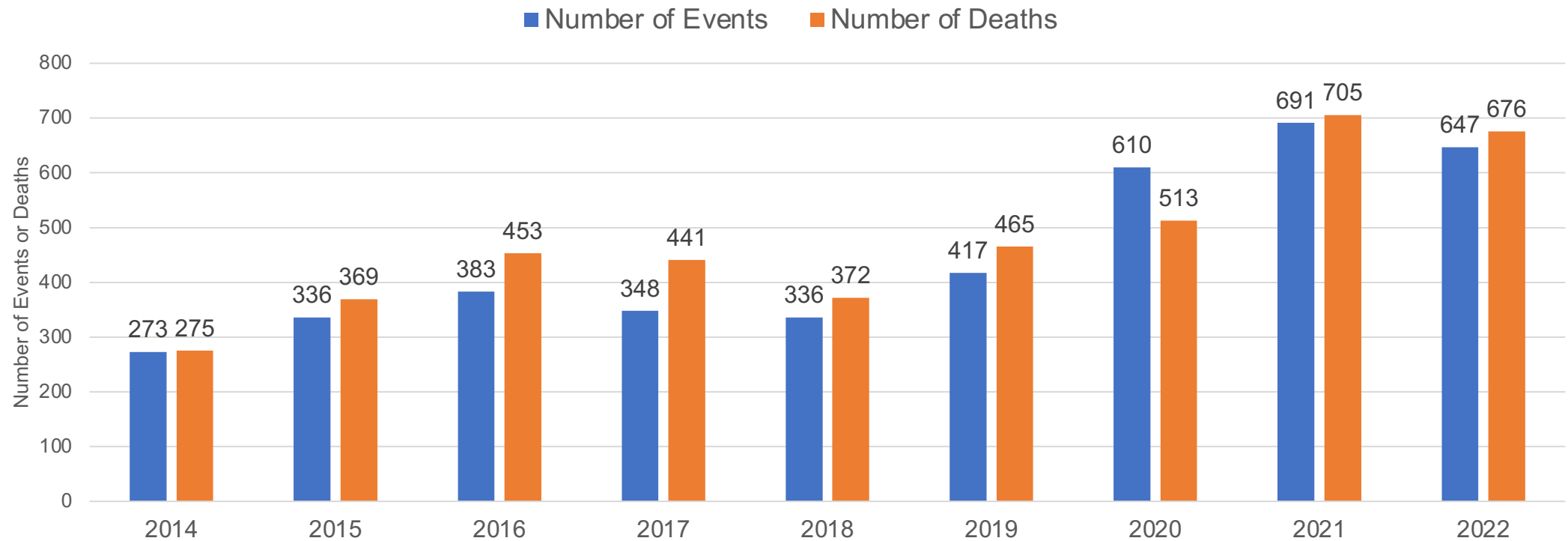
<https://time.com/4965022/deadliest-mass-shooting-us-history/>

Las Vegas, Nev., Oct. 1

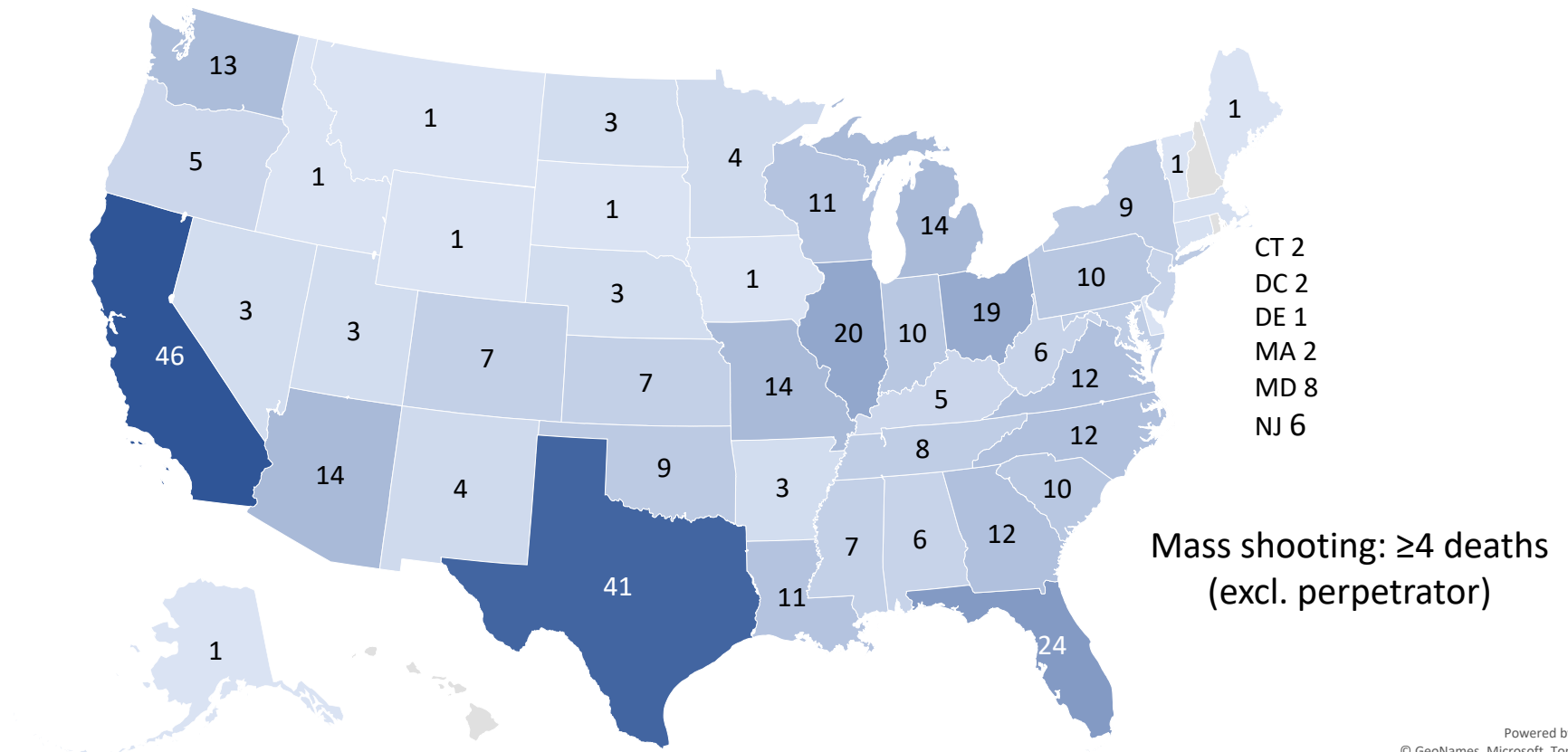


- 2017, the deadliest mass shooting to date
- 60 dead, >413 wounded (many more) who were attending a music festival
- “Bump stock” modified semi-automatic rifle used to allow continuous shooting
- >1,000 rounds fired
- ATF banned bump stocks in 2019 (Trump admin)
- Legal challenges denied by 3 federal appeals courts, approved by one court in 2023
- Supreme Court refused to overturn two of the earlier decisions in Oct. 2022

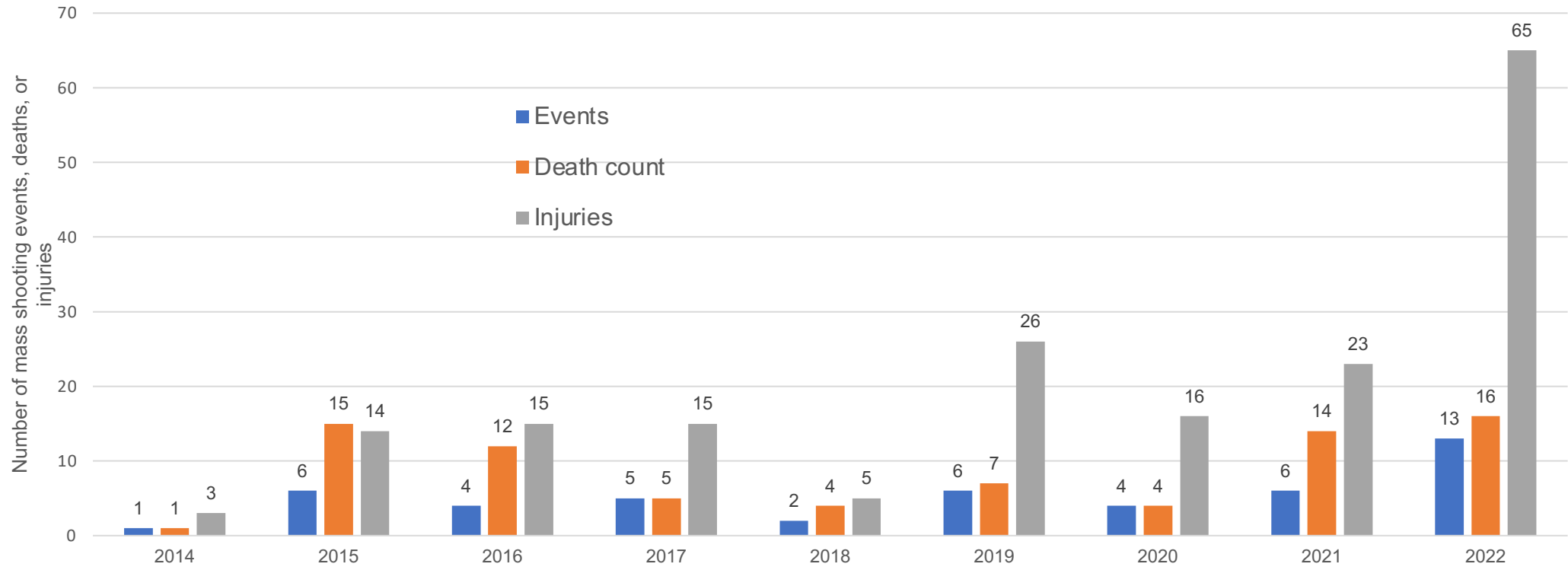
Mass Shooting Events & Deaths, US, 2014-2022



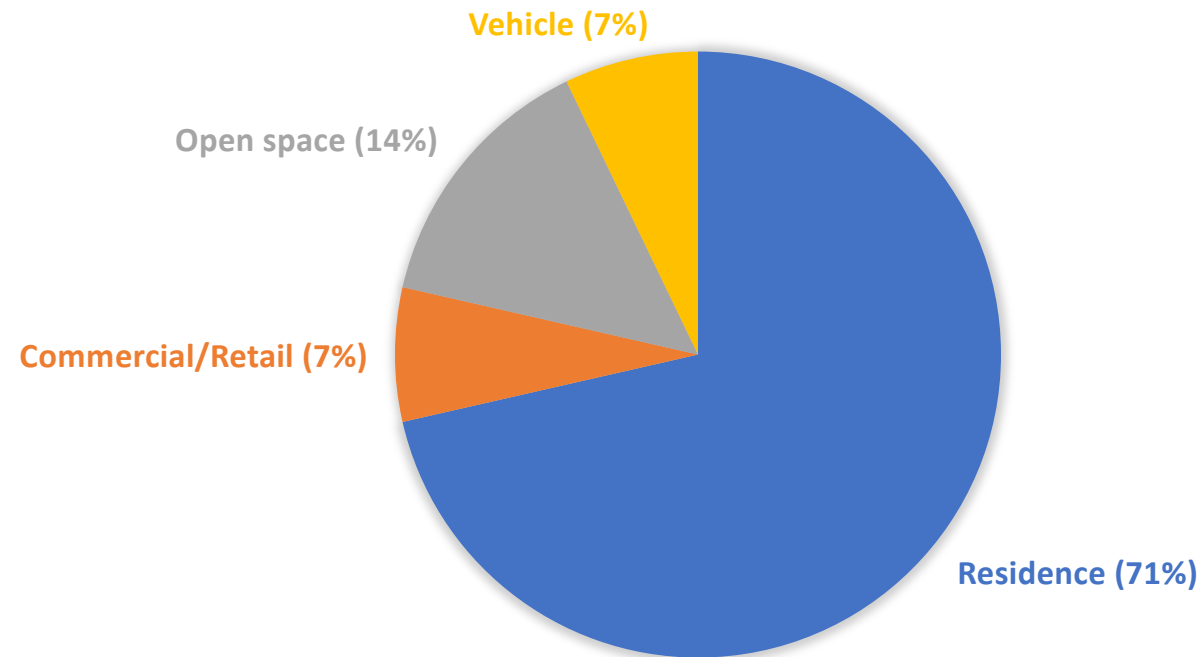
Mass Shooting Events by State, 2006-2022



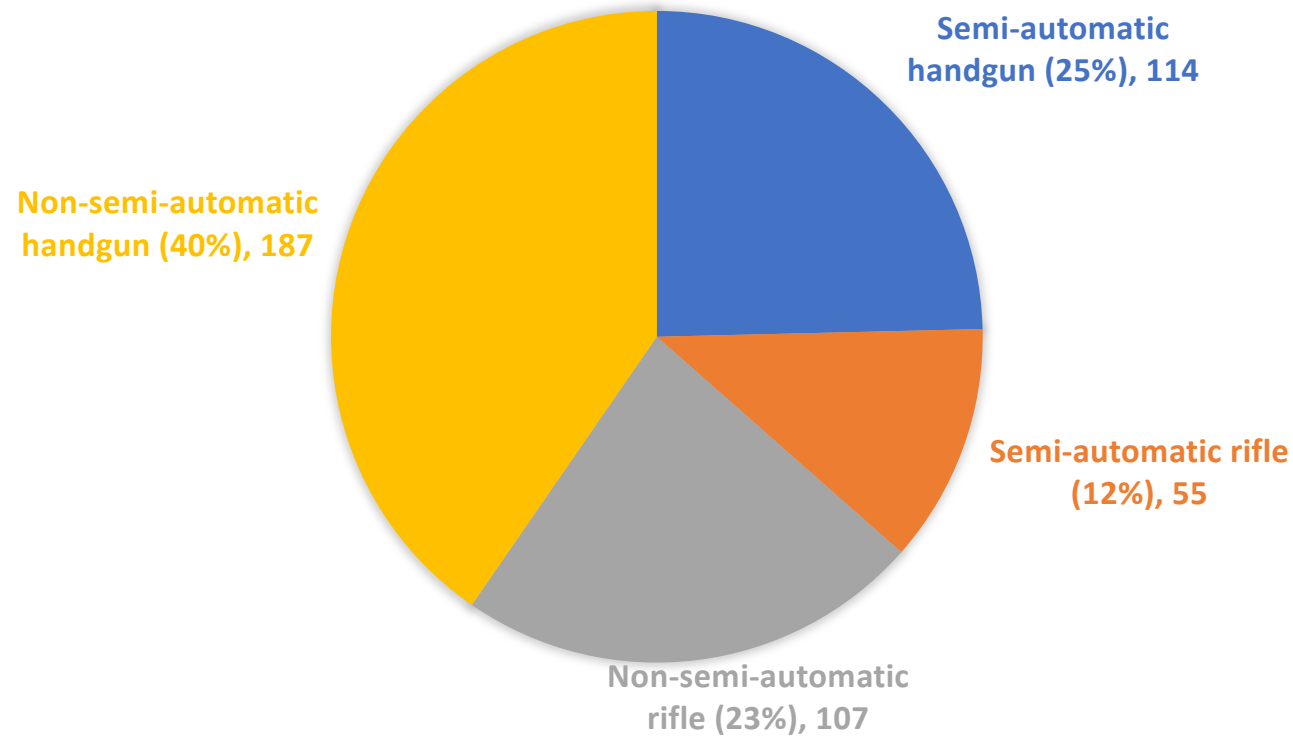
Mass Shooting Events, Deaths & Injuries, Arizona



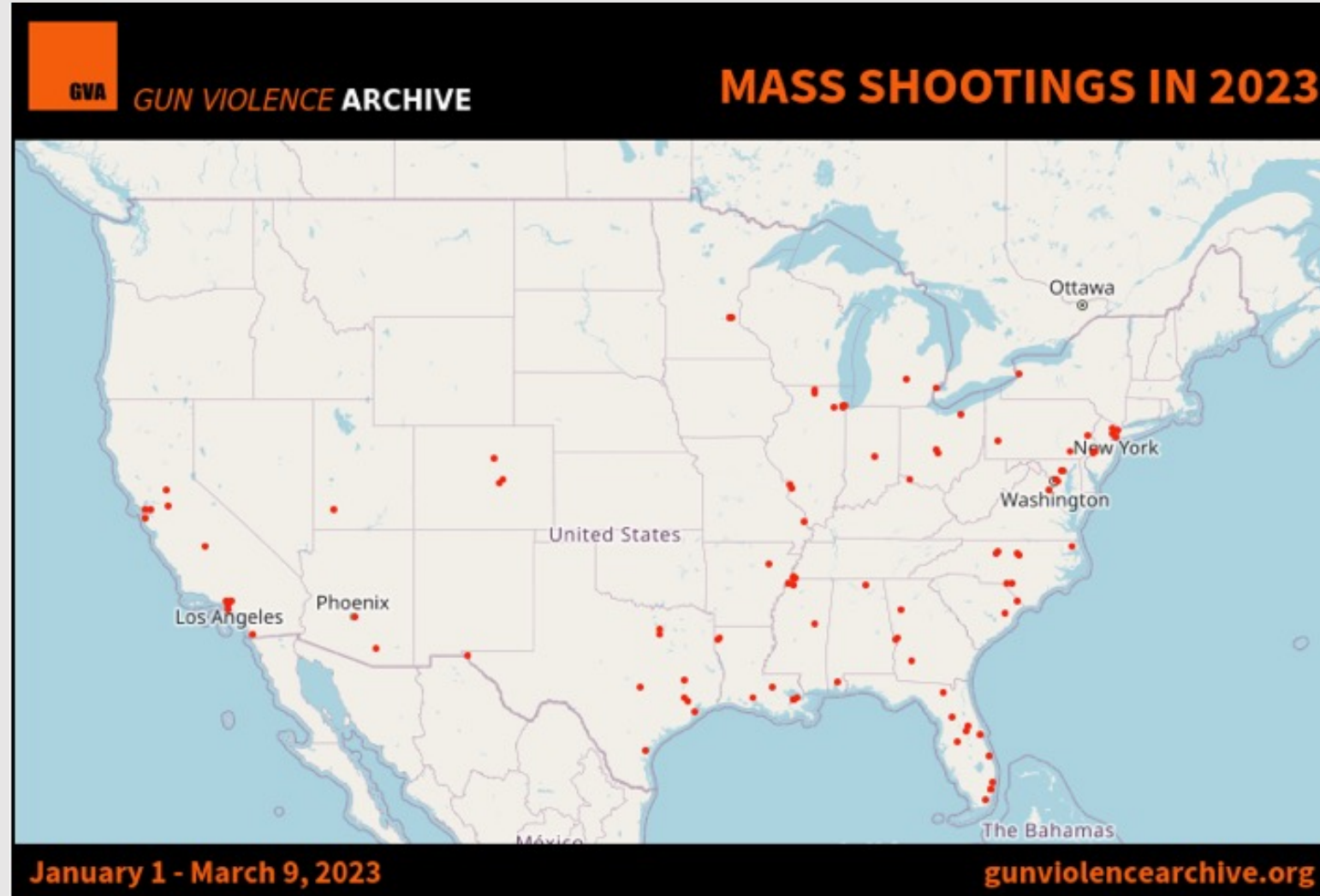
Mass Shootings by Location, AZ 2006-2022



Weapons Used in Mass Shootings, US 2006-2022

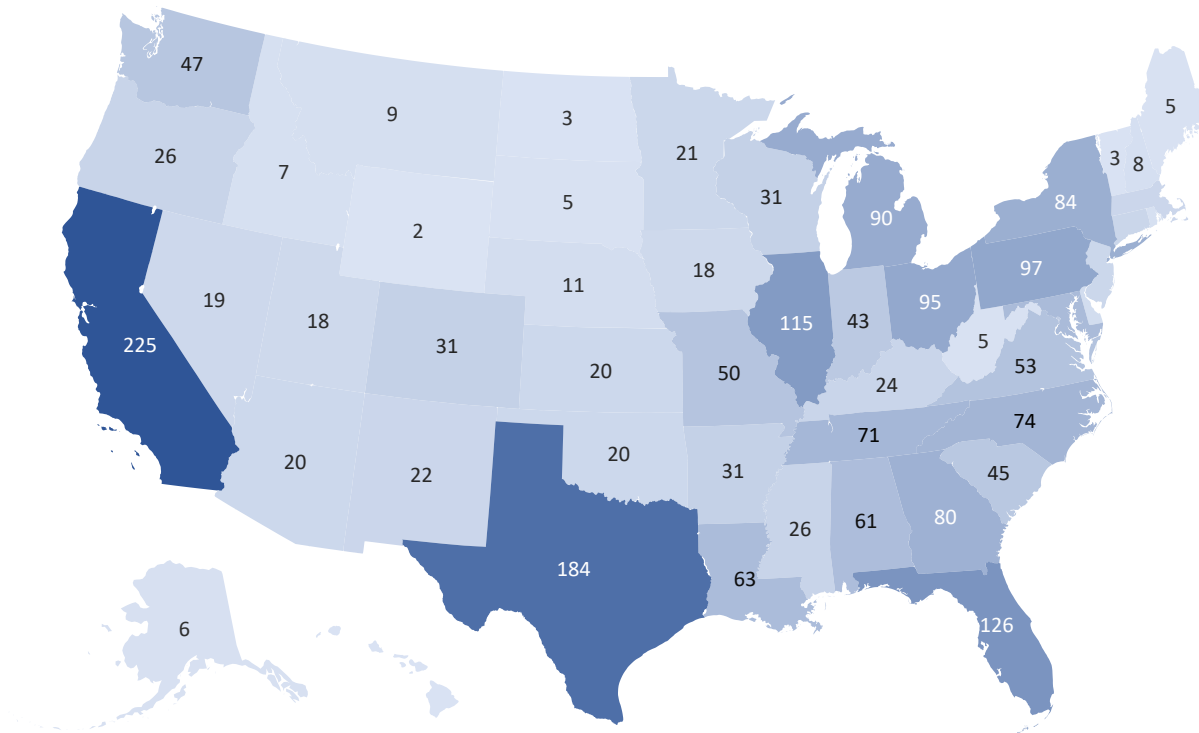


As of March 9, 2023,....107 incidents, 158 killed, 411 wounded



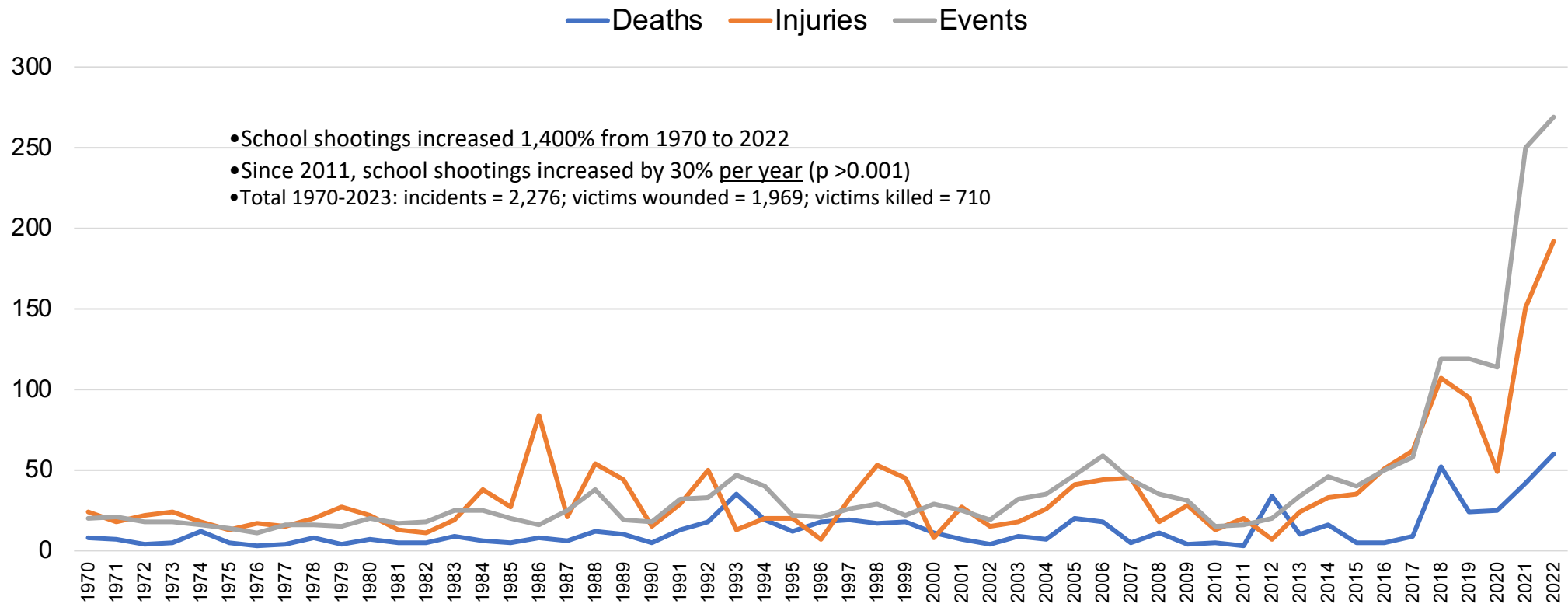
School Shootings

Number of School Shootings by State, 1970-Nov. 2022

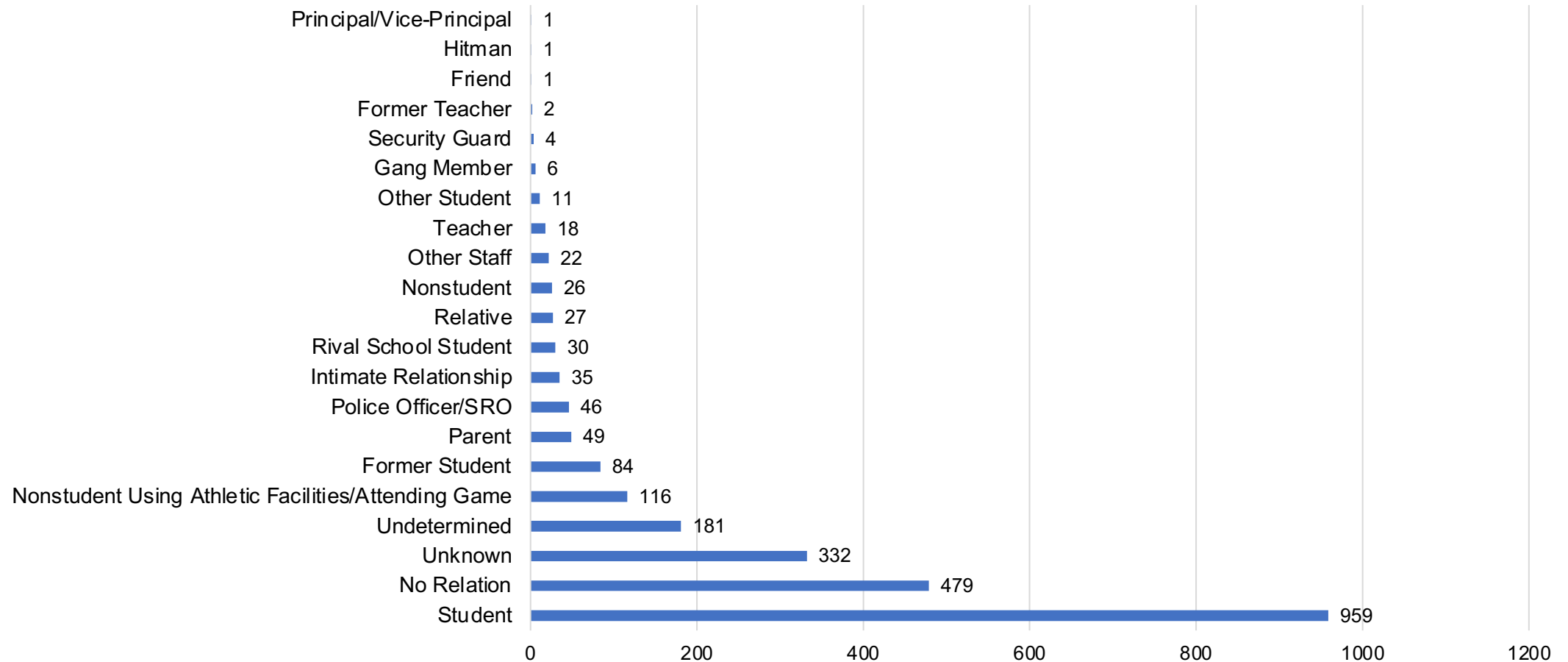


Not shown: HI 3, MA 23, CT 23, RI 7, NJ 21, MD 65, DE 12, DC 36

Deaths, Injuries, & Incidents School Shootings in the US, 1970-2022

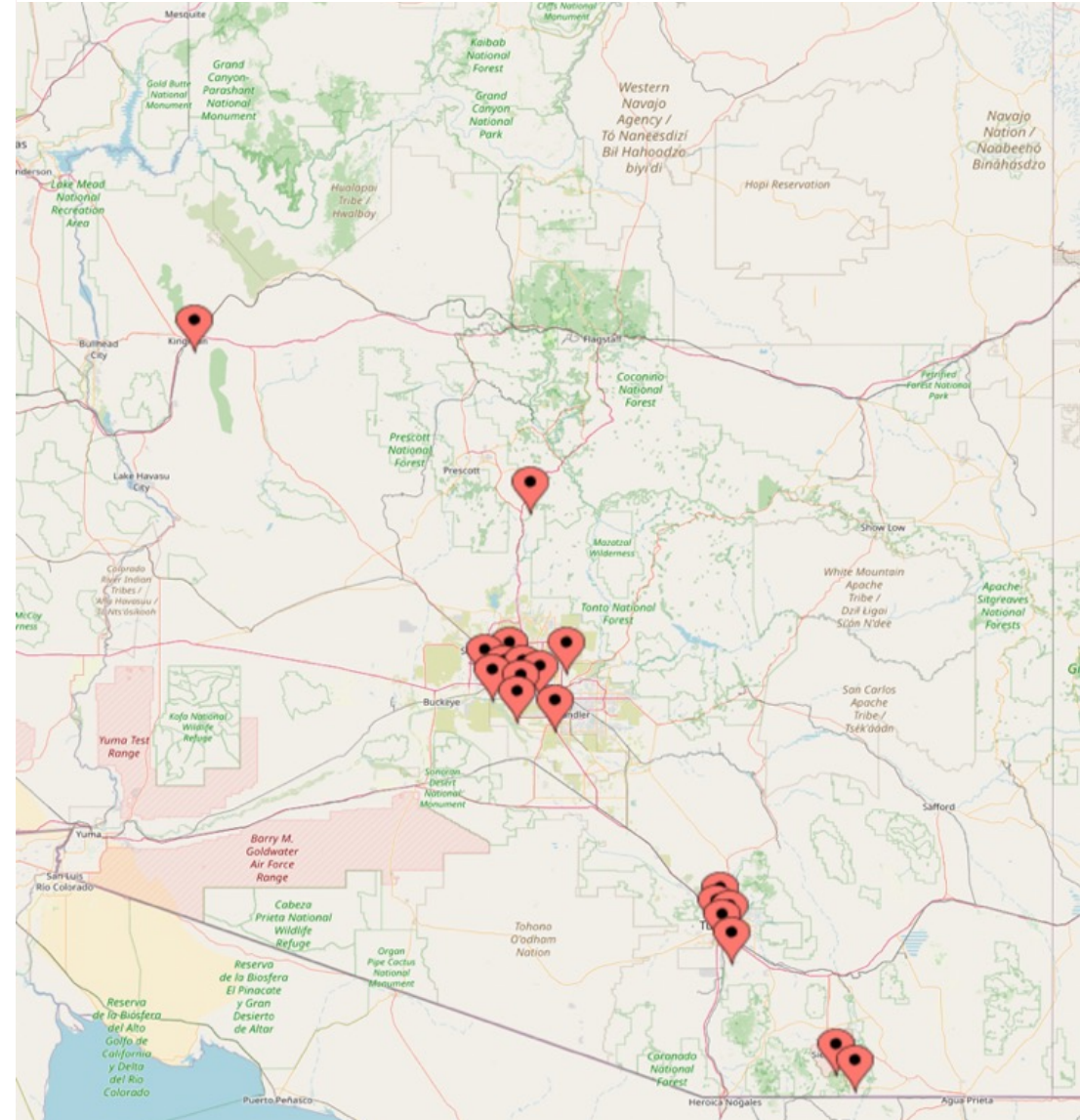


Who Are the School Shooters in the US?

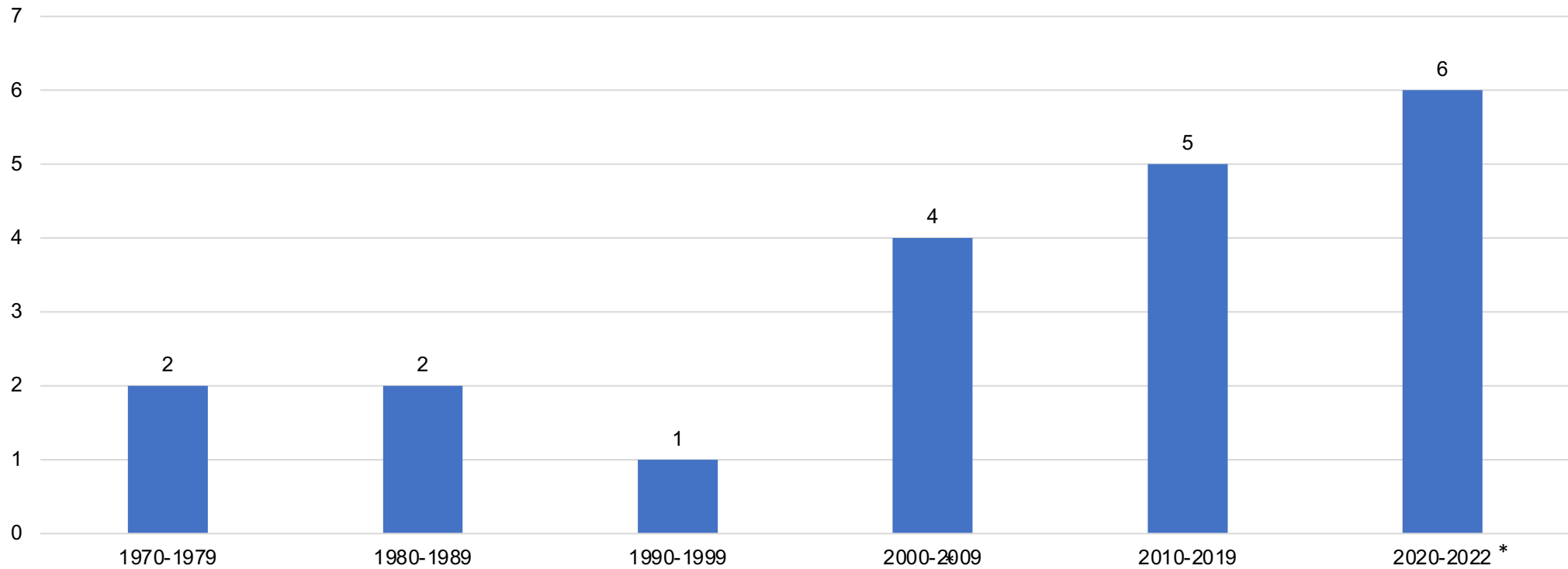


- 20 school shootings at 19 schools
- 6 deaths, 8 wounded
- 11 at high schools, 4 at elementary schools

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

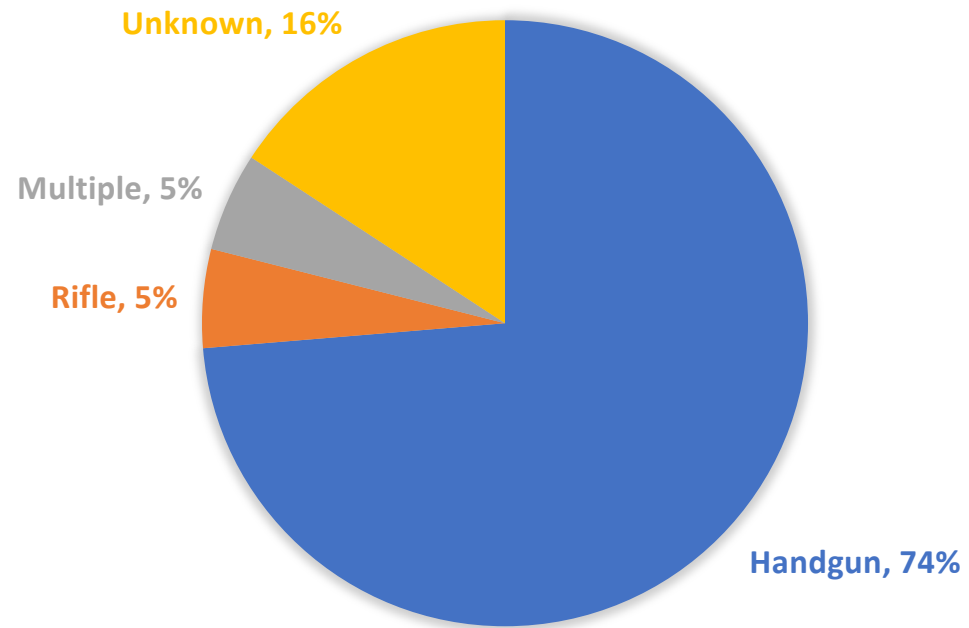


School Shooting Incidents in Arizona by Decade, 1970-Nov. 2022



* First three years of the decade

Types of Firearm Used in AZ School Shootings



ANNIVERSARY CARDS

WEDDING

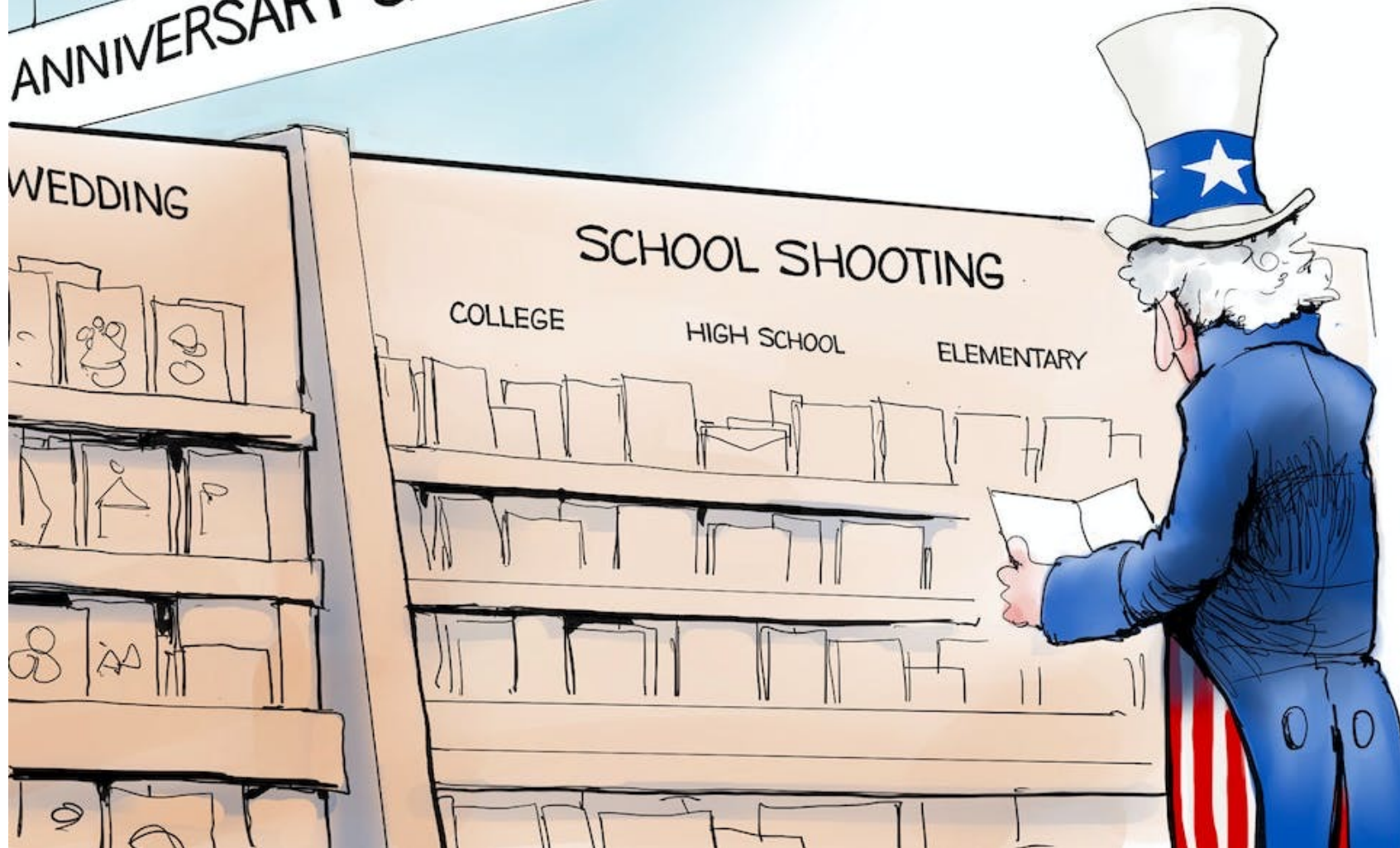
SCHOOL SHOOTING

COLLEGE

HIGH SCHOOL

ELEMENTARY

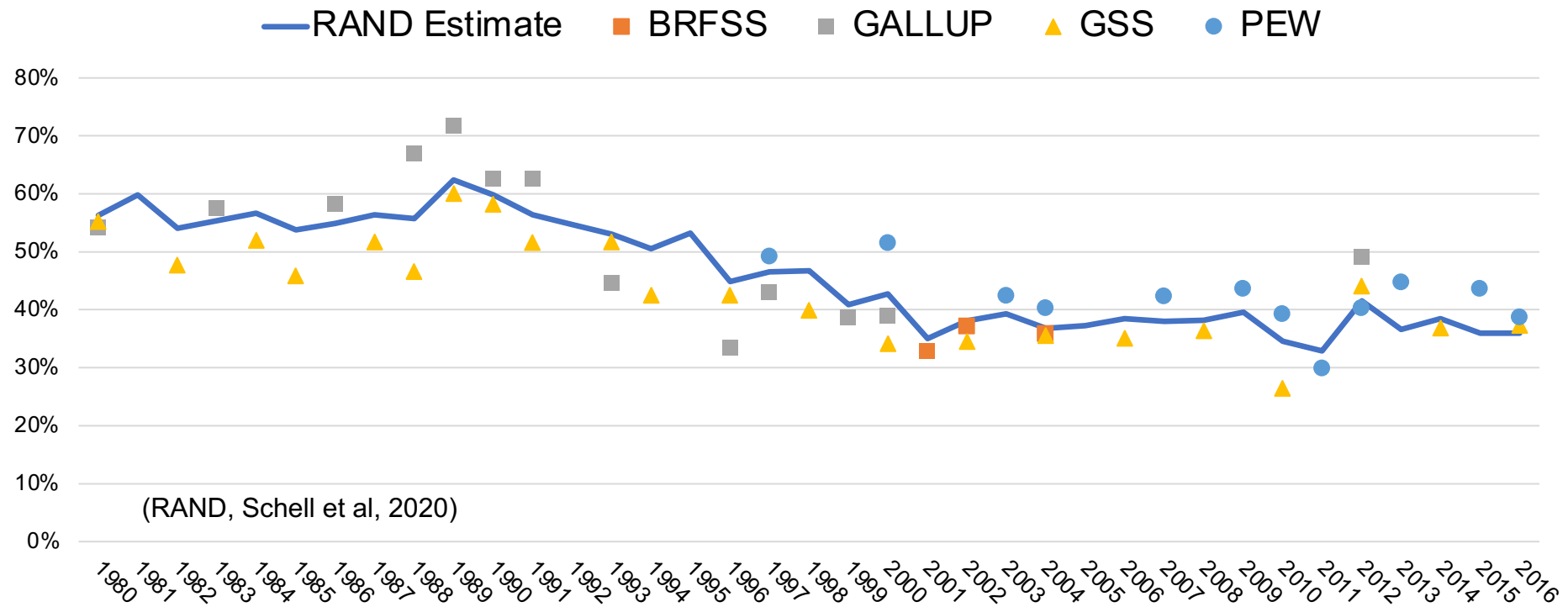
Bramhall '22
NYDN



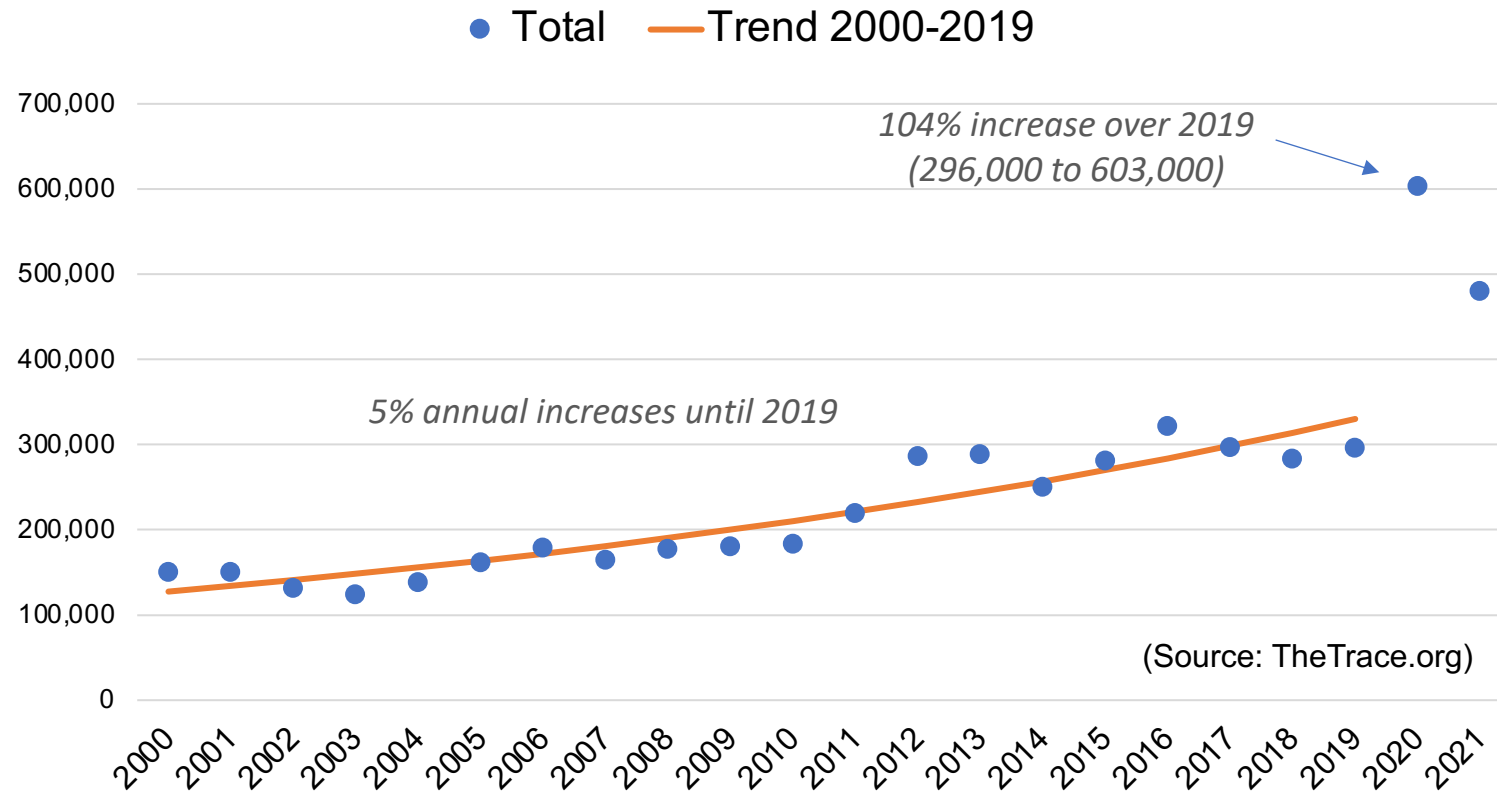
Firearm Ownership



Estimated Proportion of Adults Who Live in a Household With a Firearm, AZ, 1980-2016



Estimated Annual Firearm Sales, AZ, 2000-2021

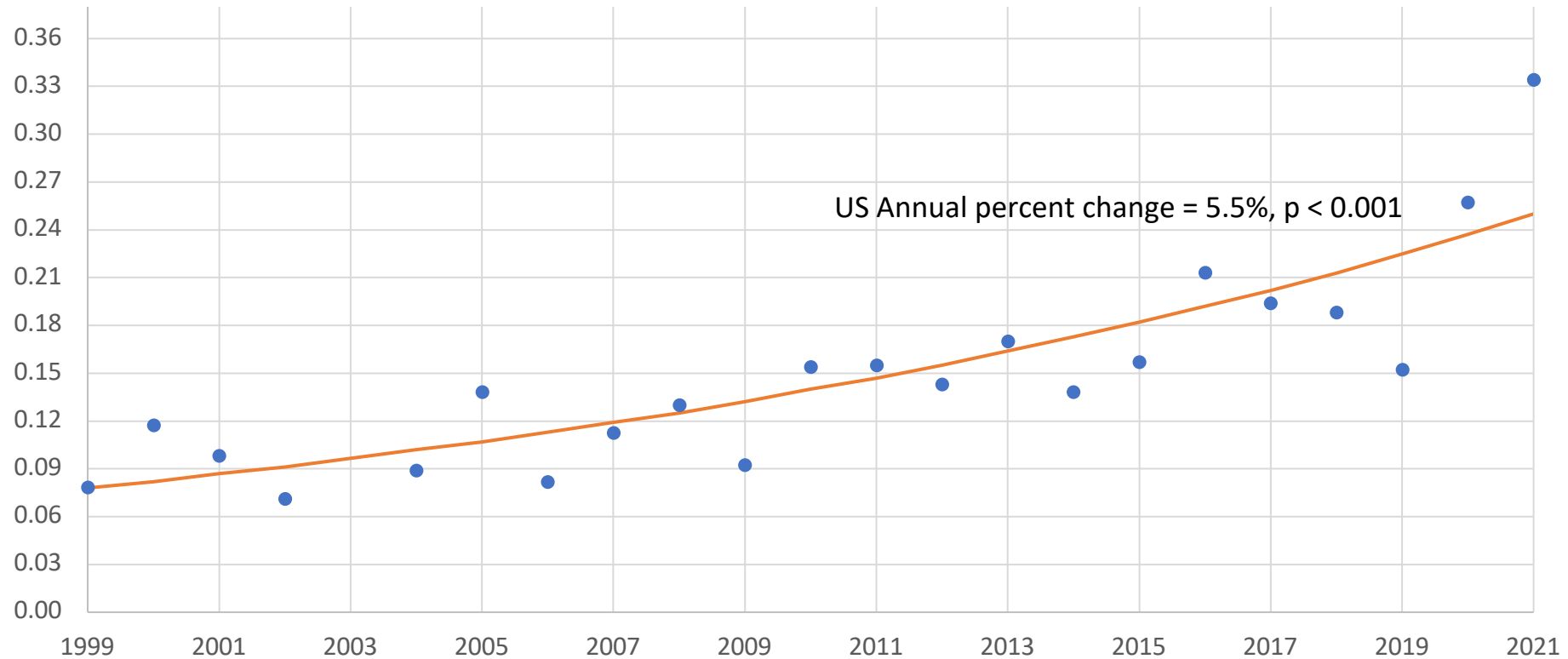


- US population increased by 18% from 2000-2020, while domestically-manufactured firearms per 100,000 people increased by 144% (ATF, 2022).
- A 2021 national survey found (English, 2022):
 - US: 81.5 million US adults (31.9%) owned a firearm
 - US: of those owning a firearm, 30.2% have ever owned an AR-15 style rifle
 - US: The average gun owner owned 5 firearms
 - AZ: 1.8 million adults (32.0%) owned a firearm
 - AZ: of those owning a firearm, 28.8% have ever owned an AR-15 style rifle

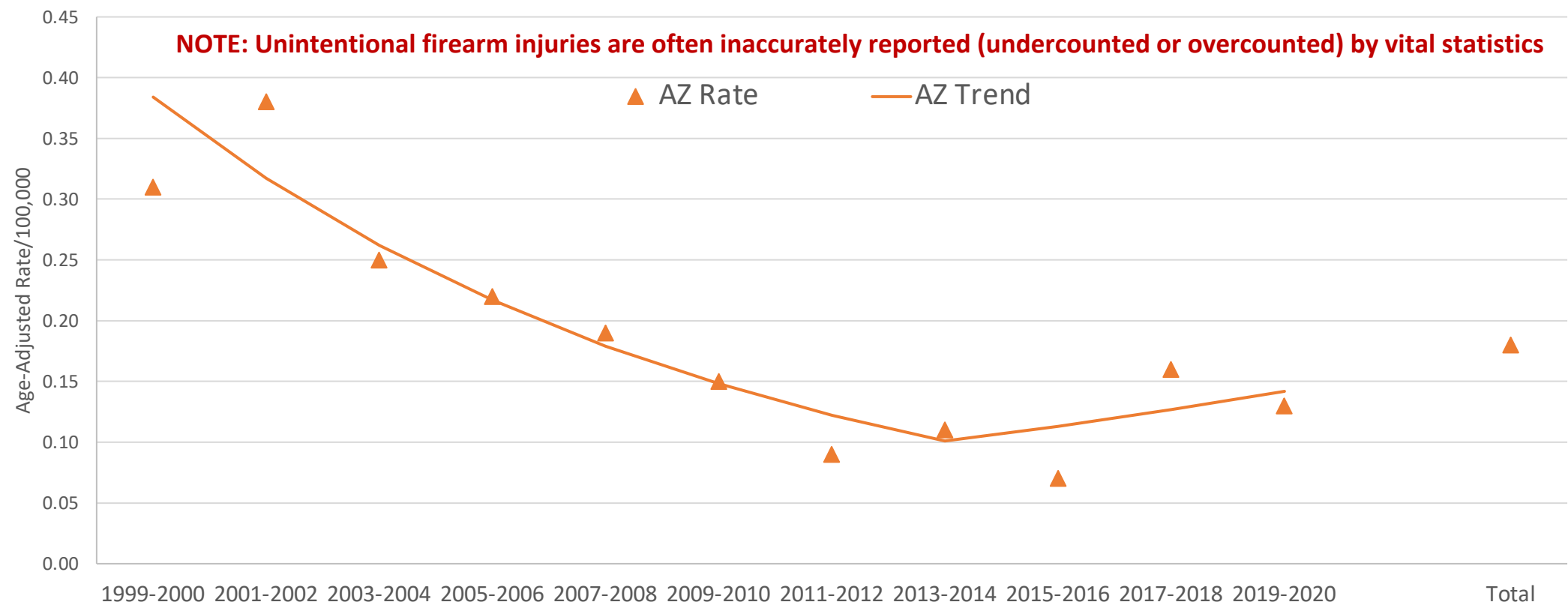


Unintentional Shootings

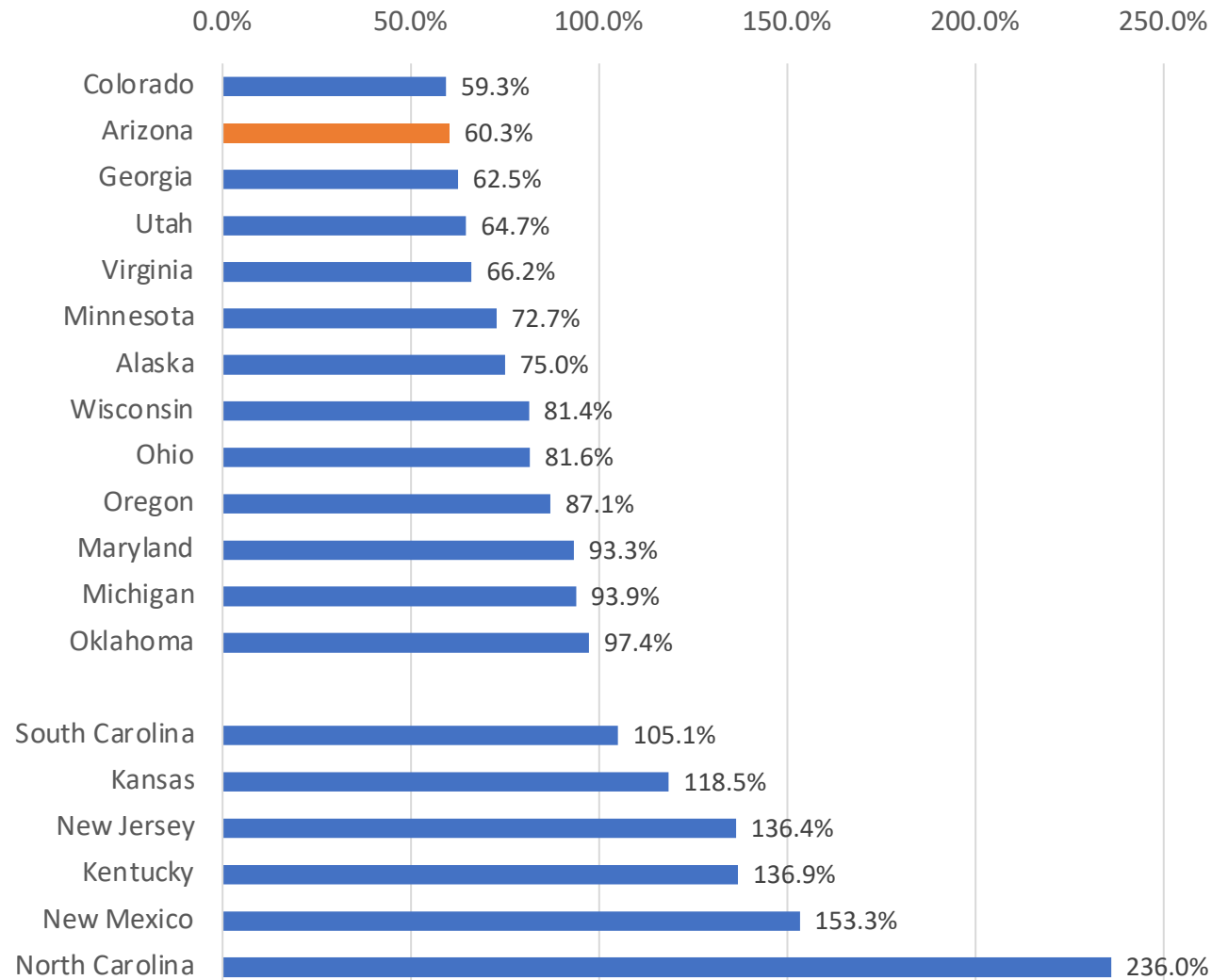
Unintentional Firearm Mortality Rates & Trend, Children Aged 1-4, US



Averaged Two-Year Rates & Trends of Unintentional Firearm Deaths, Arizona, 1999-2020



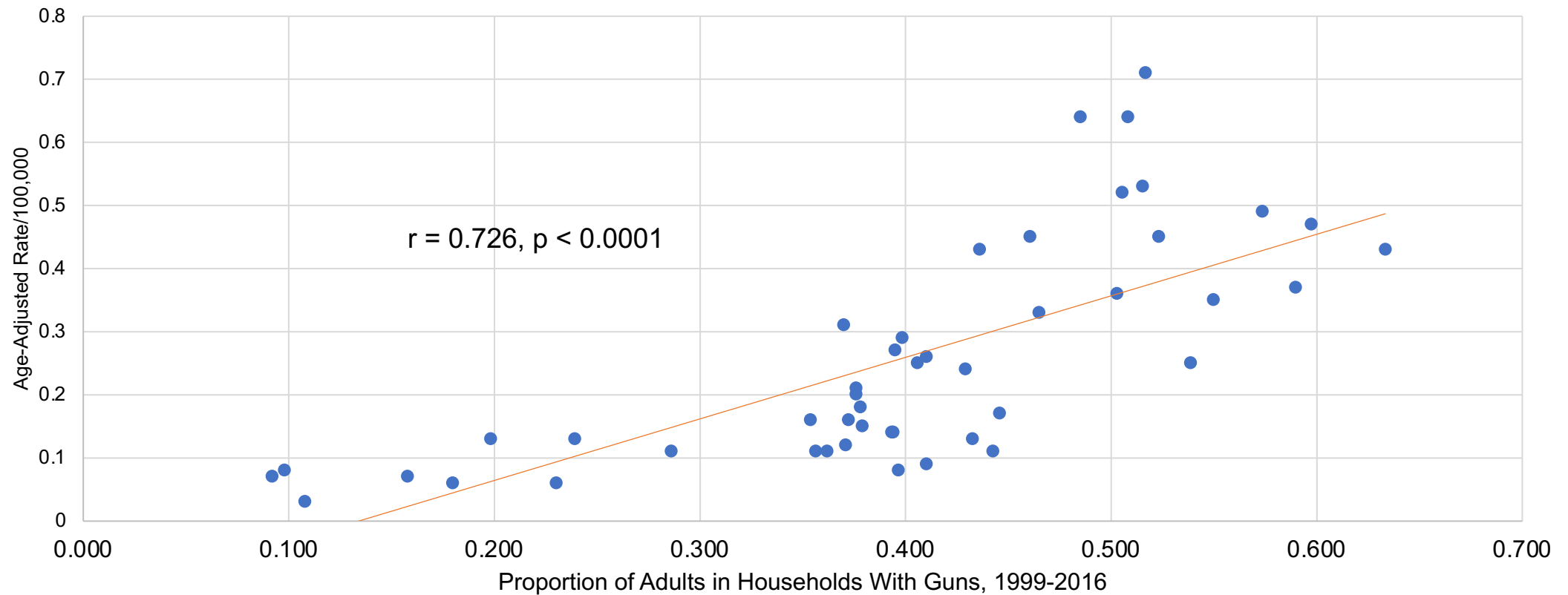
Percent of Unintentional Firearm Deaths Reported by Death Certificates vs NVDRS, 19 States With Non-Suppressed Data for 2015-19



Unintentional Firearm Deaths by Circumstance, Arizona & 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%

Unintentional Firearm Mortality Rates 1999-2020 vs Household Gun Ownership 1999-2016, 47 States

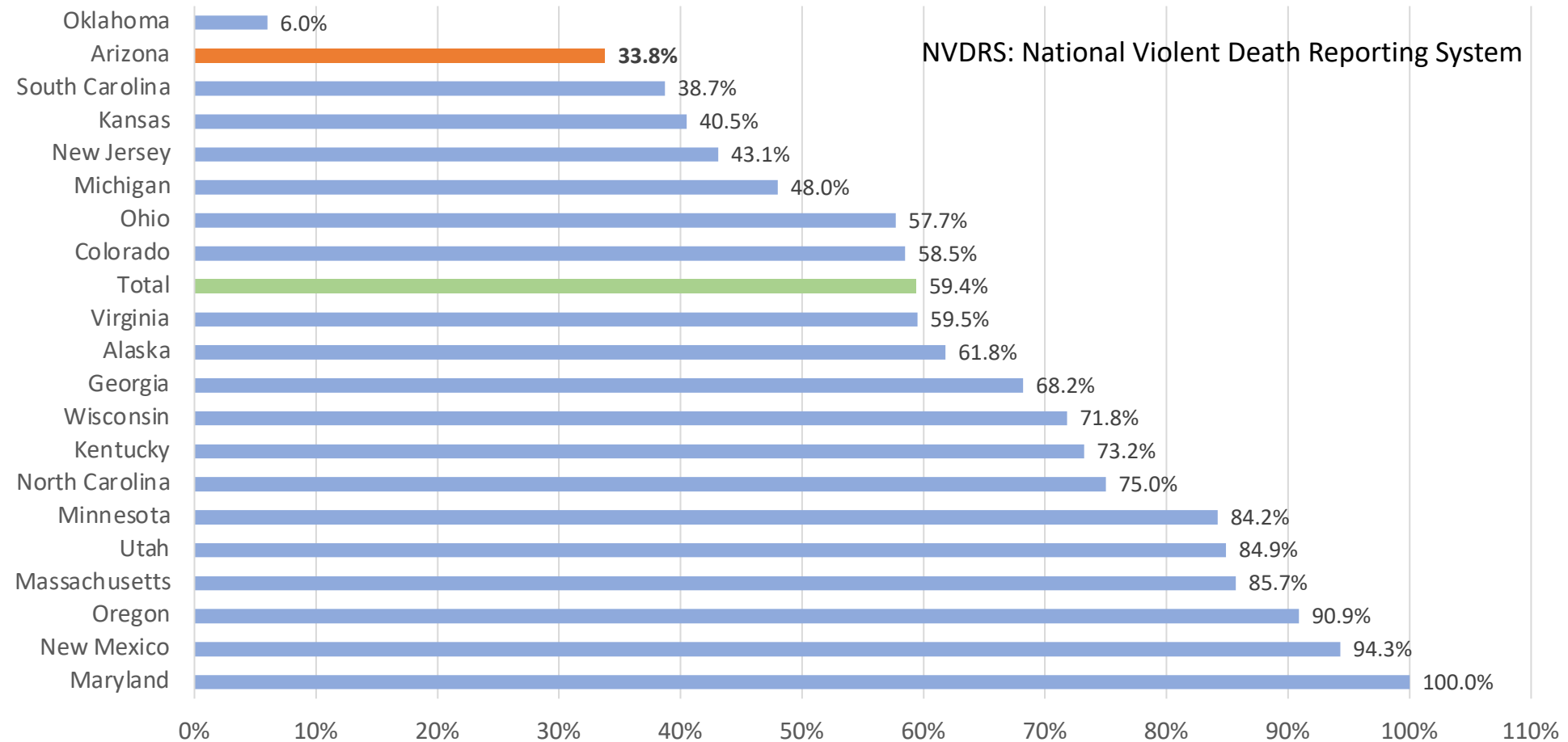


Police Shootings

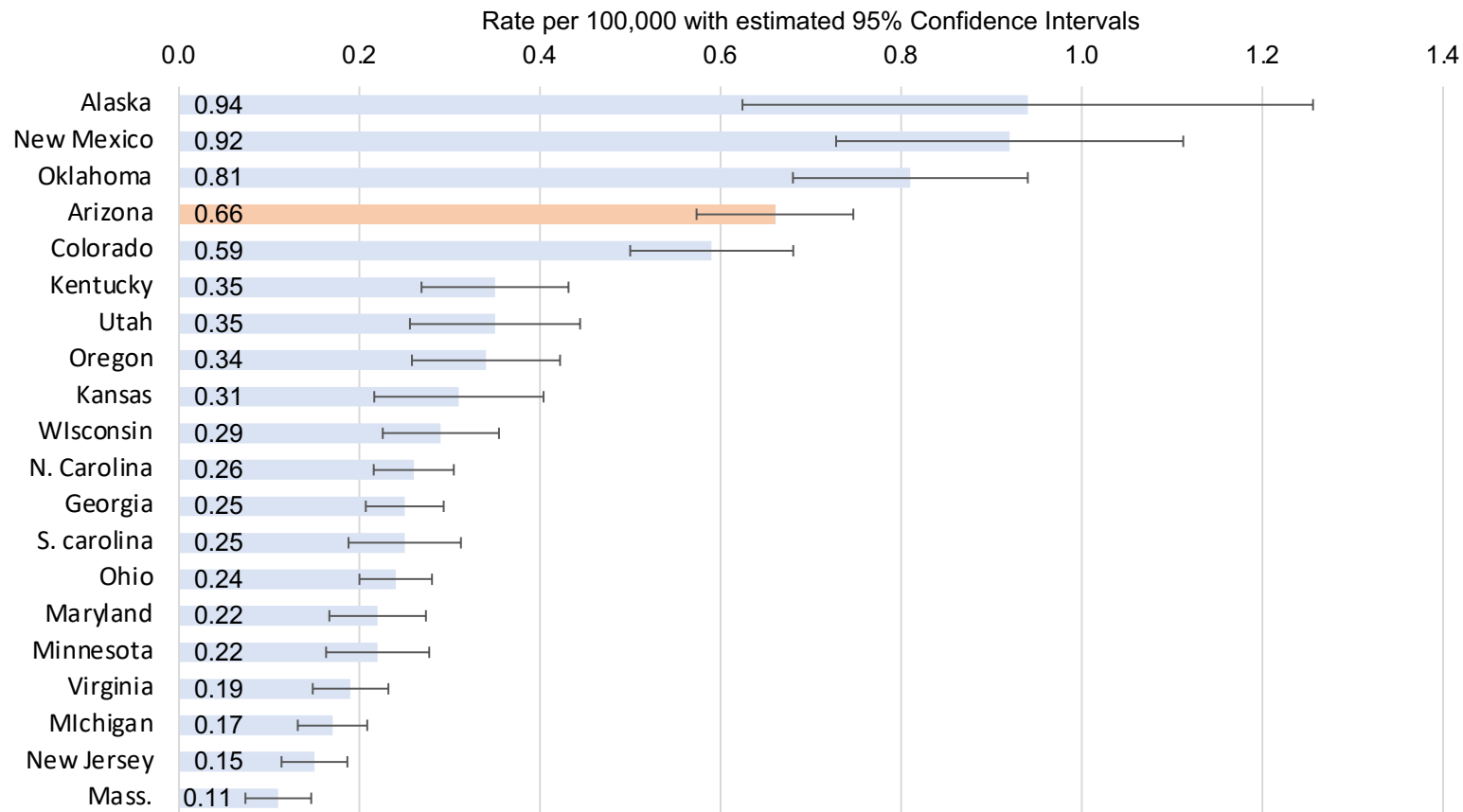
(AKA Legal Intervention)



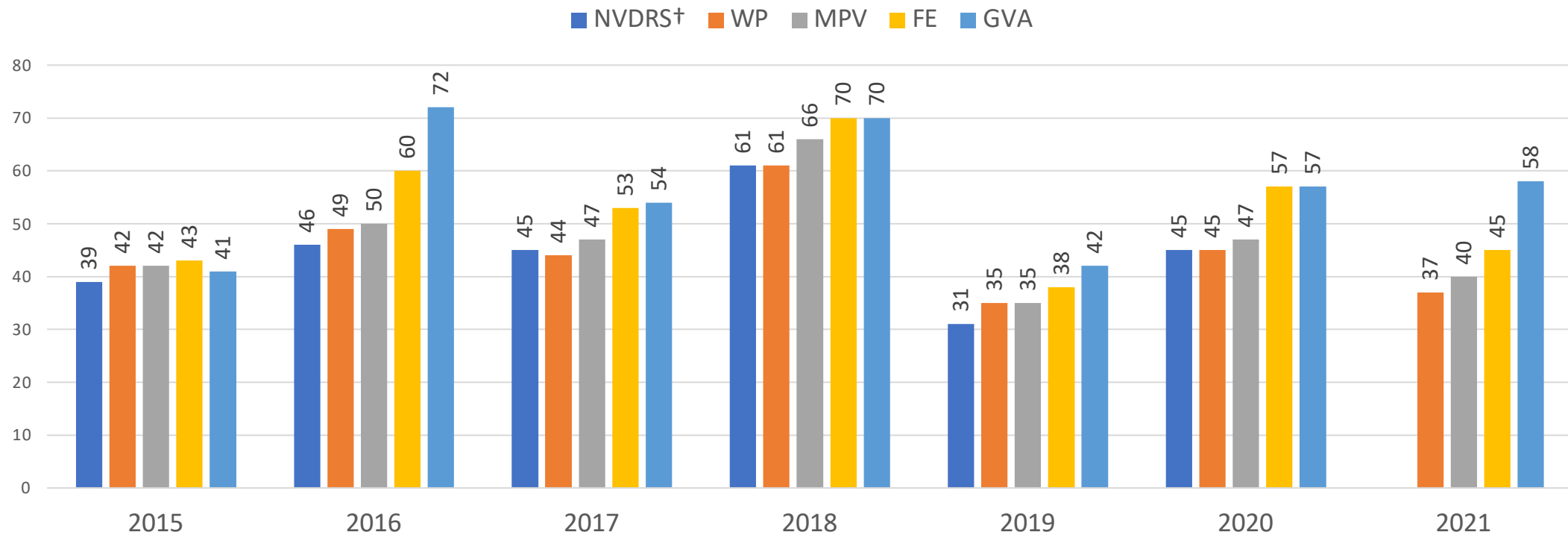
Percent of Police Shootings Identified from Death Certificates Compared to NVDRS, 2015-19



Rates of Police Shootings for 20 States with Reliable Data from NVDRS, 2015-2019

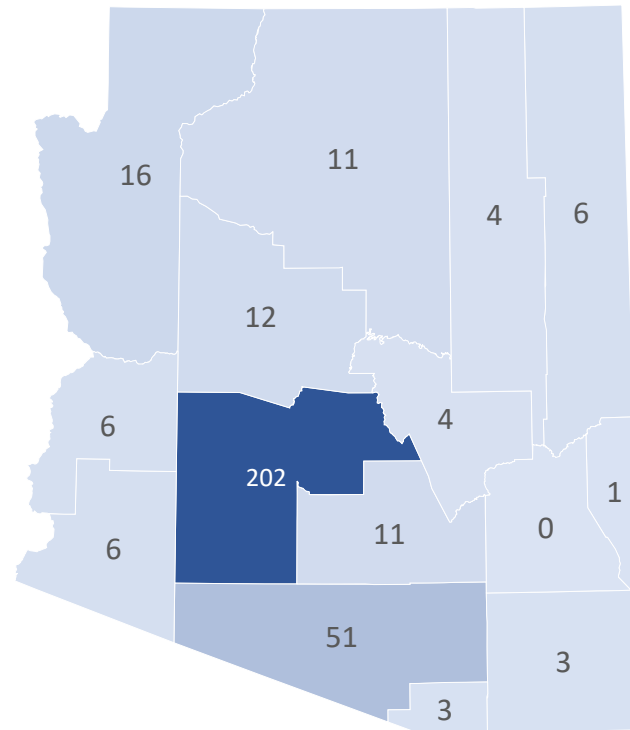


Reported Police Shootings by Data Source, AZ, 2015-2021

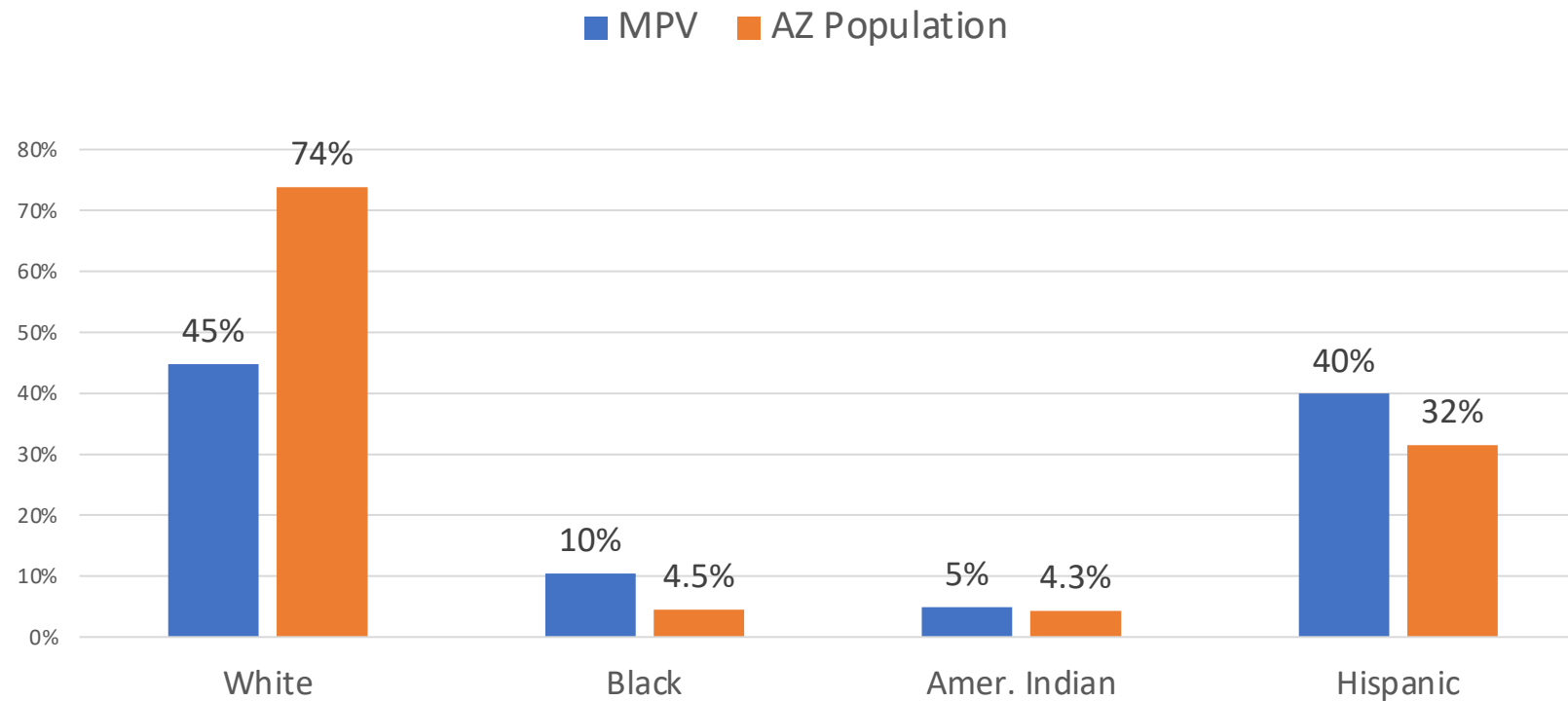


WP – Washington Post; MPV – Mapping Police Violence; FE – Fatal Encounters; GVA – Gun Violence Archive

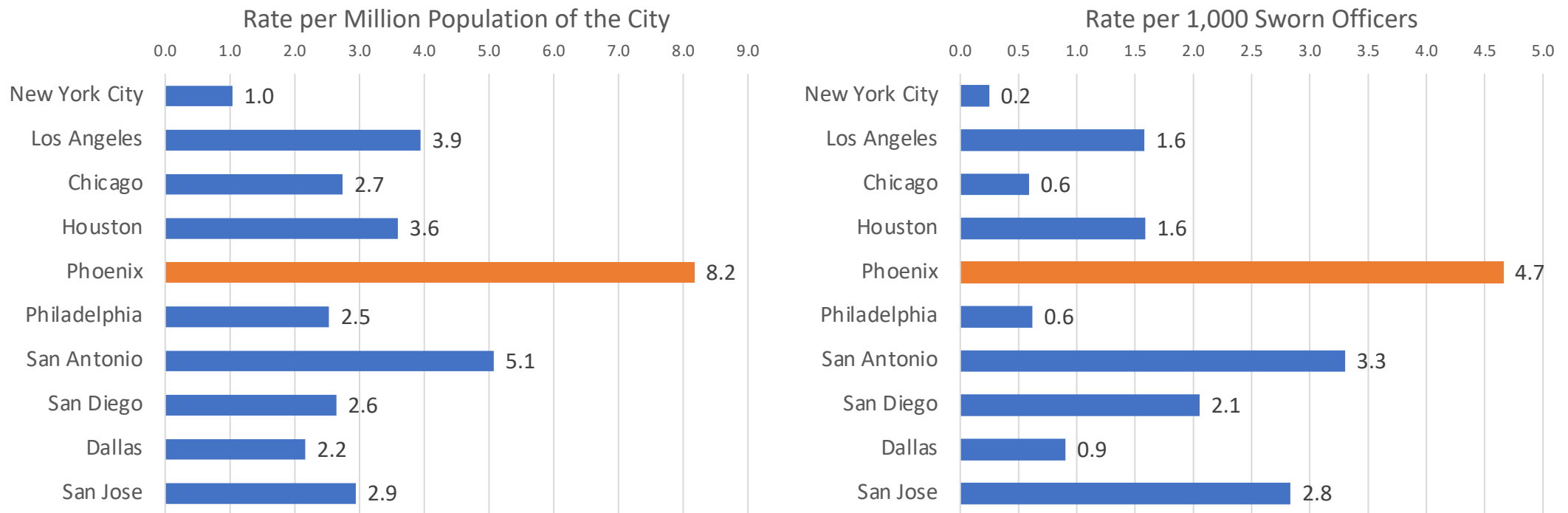
Fatal Police Shootings by County, 2015-2021



Percent of AZ Police Shootings by Race/Ethnicity 2015-2021 Compared to Percentages in the Population 2016-2020

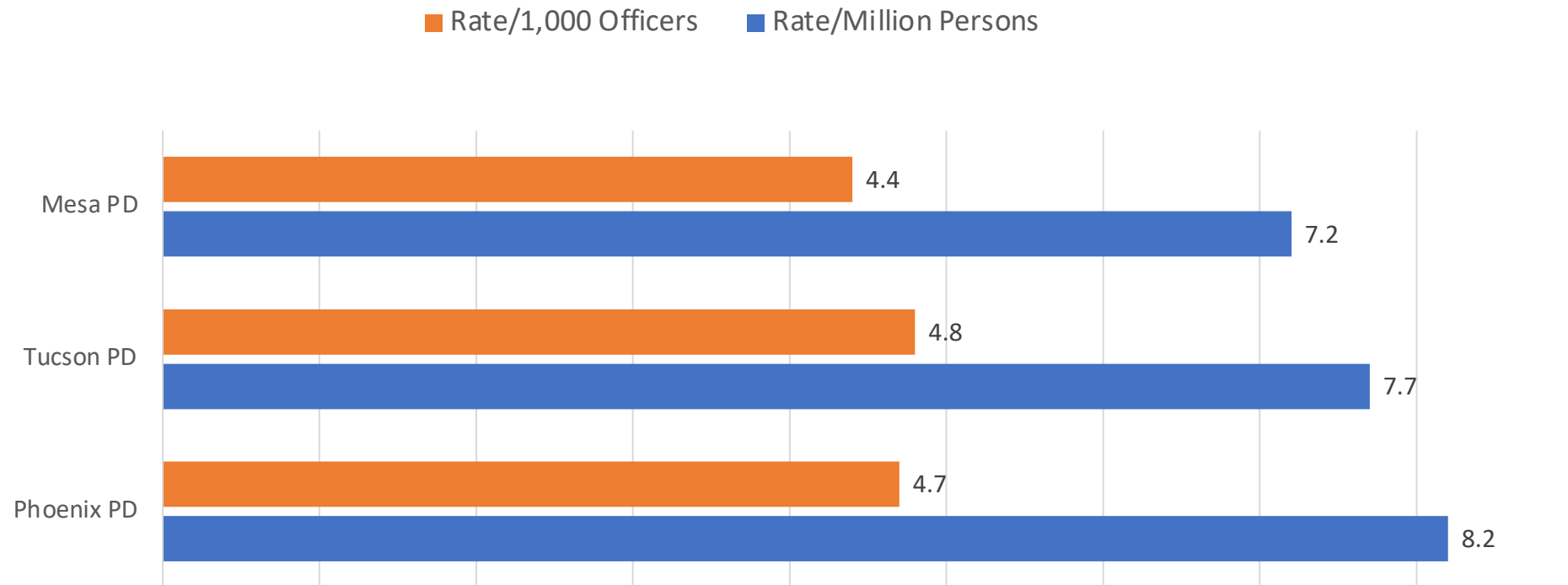


Rates of Fatal Police Shootings, 10 Largest US Cities, 2015-2021



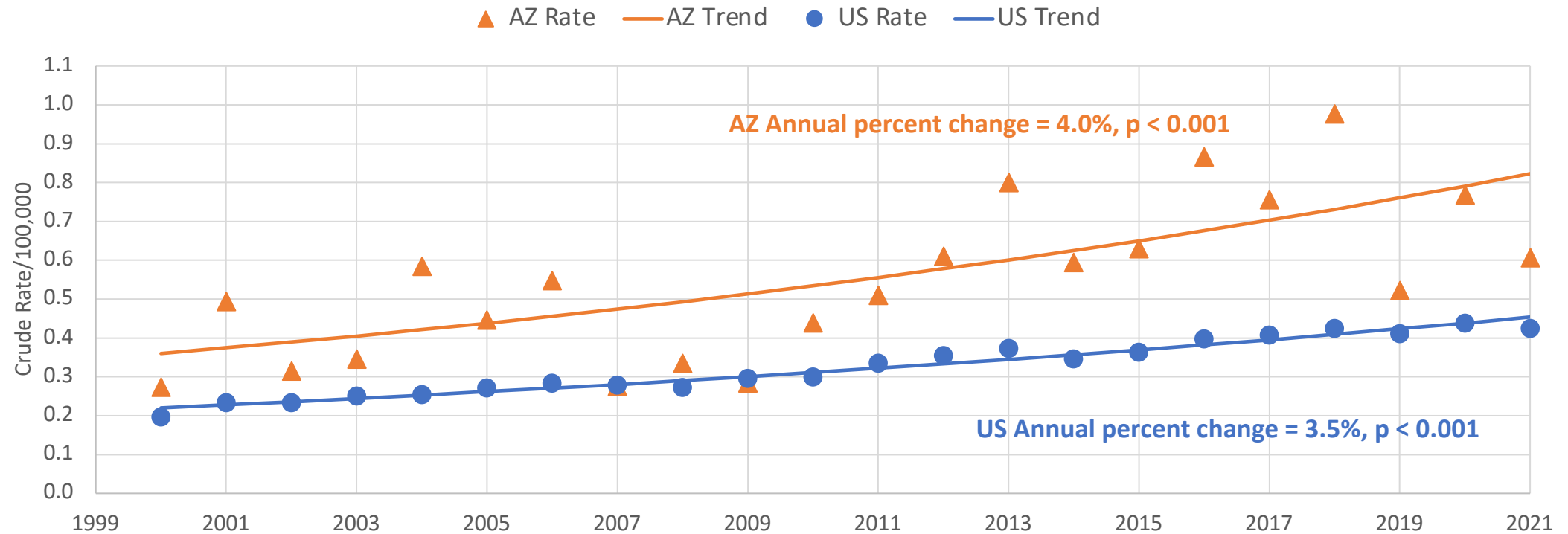
Sources: MPV; FBI Crime Data Explorer

Rates of Fatal Police Shootings by Three City Police Departments in AZ, 2015-2021

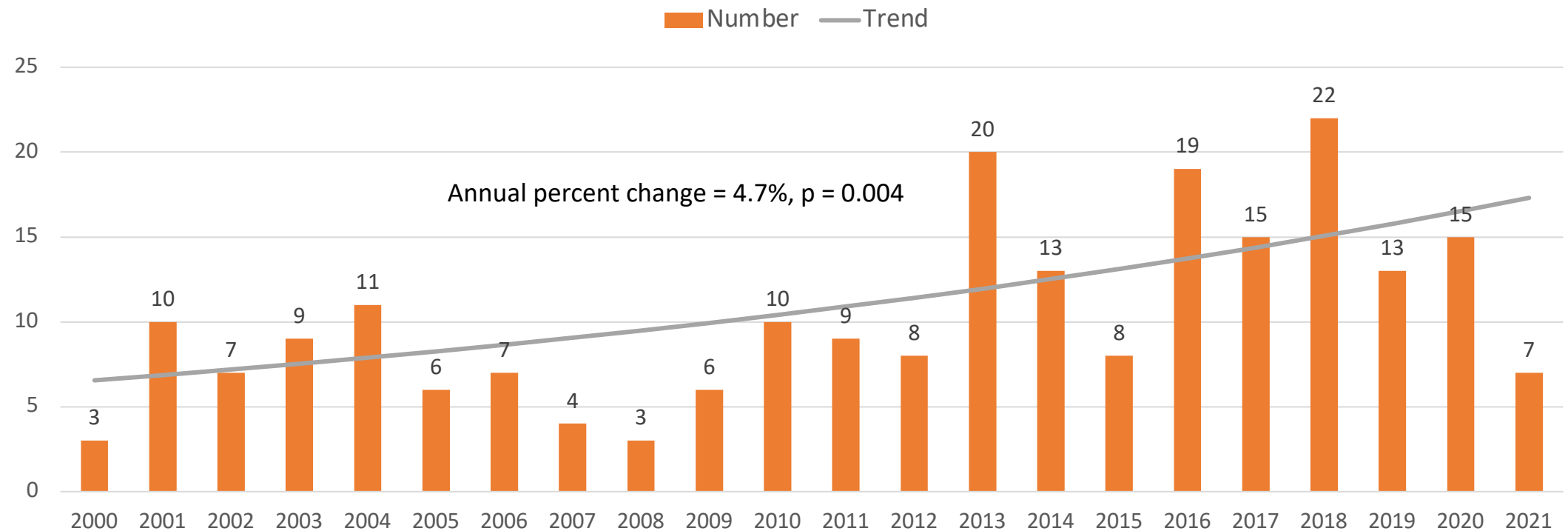


Trends in Police Shootings, AZ vs US, 2000-2021

(Source: FatalEncounters.org)



Numbers & Trends of Fatal Police Shootings by Phoenix Police, 2000-2021

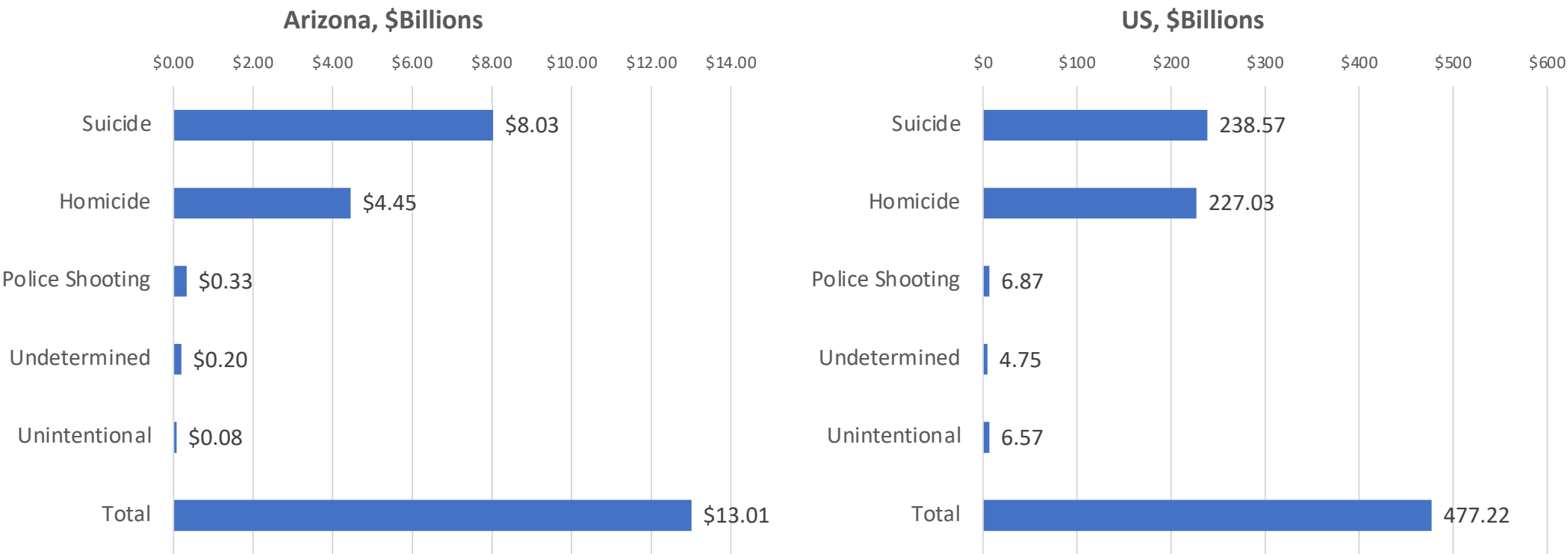


Economic Burden of Firearm Violence



Medical & Statistical Life Costs of Firearm Deaths, 2020

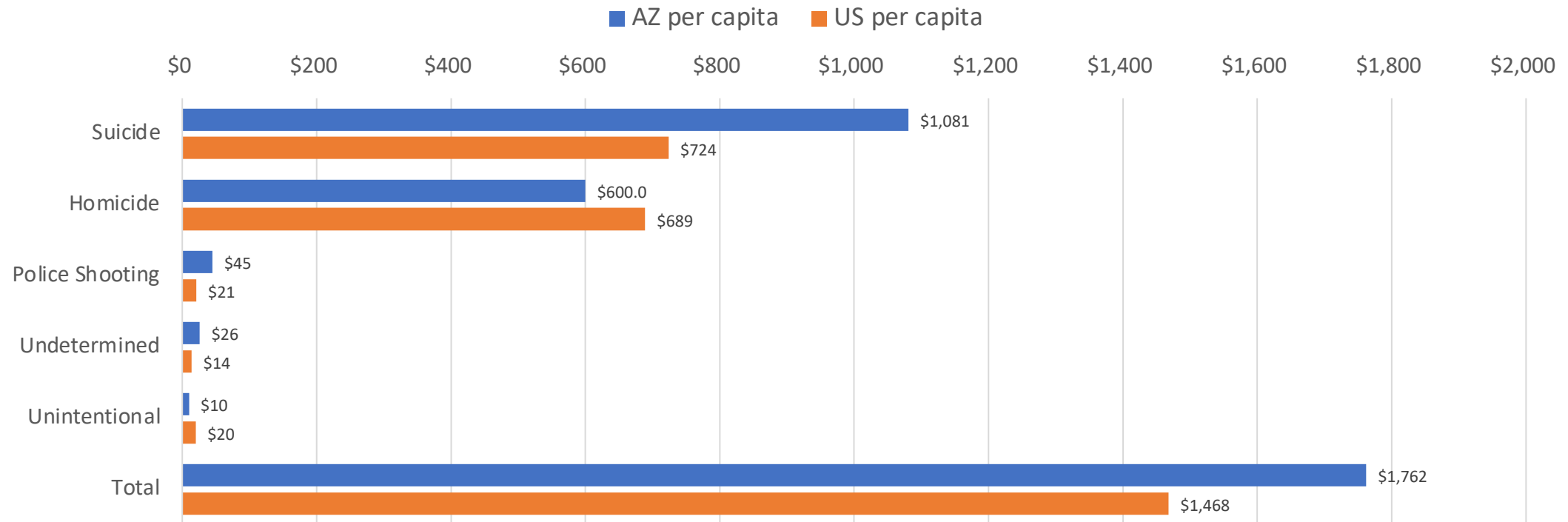
(CDC WISQARS)



Per Capita Medical/Life Lost Costs of Firearm Deaths, 2020

Arizona vs US

(CDC WISQARS)



Economic Cost of Fatal & Nonfatal Gun Violence in Arizona, 2019

(Everytown Research & Policy)

Intent	Payer	Total Cost	Per Capita
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

AZ costs total \$15.9 billion, of which \$253 million paid by taxpayers. 4.3% of AZ GDP in 2019

FULL VALUE PRICING...



FULL COST 482.73

GUN
RELATED

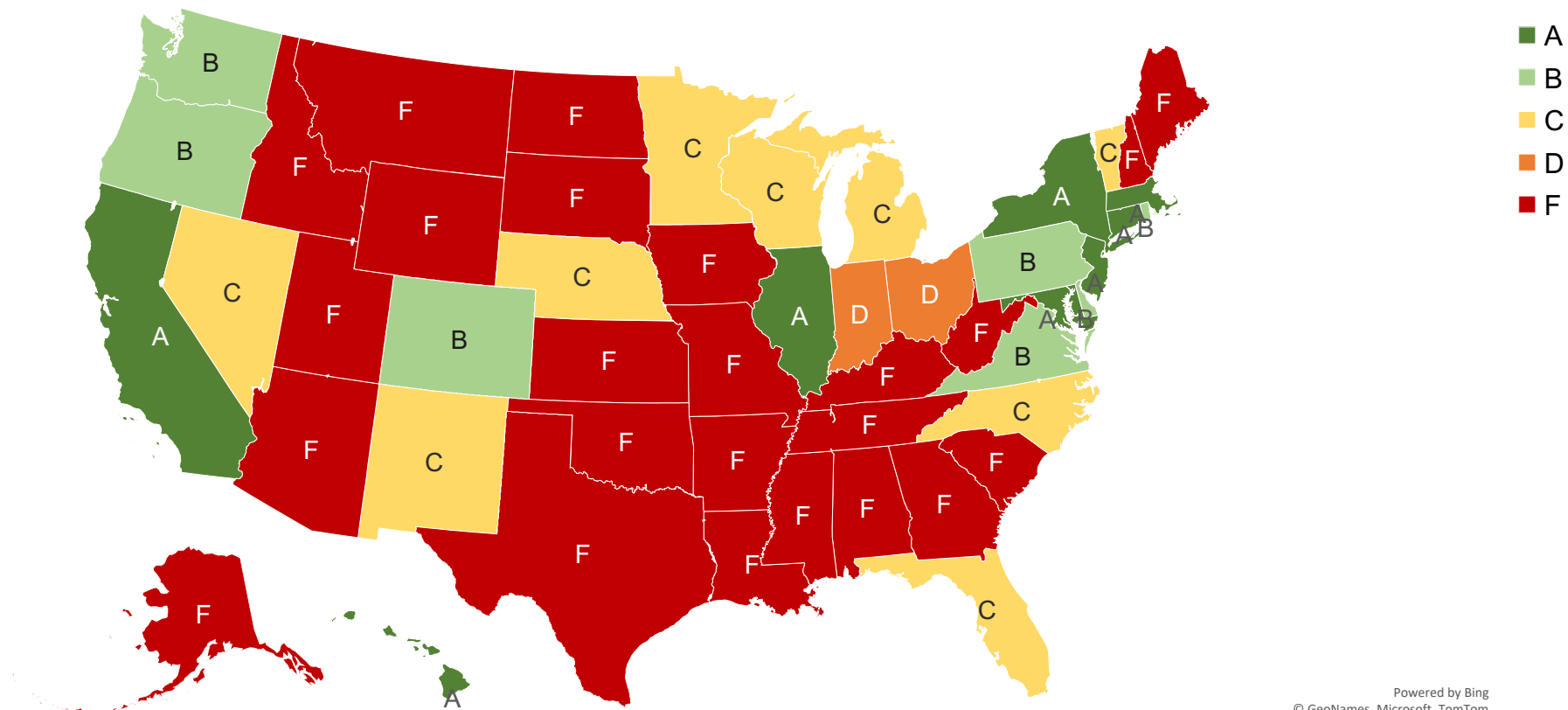
- COPS
- AMBULANCE
- EMERGENCY ROOM
- SURGERY
- DISTRICT ATTORNEY
- SHERIFF
- COURTS
- PRISON

TOTAL ...\$482.73

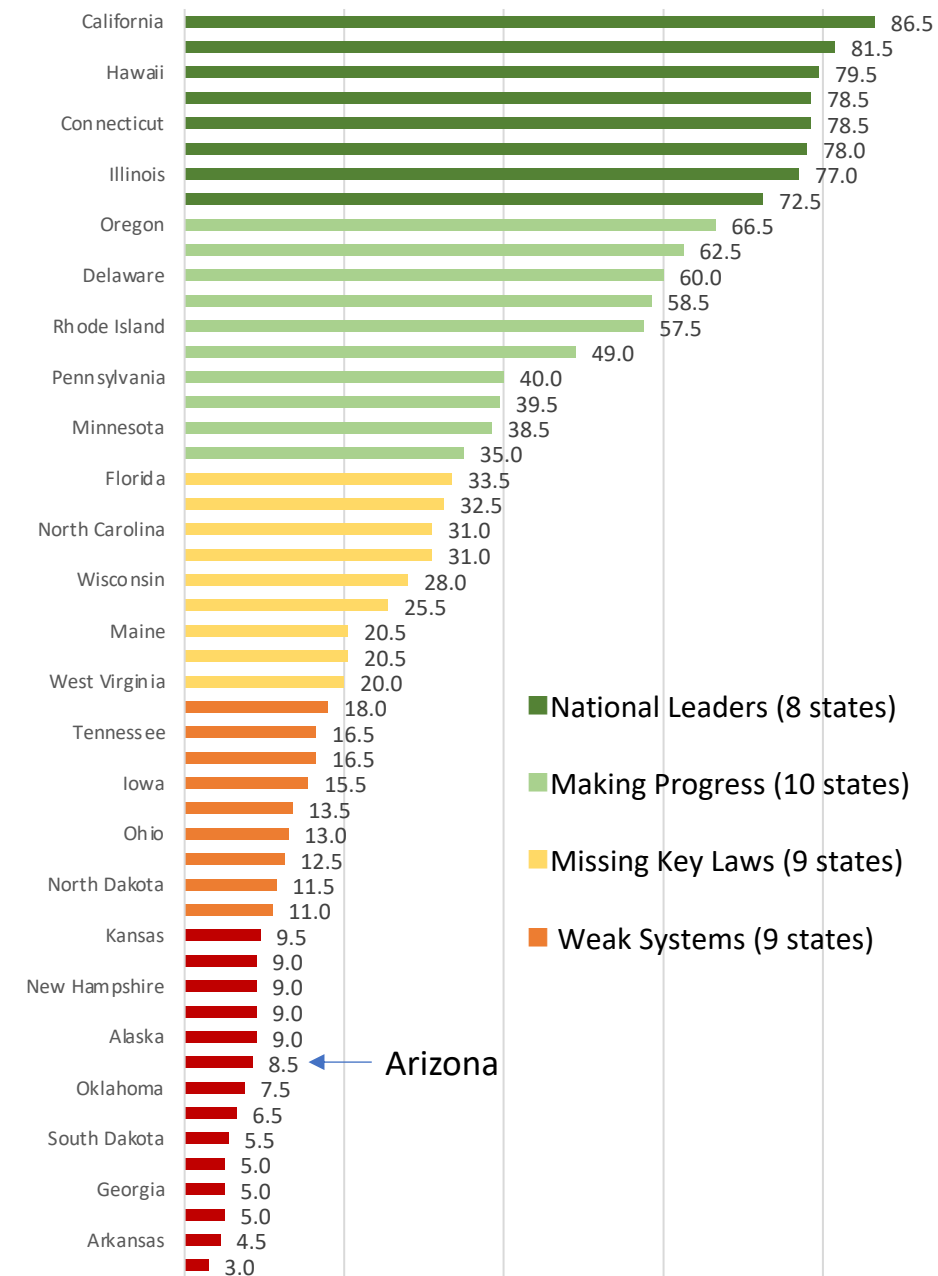
Gun Law Status & Impacts

Giffords Ratings of State Gun Laws from Strongest (A) to Weakest (F), 2021

(Giffords Law Center)

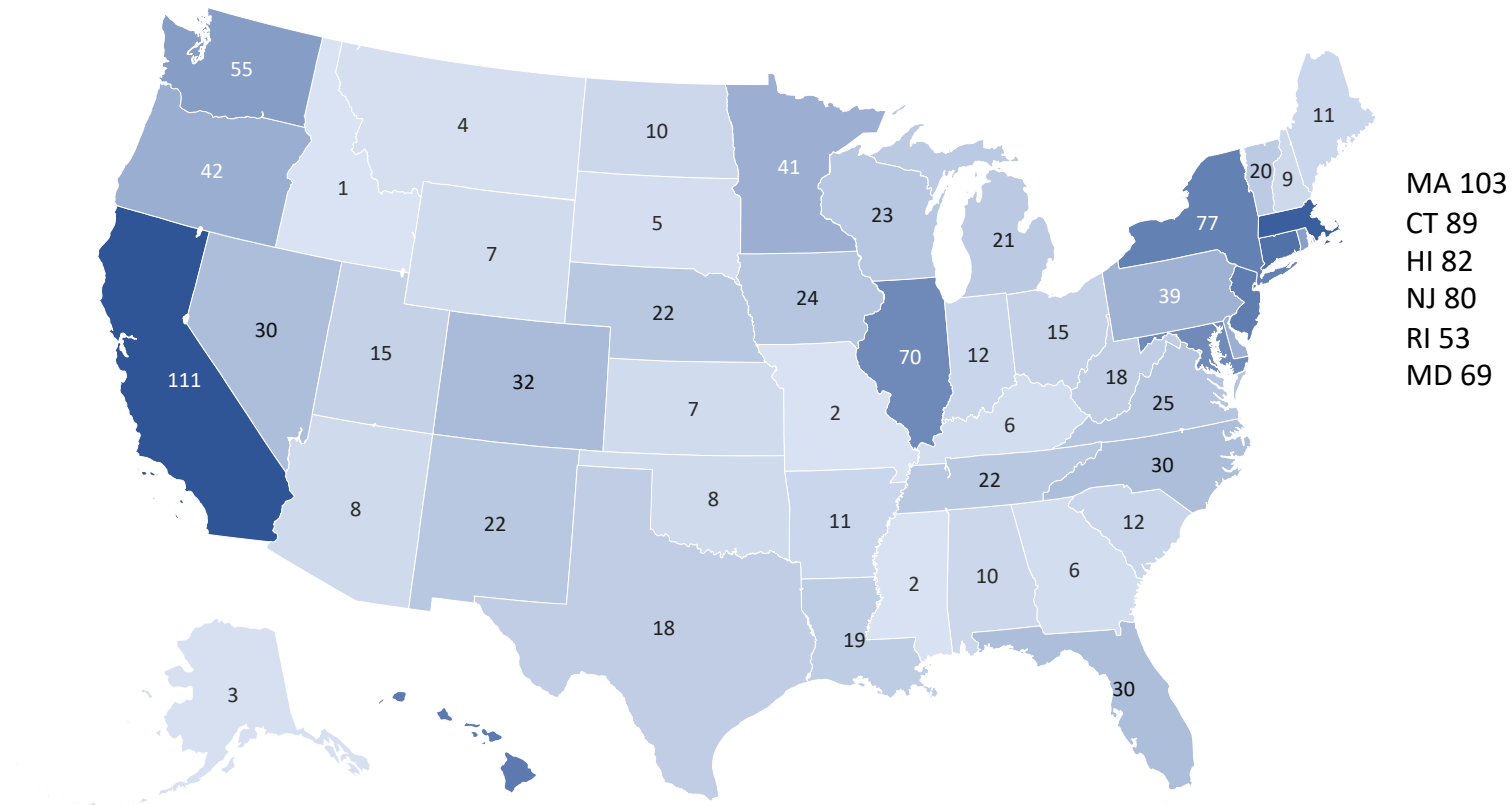


Everytown
Research State
Gun Law Rating
Scores Based
On 50 Key Gun
Policies

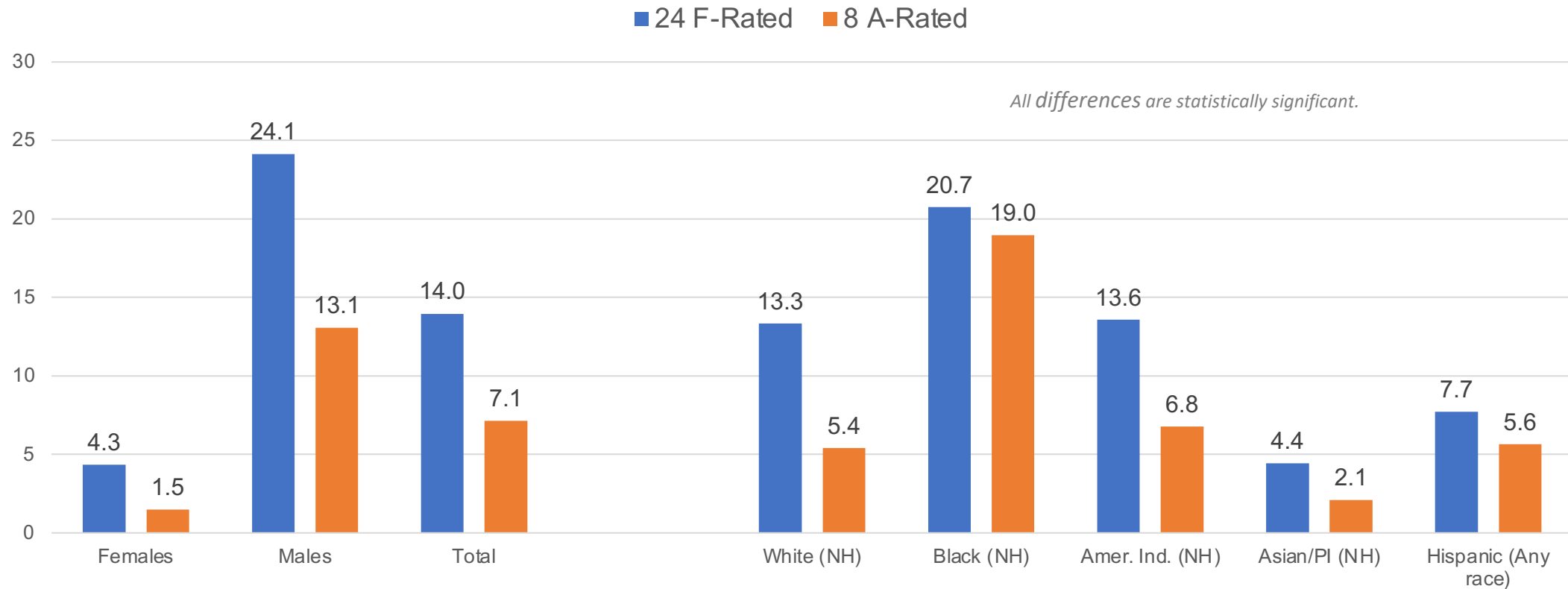


Number of State Firearm Laws Out of a Possible 133 Laws, 2020

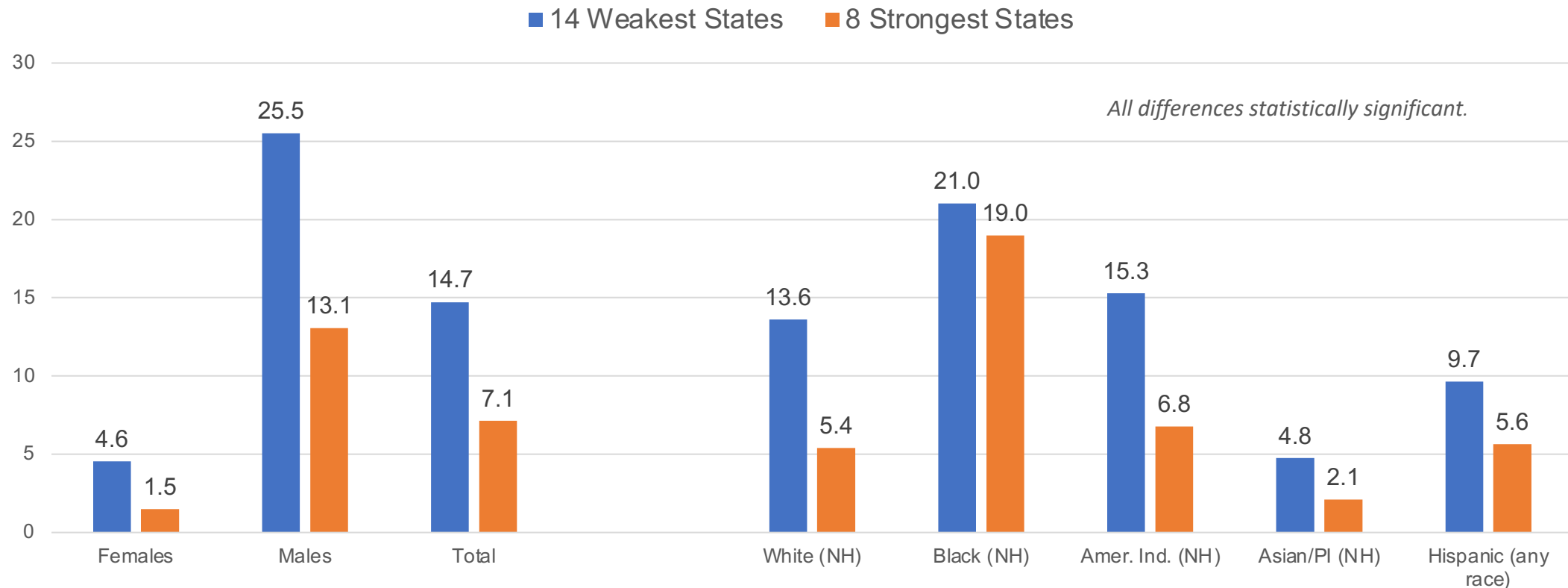
(statefirearmlaws.org)



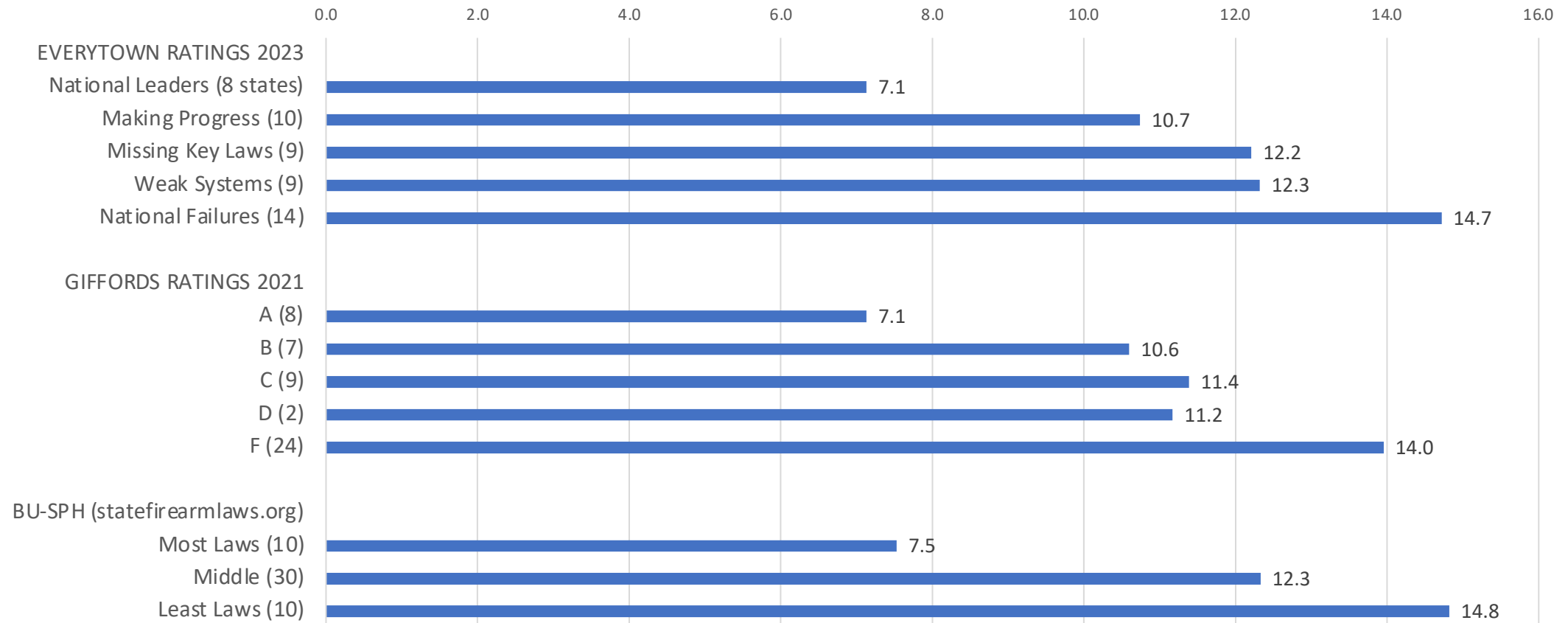
Overall Firearm Mortality Rates Among Giffords Law Center's 24 States with F-Grades vs. 8 States with A-Grades for Gun Laws, by Gender, Race/Ethnicity, 1999-2020



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



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



Policy Options



Pass Child Access Prevention (CAP) and safe storage laws.

CAP laws: make adults criminally liable for negligently storing or recklessly providing children with access to firearms

Safe storage laws: require guns to be stored locked and unloaded when a child (or other person prevented from having a gun) is in a home



Repeal stand-your-ground (“shoot first”) laws.

Stand-your-ground laws: allow individuals to legally shoot and kill someone if they are intimidated, even if they could retreat and if they started the confrontation



Pass requirements for a background check and/or permit to purchase a firearm.

Background checks 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. These laws are very popular (93% in support of requiring background checks on all sales).

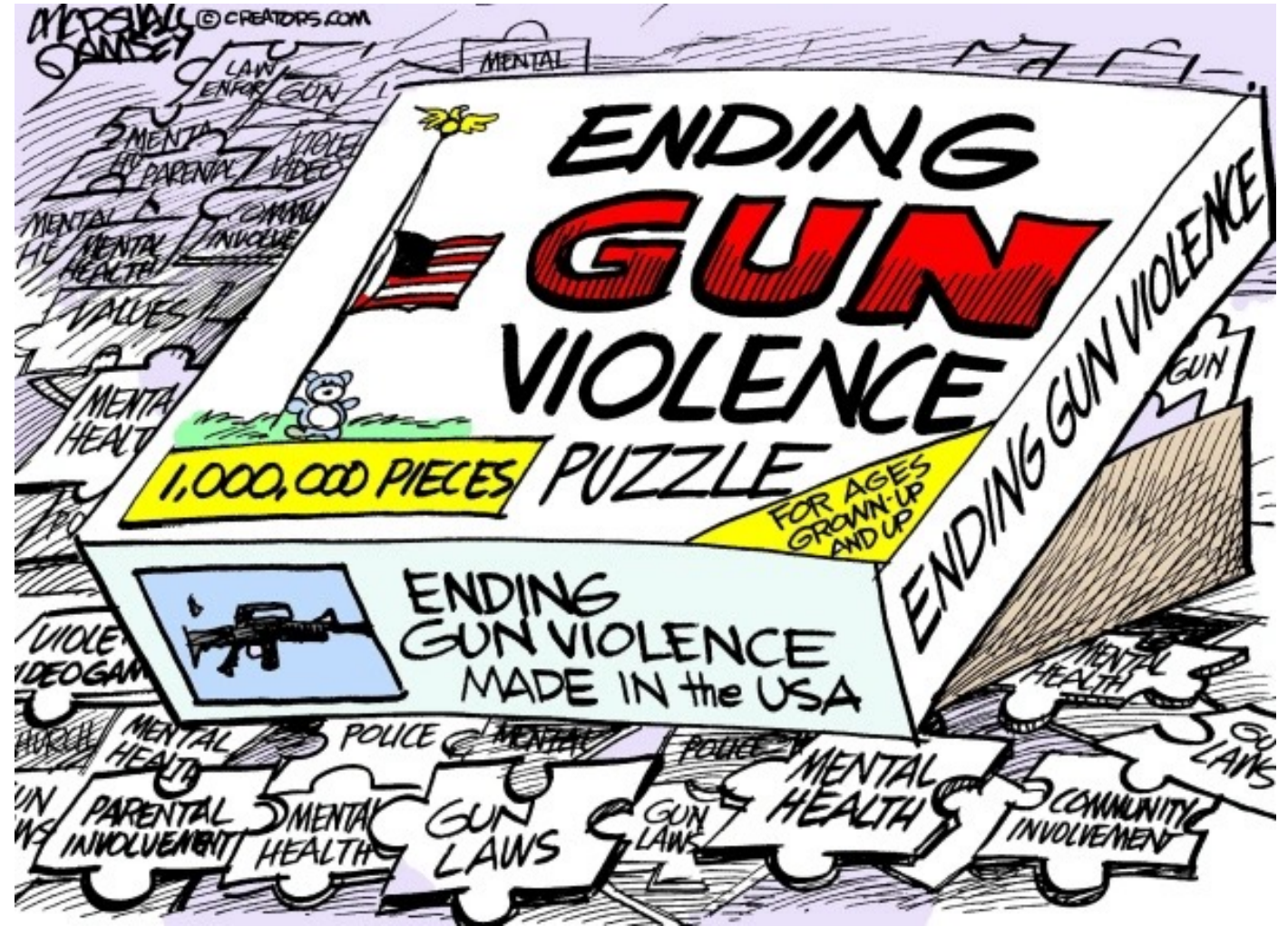


Pass permit requirements for anybody carrying a concealed firearm in public

Concealed carry permitting: these laws require individuals to have a permit to carry a loaded and concealed handgun in public. Arizona is a “shall-issue” state, meaning that anybody who meets state requirements to own a gun can be issued a concealed carry permit.

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.





Sack, Minneapolis *StarTribune*