

Firearms and population health

Sandro Galea

Boston University School of Public Health



“Population health requires us, as a society, to collectively assure the social, economic, cultural conditions for people to be healthy”

Gunman Kills at Least 26 in Attack on Rural Texas Church

[Leer en español](#)

By DAVID MONTGOMERY, CHRISTOPHER MELE and MANNY FERNANDEZ NOV. 5, 2017



Devin Patrick Kelley, 26, opened fire in a church in rural Texas on Sunday, killing at least 26 people. He was pursued by residents and found dead in his car. By NATALIA V. OSIPOVA, CHRIS CIRILLO and CAMILLA SCHICK on November 6, 2017. Photo by Todd Heisler/The New York Times. [Watch in Times Video](#) »



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Sutherland Springs: A Post Office, No Traffic Light and Now a Mass Murder

NOV. 5, 2017



Sutherland Springs, Charleston, Wichita: A History of Attacks at Churches

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Suspect in Tennessee Church Shooting Cited Revenge for Charleston Massacre

SEPT. 29, 2017



Shooting at Tennessee Church Leaves One Dead and Seven Wounded

SEPT. 24, 2017



Nine Killed in Shooting at Black Church in Charleston

JUNE 17, 2015

Read the latest on the [Texas shooting](#) with Monday's updates.

ARSENAL FOUND IN LAS VEGAS GUNMAN'S ROOM AS DEATH TOLL GROWS TO 59; MORE THAN 520 HURT

Suspect Found Dead After One of Worst U.S. Mass Shootings

By THE NEW YORK TIMES
7:12 PM ET

- The police identified the suspect as Stephen Paddock, 64, and said he had killed himself.
- In his hotel room, the suspect had at least 17 firearms, including a handgun, and some were rifles equipped with scopes, an official said.

4566 Comments

THE SCENE

A Burst of Gunfire, a Pause, Then Carnage That Would Not Stop

Thousands of concertgoers found themselves turned into targets, and many lay flat,



2:36

Penned In and Under Fire

Video by CAMILLA SCHICK, DAVE HORN and CHRIS CIRILLO. Photo by David Becker/Getty Images

THE VICTIMS

Mourning the Many Lives 'Gone Too Fast'

By JULIE BOSMAN

Mandalay Bay
Resort and Casino

OPINION

OP-ED CONTRIBUTOR

Nothing Will Change After the Las Vegas Shooting

By STEVE ISRAEL 7:33 PM ET

I used to hope that tragedy would inspire my colleagues in Congress to take action about gun violence. It never does.

98 Comments

OP-ED COLUMNIST

Preventing Mass Shootings Like the Vegas Strip Attack

By NICHOLAS KRISTOF 4:47 PM ET

What we need most of all isn't mourning, but action.

2020 Comments

CONTRIBUTING OP-ED WRITER

In Las Vegas, We Take Care of People

By BRITTANY BRONSON

5:30 PM ET

But hospitality and prayers can do only so much to prevent another shooting.

Letters: Pleas for Gun Control

"All the News
That's Fit to Print"

The New York Times

Late Edition

Today, sunshine and clouds, breezy, not as warm, high 78. Tonight, partly cloudy, low 62. Tomorrow, mostly sunny, low humidity, high 81. Weather map appears on Page A10.

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NEW YORK, MONDAY, JUNE 13, 2016

\$2.50

PRAISING ISIS, GUNMAN ATTACKS GAY NIGHTCLUB, LEAVING 50 DEAD IN WORST SHOOTING ON U.S. SOIL



STEVE NISHI/REUTERS

Friends and relatives of shooting victims consoled one another on Sunday outside the Police Headquarters in Orlando, Fla.

'We Will Not Give In to Fear,' Obama Says as Florida Aches

By LIZETTE ALVAREZ and RICHARD PÉREZ-PEÑA

ORLANDO, Fla. — A man who called 911 to proclaim allegiance to the Islamic State terrorist group, and who had been investigated in the past for possible terrorist ties, stormed a gay nightclub here Sunday morning, wielding an assault rifle and a pistol, and carried out the worst mass shooting in United States history, leaving 50 people dead and 53 wounded.

The attacker, identified by law enforcement officials as Omar Mateen, a 29-year-old who was born in New York, turned what had been a celebratory night of dancing to salsa and merengue music at the crowded Pulse nightclub into a panicked scene of unimaginable slaughter, the floors slicked with blood, the dead and the injured piled atop one another. Terrified people poured onto the darkened streets of the surrounding neighborhood, some carried wounded victims to safety, and police vehicles were pressed into service as makeshift ambulances to rush people to hospitals.

Joel Figueroa and his friends "were dancing by the hip-hop area when I heard shots, bam, bam, bam," he said, adding, "Everybody was screaming and running toward the front door."

Pulse, which calls itself "Orlando's Latin Hotspot," was holding its weekly "Upscale Latin Saturdays" party. The shooting began around 2 a.m., and some patrons thought at first that the booming reports they heard were firecrackers or part of the loud, thumping dance music.

Some people who were trapped inside hid where they could, calling 911 or posting messages to social media, pleading for help. The club posted a stark message on its Facebook page: "Everyone get out of pulse and keep running."

Hundreds of people gathered in the glare of flashing red lights on the fringes of the law enforcement cordon around the nightclub, and later at area hospitals, hoping desperately for some word on the

Continued on Page A12

San Bernardino School Shooting Leaves 3 Dead, Including Student

By REBECCA FAIRLEY RANEY and JENNIFER MEDINA APRIL 10, 2017

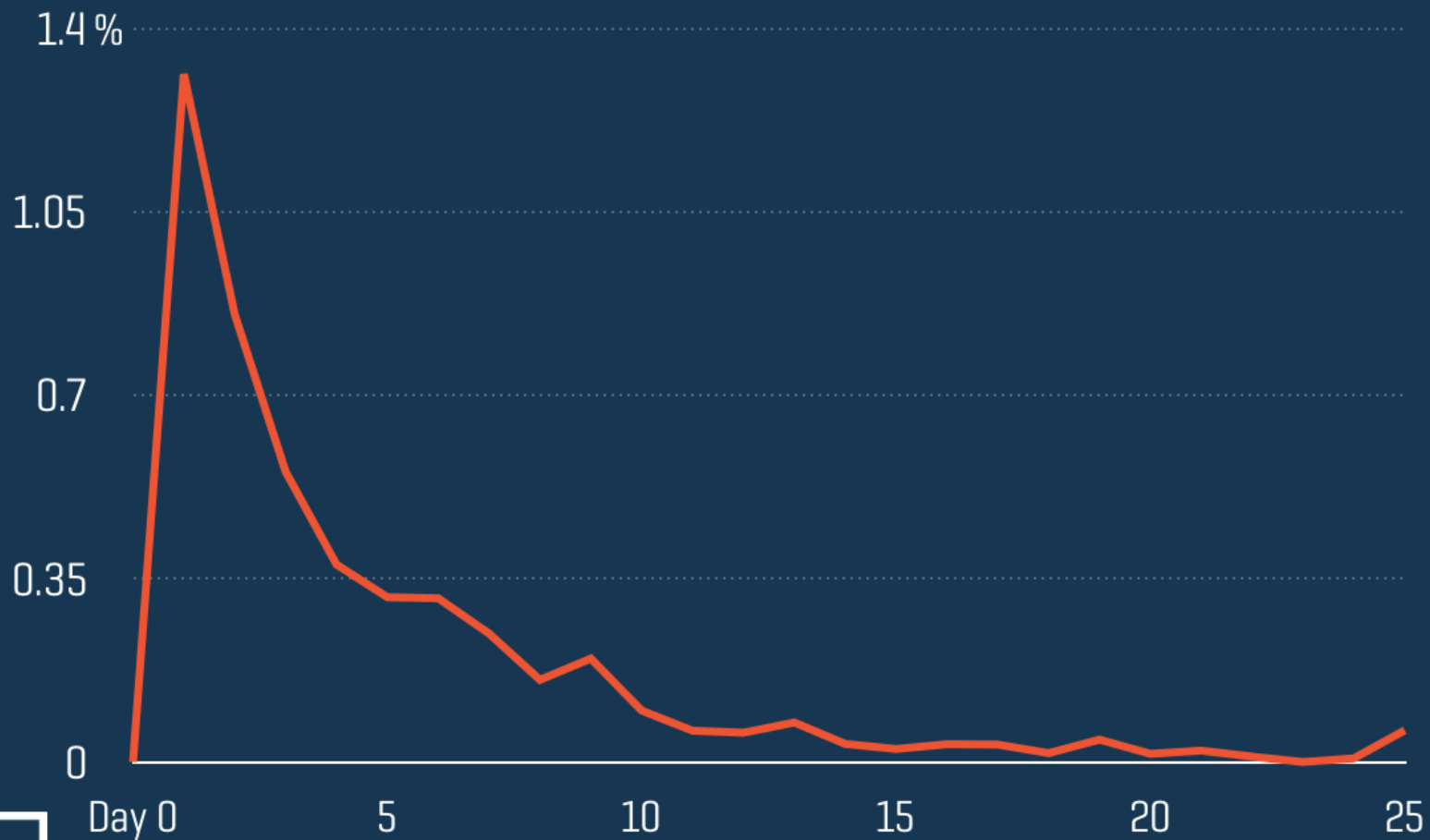


Summer Terrell hugging her daughter Jaylah James, a kindergartner, after a shooting at North Park Elementary School in San Bernardino, Calif. Andrew Cullen for The New York Times

SAN BERNARDINO, Calif. — Gunfire erupted inside an elementary school classroom in San Bernardino, Calif., on Monday, leaving two adults and one student dead in what the authorities said was an apparent murder-suicide.

MENTIONS OF THE LAS VEGAS SHOOTING ON TV NEWS

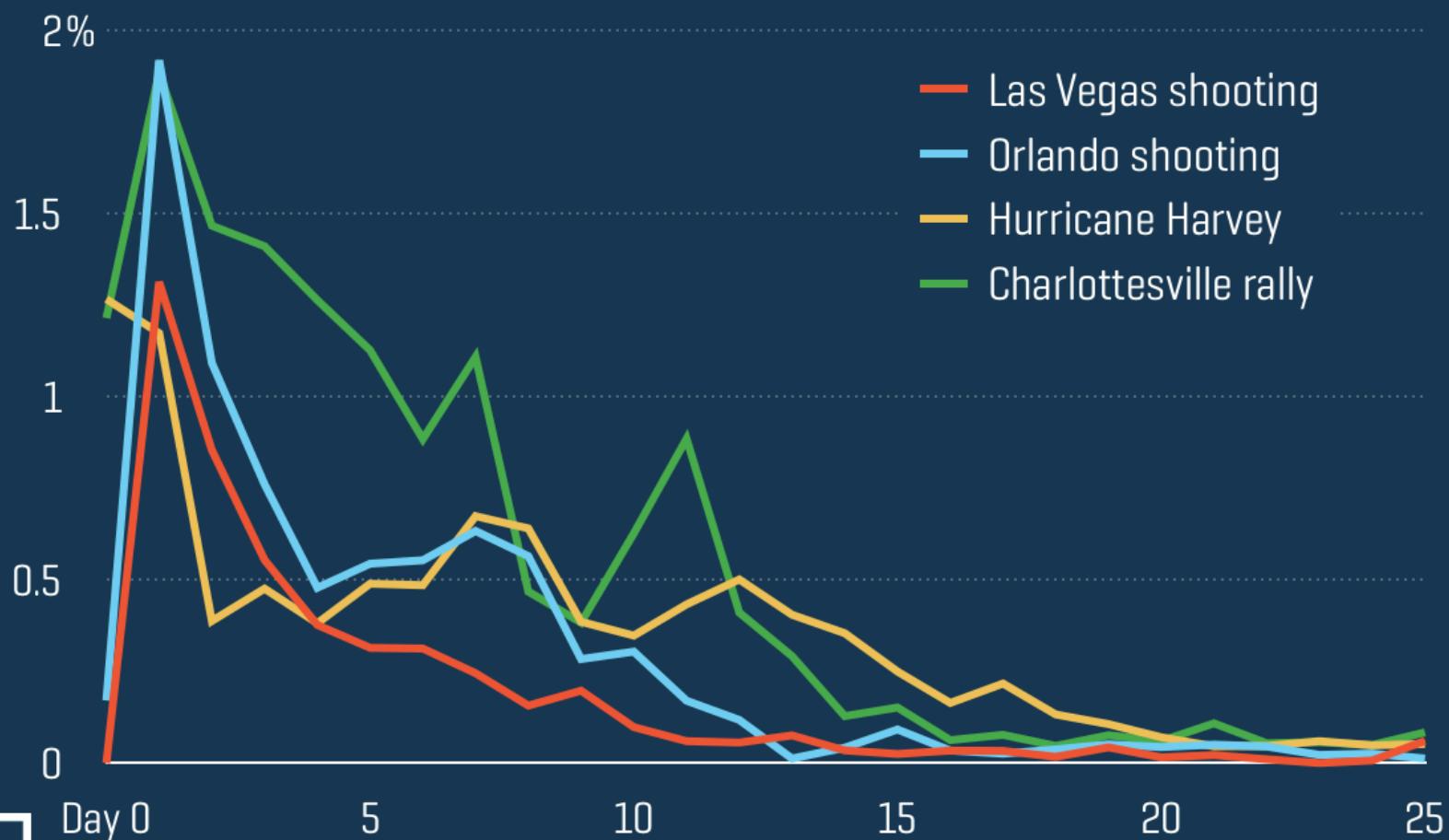
As a percentage of all sentences spoken on CNN, CNBC, FOX, FOX Business, MSNBC, and Bloomberg



Source: GDELT Television Explorer, Television News Archive

MENTIONS OF MAJOR EVENTS ON TV NEWS

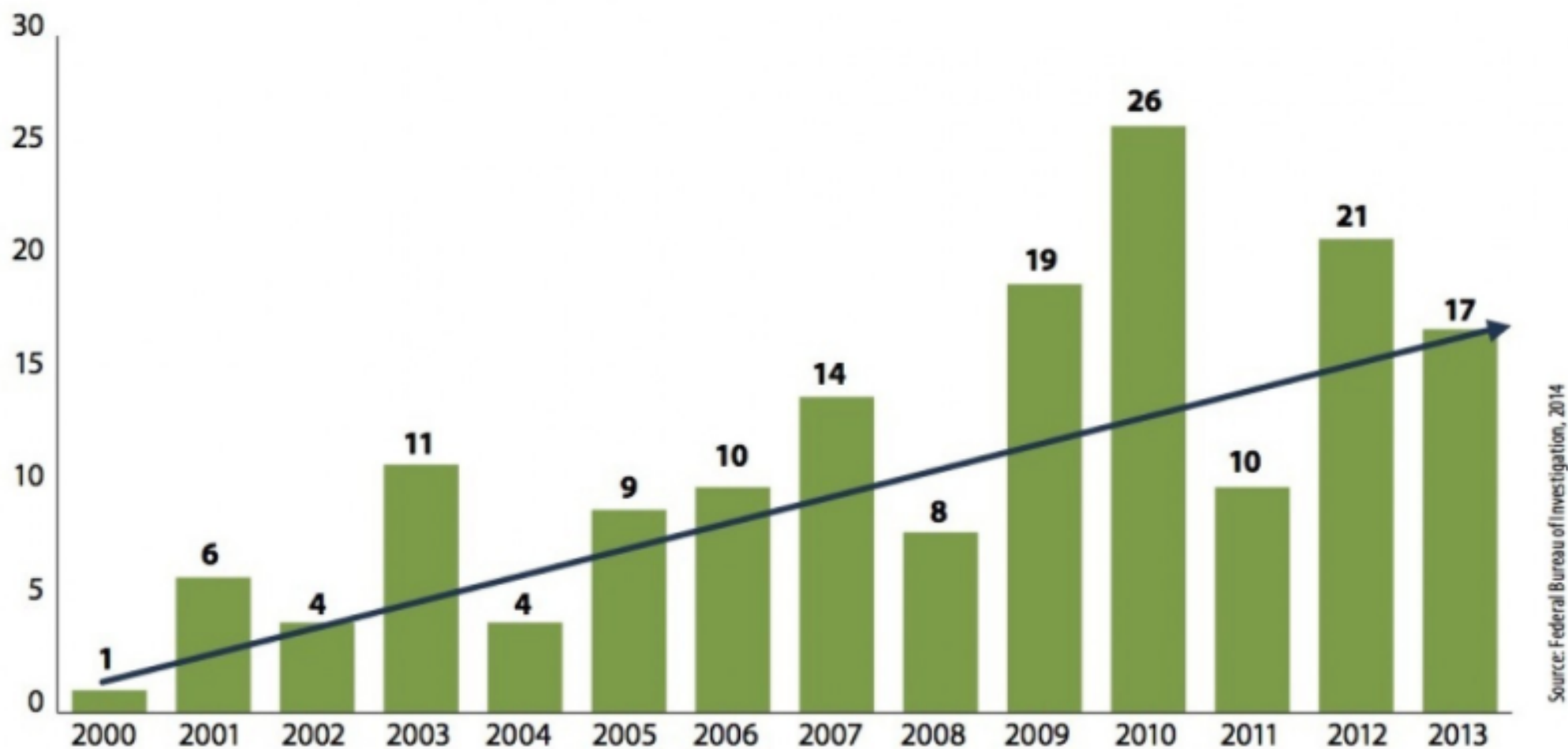
As a percentage of all sentences spoken on CNN, CNBC, FOX, FOX Business, MSNBC, and Bloomberg

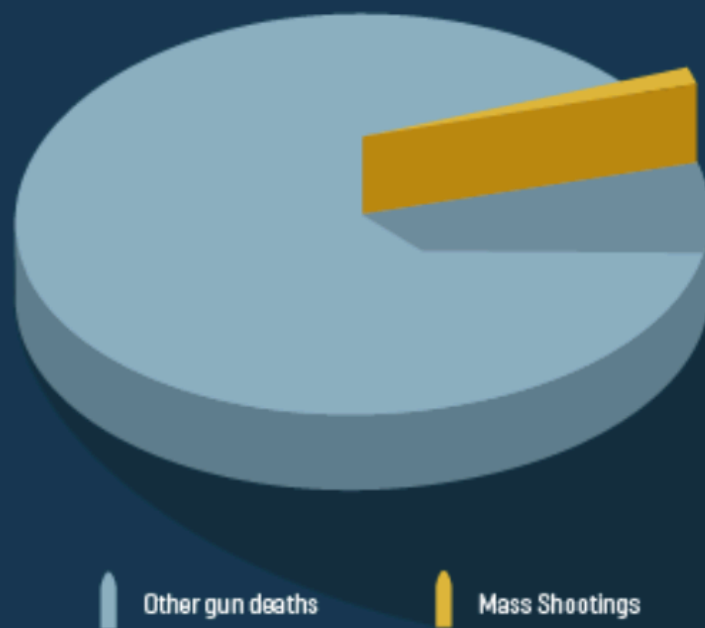


Source: GDELT Television Explorer, Television News Archive

1. Descriptive epidemiology

A Study of 160 Active Shooter Incidents in the United States Between 2000 - 2013: Incidents Annually





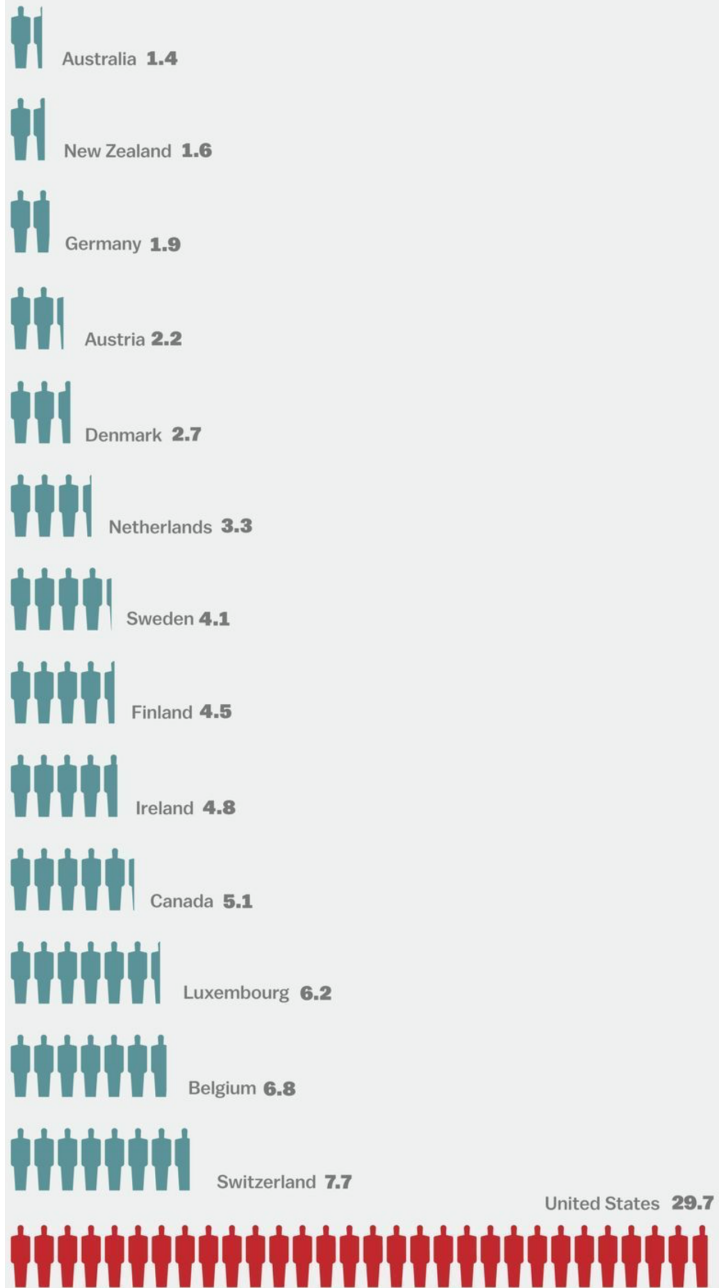
Mass shootings account for less than **2%** of annual gun deaths.



Source: CDC/Mass Shooting Tracker via Vox

Homicides by firearm per 1 million people

In advanced countries according to the Human Development Index. Numbers are for 2012.



SOURCE: UNODC, Small Arms Survey, via The Guardian.

Vox

EACH SYMBOL REPRESENTS 500 GUN DEATHS IN 2016

AN ESTIMATED **22,000** GUN SUICIDES



ABOUT **11,760** HOMICIDES



OTHER CAUSES



VICTIMS KILLING
PERPETRATORS IN
SELF-DEFENSE:
589



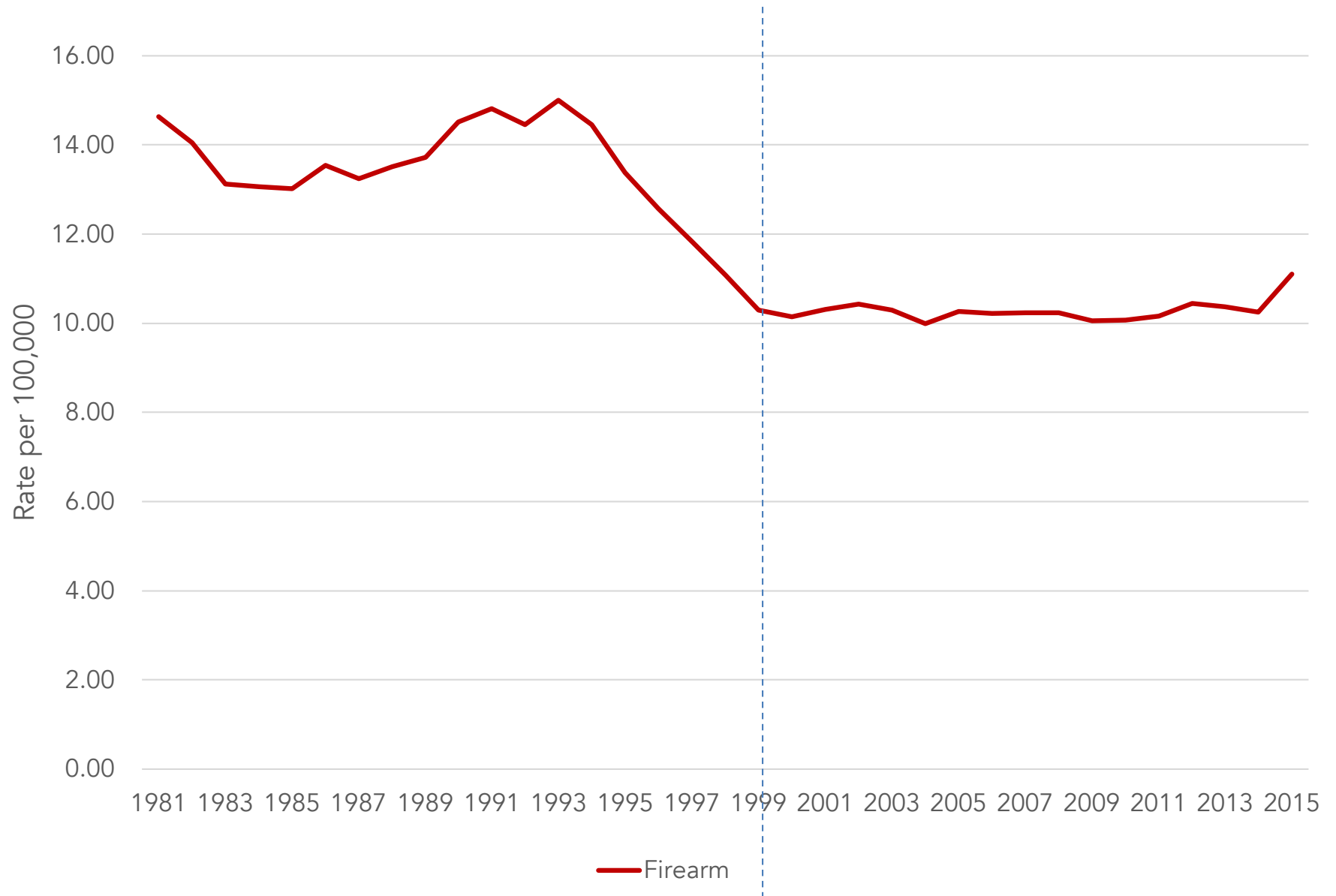
DEATHS IN
MASS
SHOOTINGS:
456



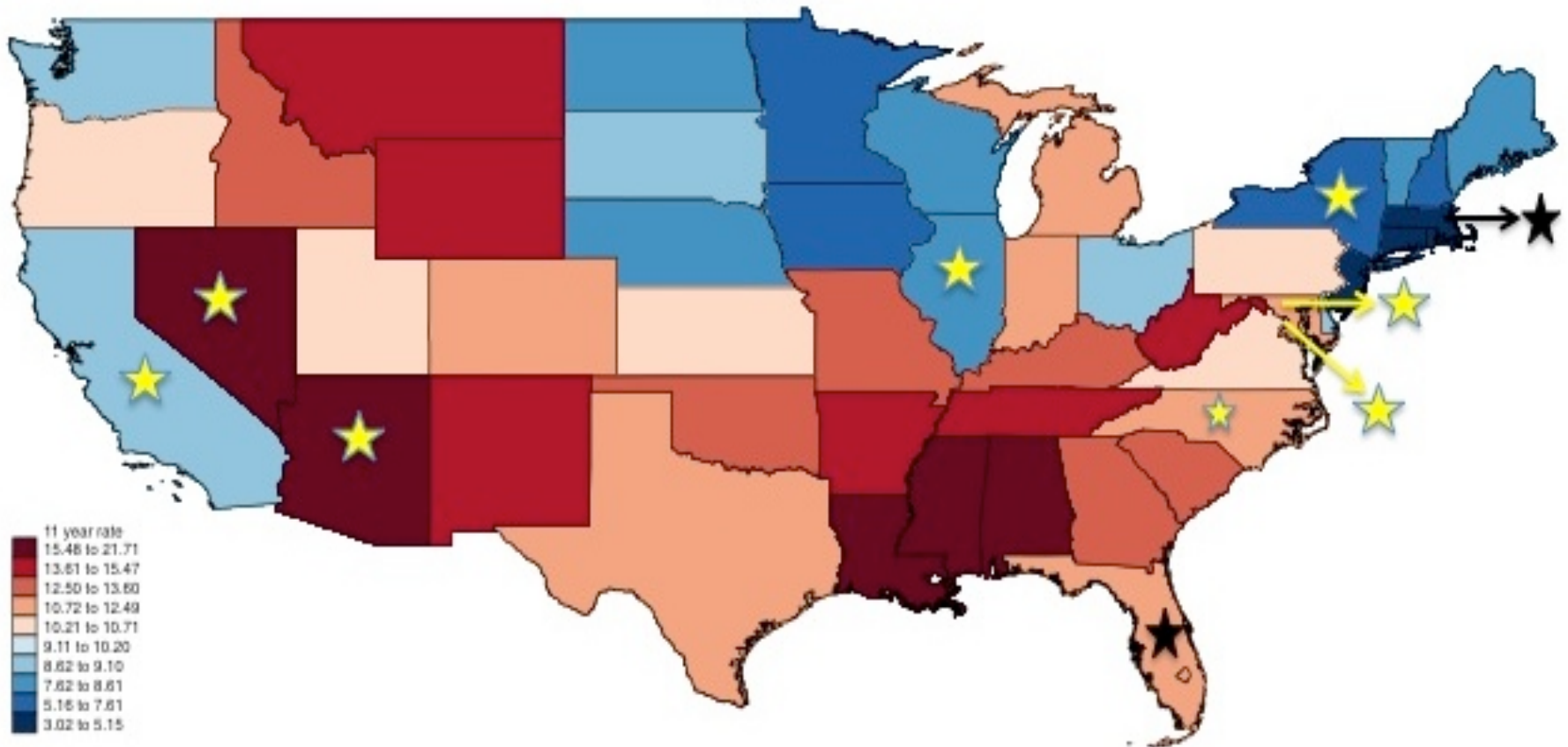
SHARE OF ALL
GUN DEATHS: **1.6%**

1.2%

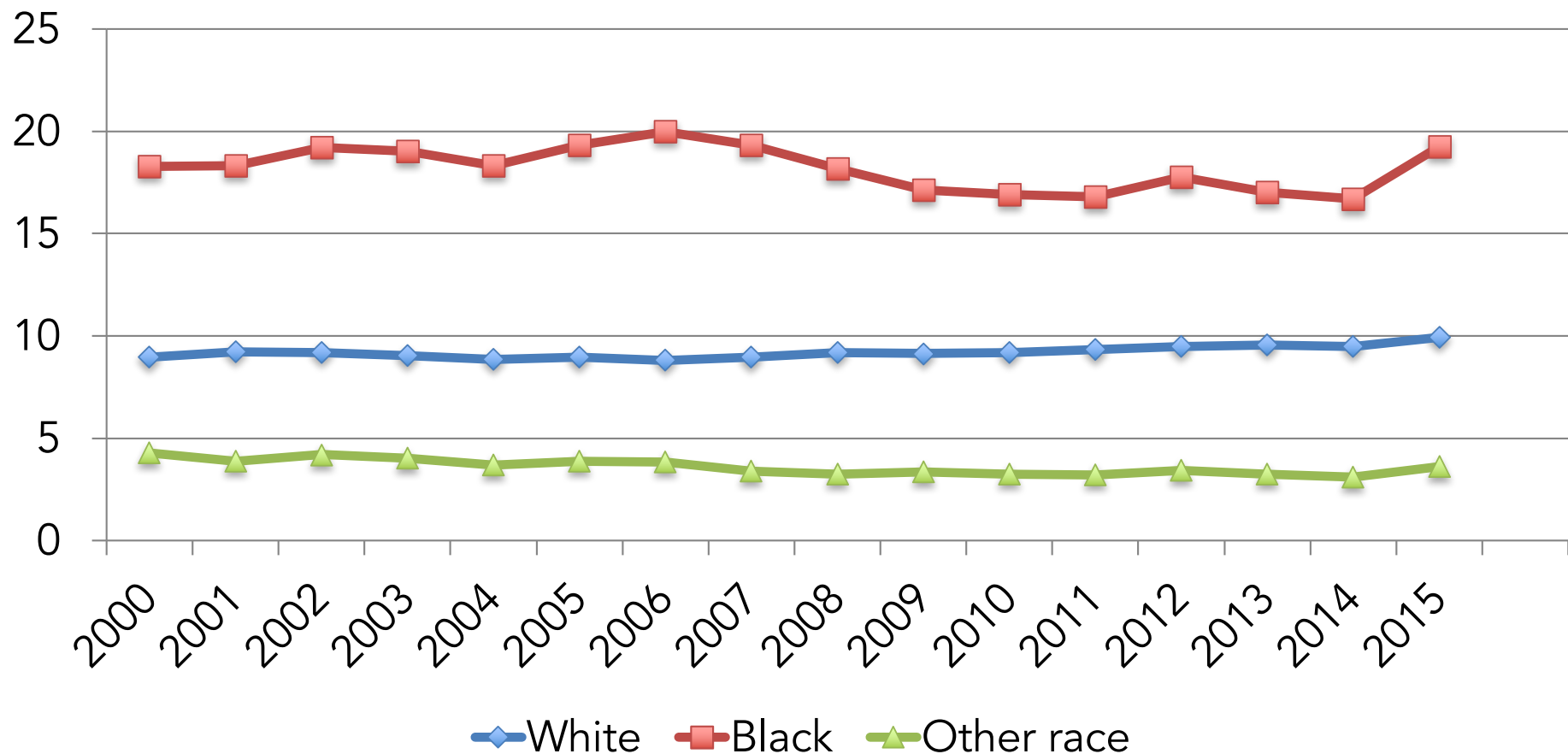
National Firearm Deaths, 1981-2015



State-specific fatal firearm injury



Fatal firearm- Temporal trends by Race



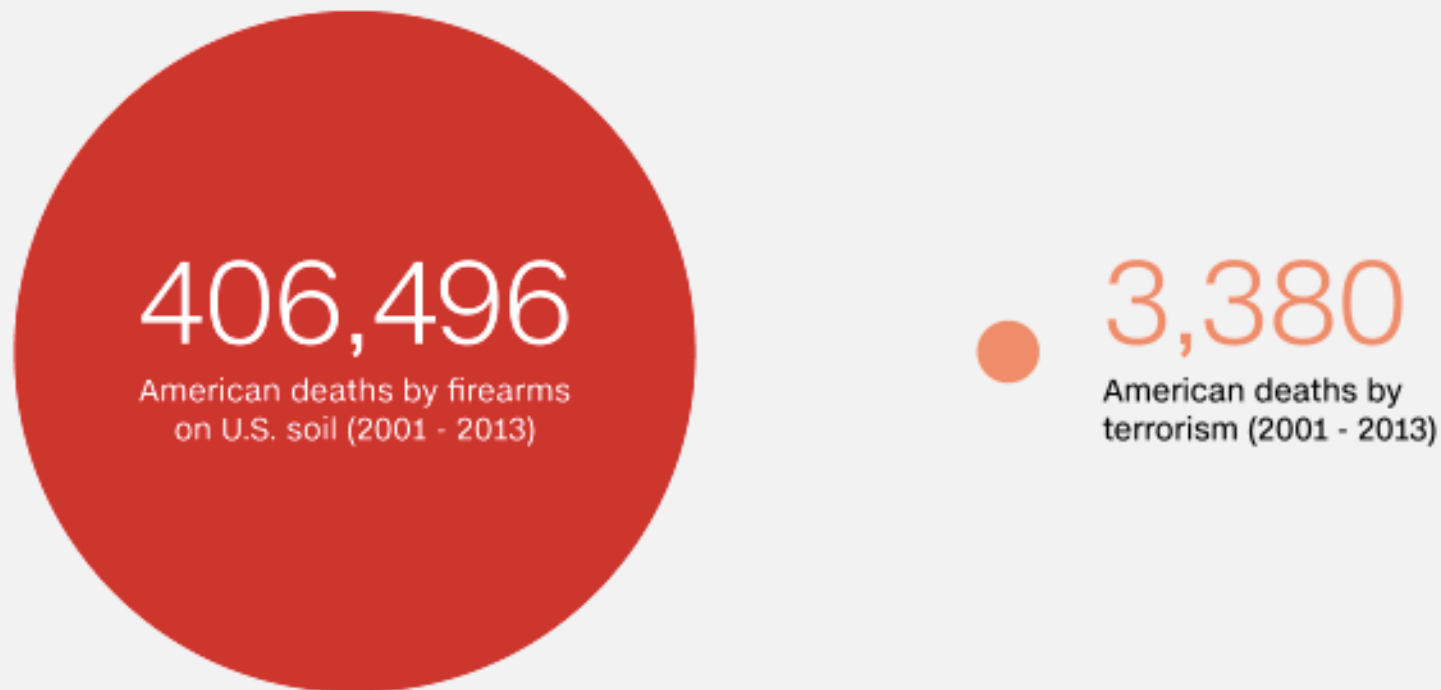
Whites: Annual rate change= 0.006 per 100,000, P-trend=0.71

Blacks: Annual rate change= -0.114 per 100,000, P-trend=0.22

Other race: Annual rate change= -0.12 per 100,000, P-trend<0.0001

American deaths caused by terrorism vs. gun violence

The gun fatalities number covers all manner of death, including homicide, accident and suicide.

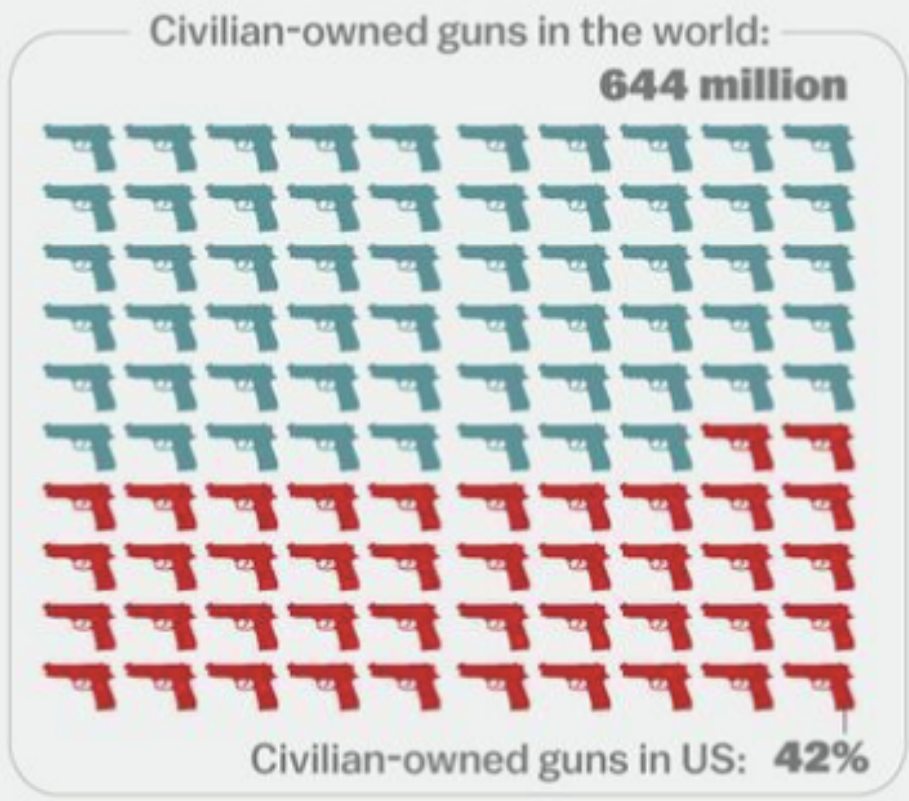
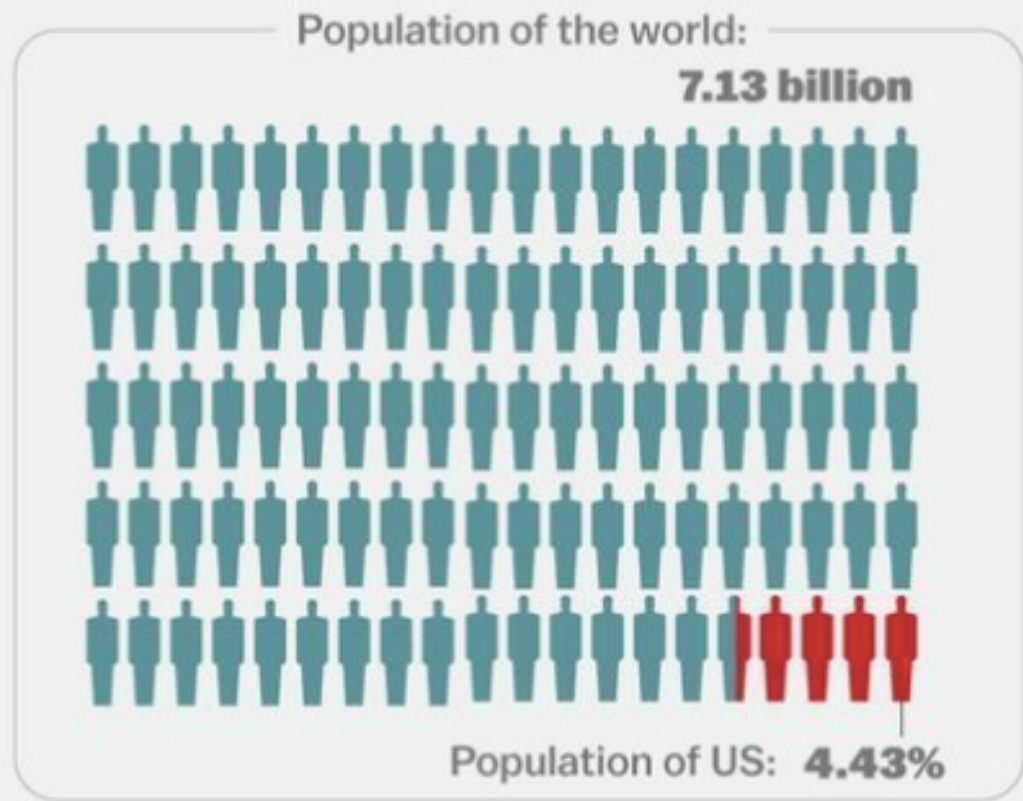


Source: Centers for Disease Control and Prevention, U.S. State Department



2. Guns

Americans own a ridiculous number of guns

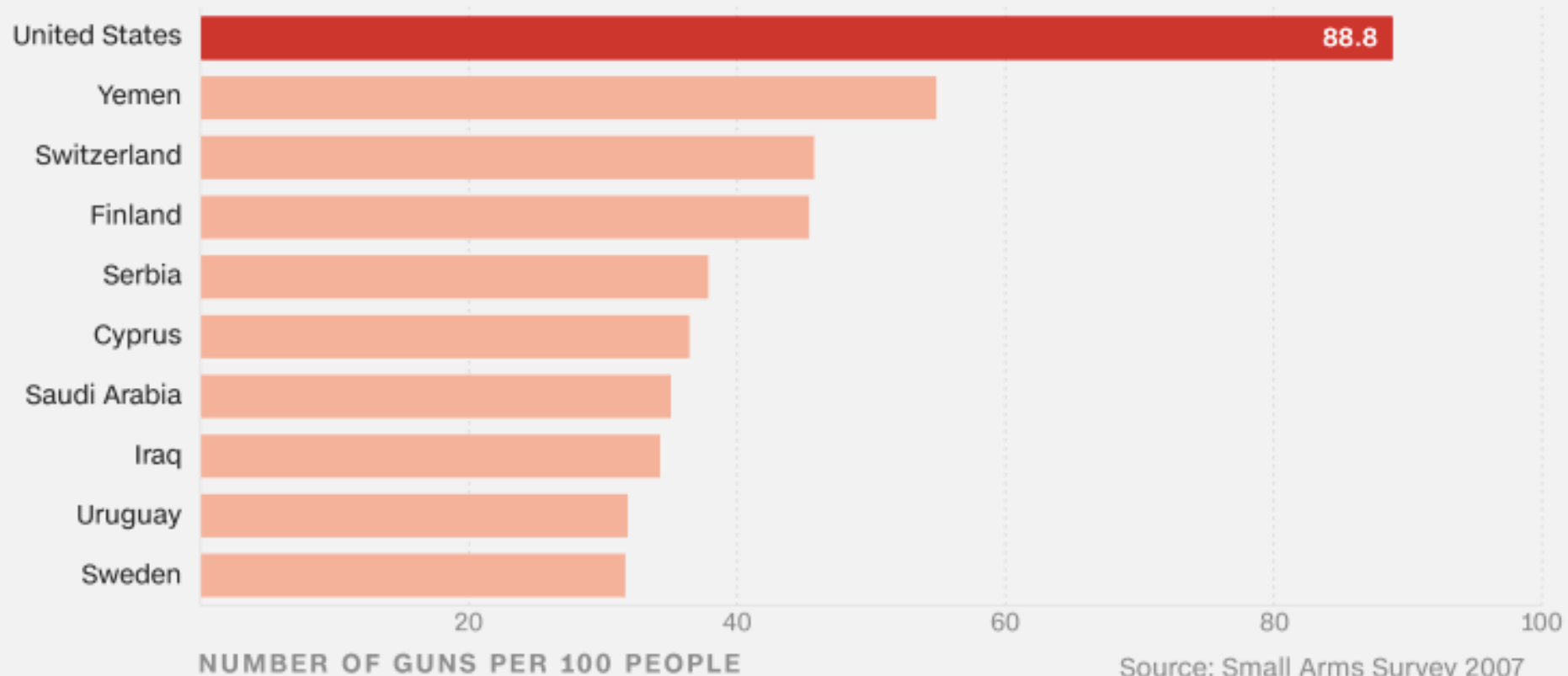


SOURCE: UNODC, Small Arms Survey, via The Guardian.



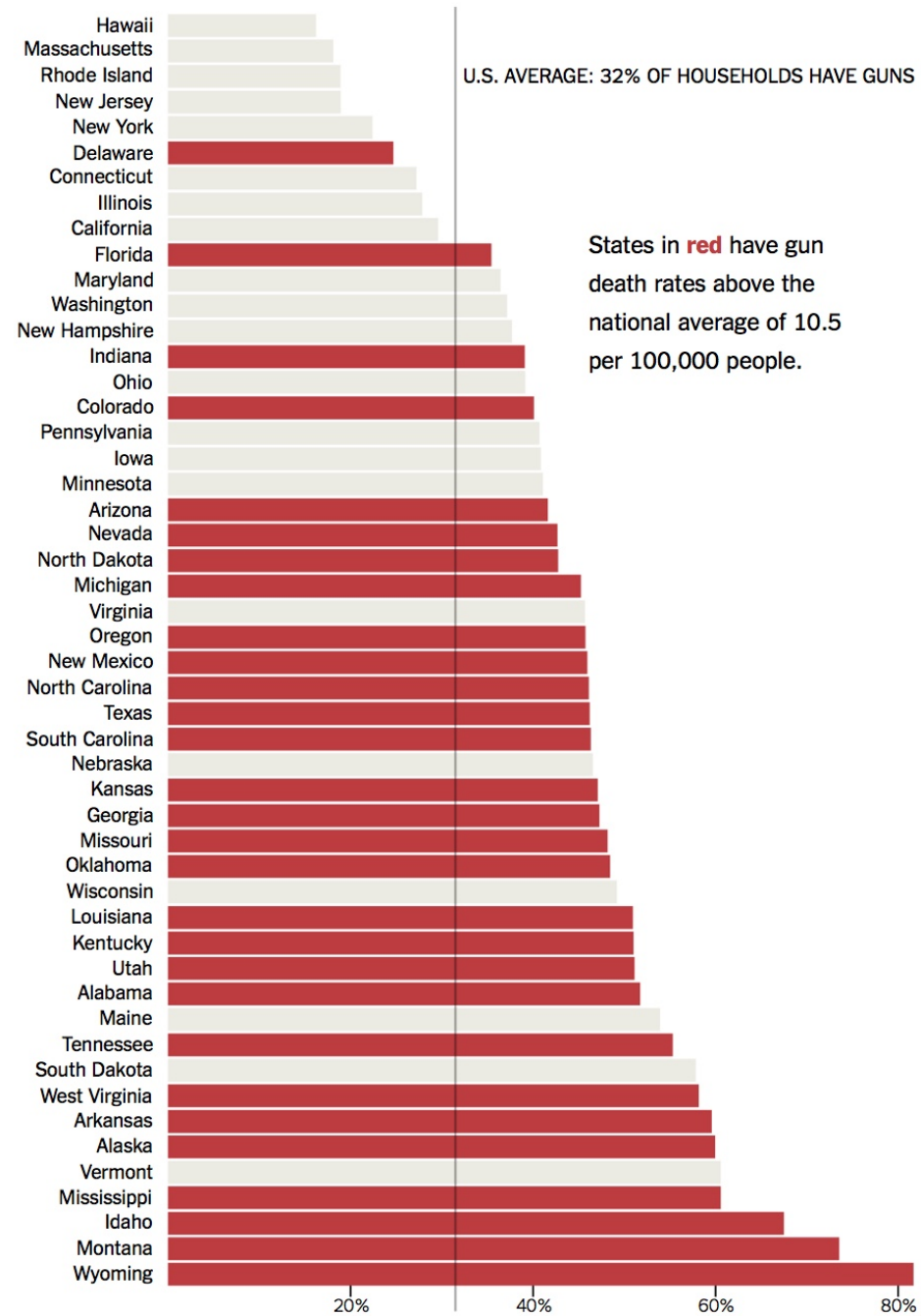
Countries with most guns per capita

There are more guns owned by civilians in the United States than any other country. Shown below are the ten countries with the highest rates of gun ownership.



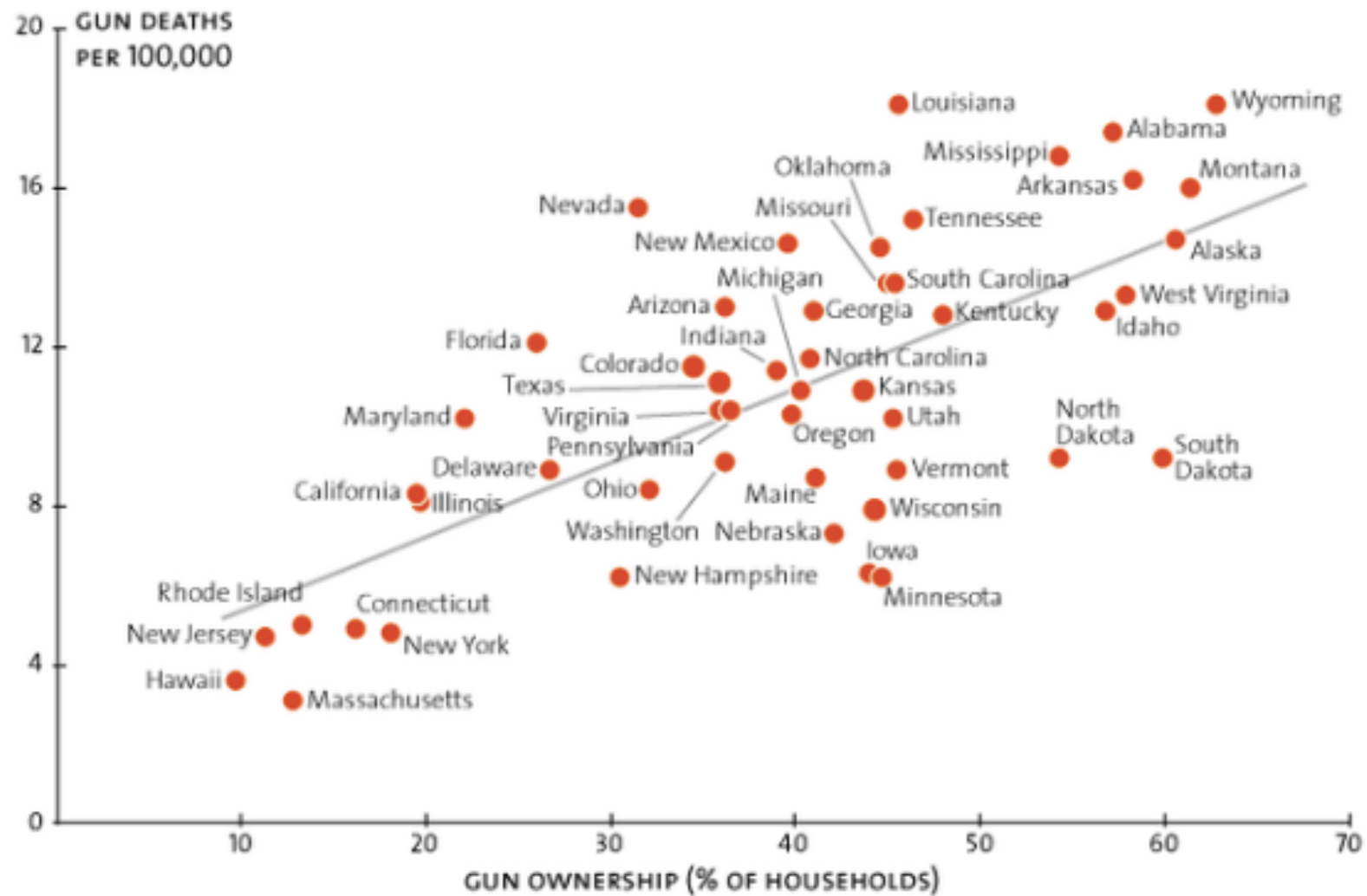
3. Guns=gun death and injury

Percent of Households With Guns, by State



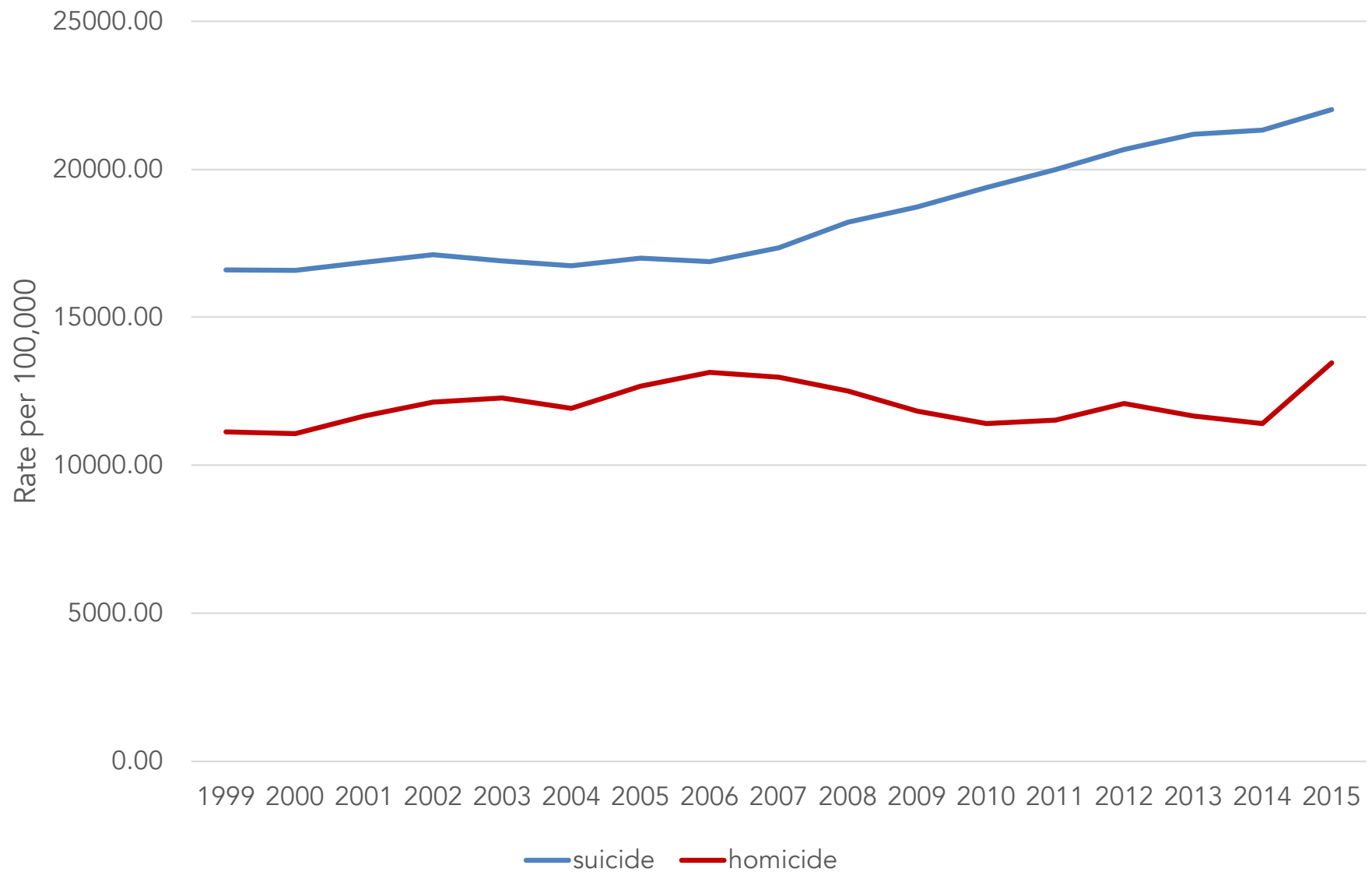
Source: Michael Siegel, Boston University School of Public Health

Gun ownership vs. gun deaths, by state



4. Suicide and lethality

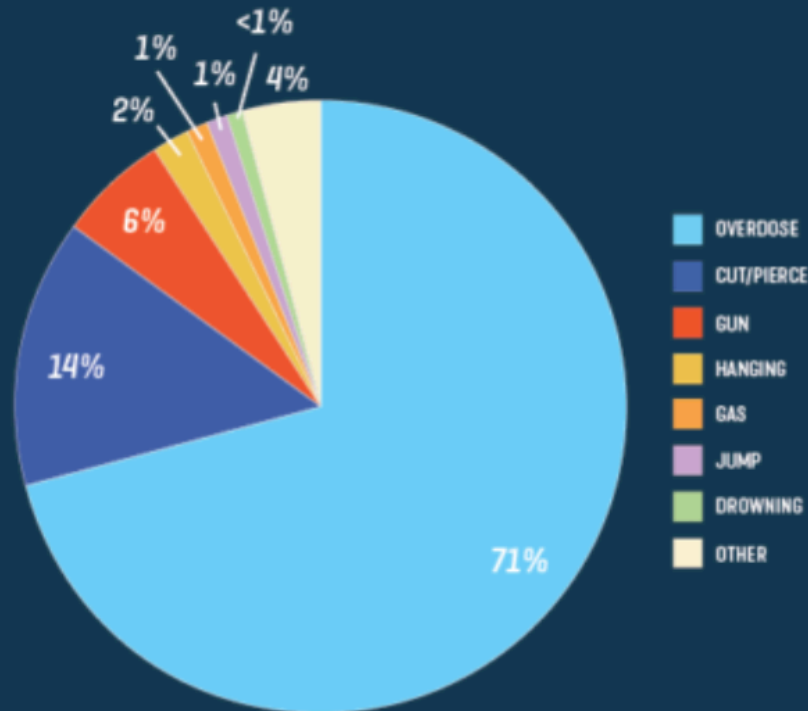
Firearm suicides versus homicides, 1999-2015



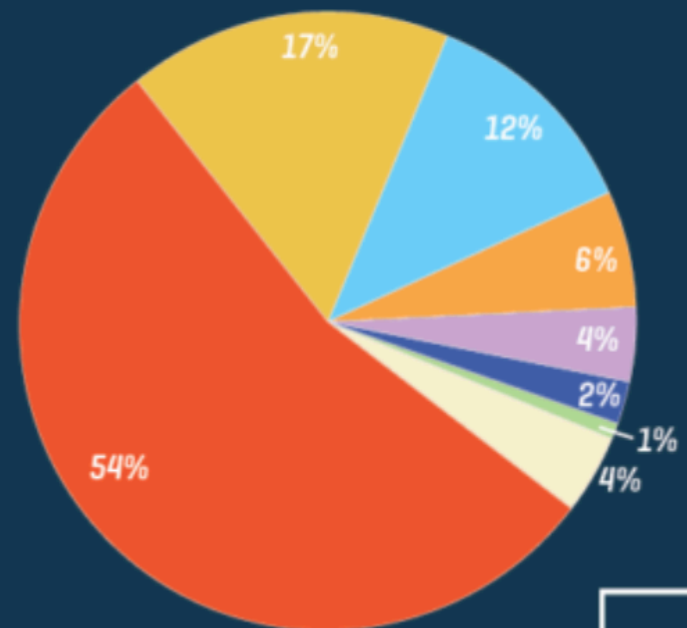
GUNS AREN'T THE MOST COMMON WAY TO ATTEMPT SUICIDE. BUT THEY ARE THE MOST FATAL.

Firearms account for more suicide deaths than every other means combined.

PERCENTAGE OF ALL SUICIDE ATTEMPTS



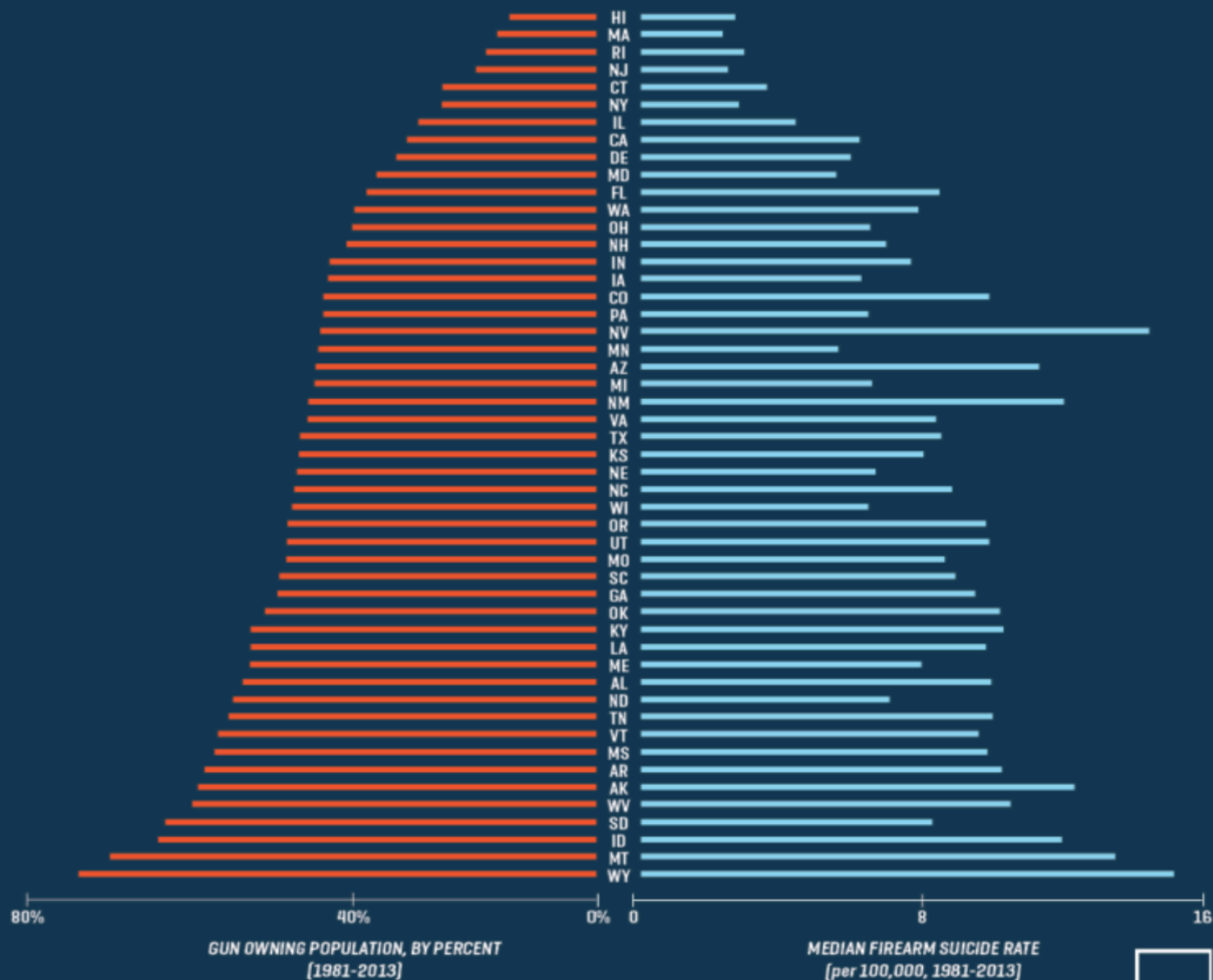
PERCENTAGE OF ALL FATAL SUICIDE ATTEMPTS



SOURCE: American Journal of Public Health



IN STATES WHERE MORE PEOPLE OWN GUNS SUICIDE RATES ARE HIGHER



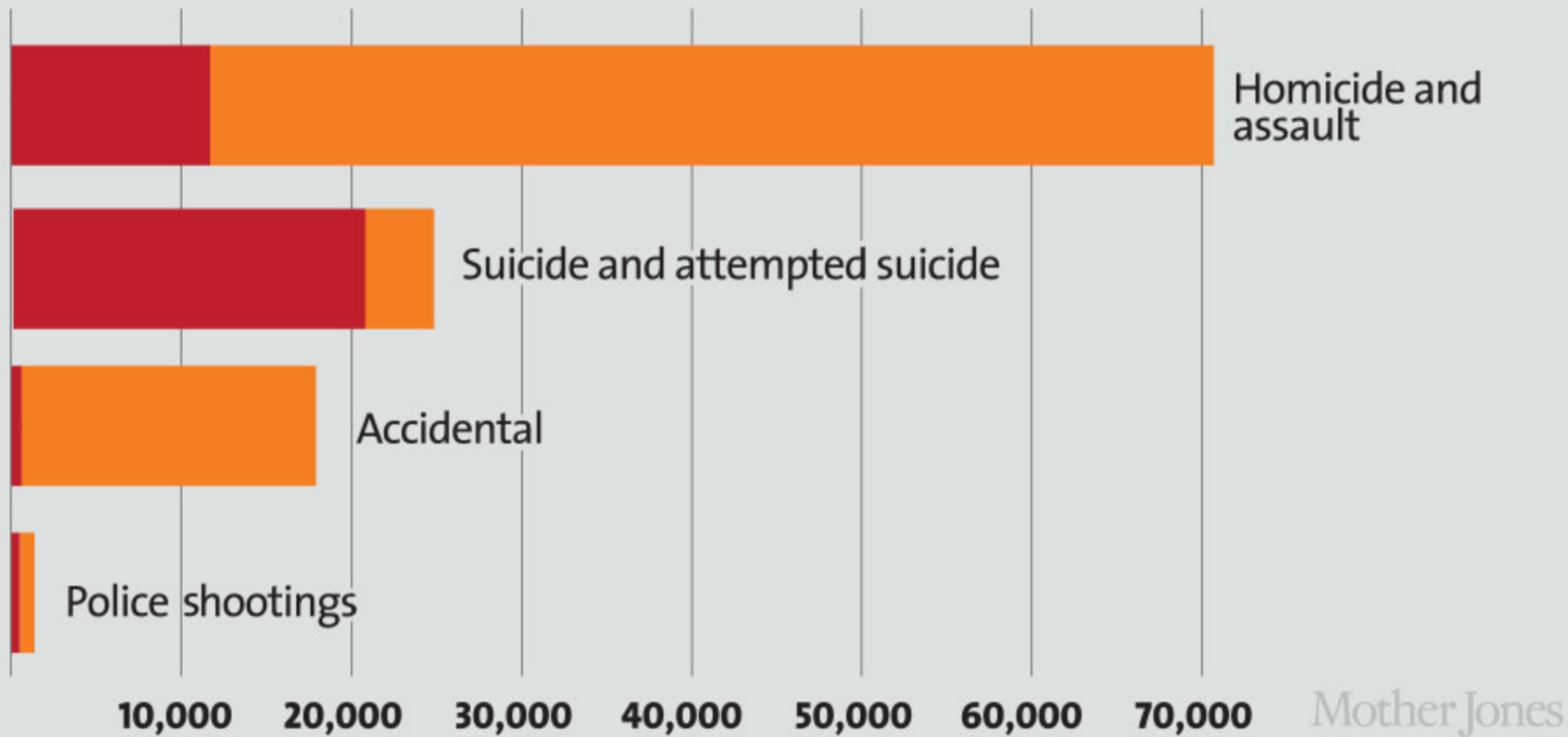
SOURCE: American Journal of Public Health



5. What we often forget

GUN CASUALTIES, 2012

Deaths Injuries



Mother Jones

Total Burden of Firearm injuries 2001-2014

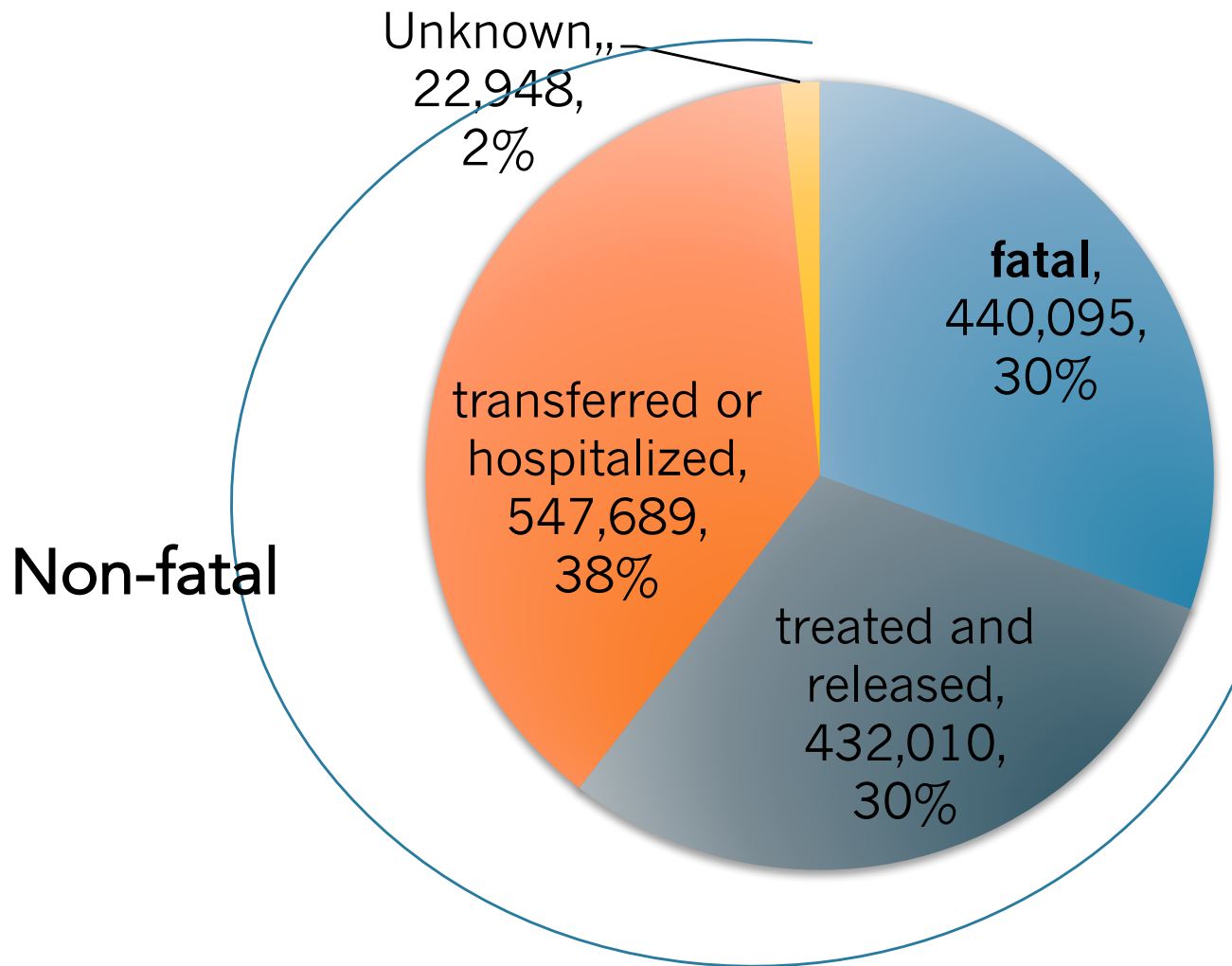
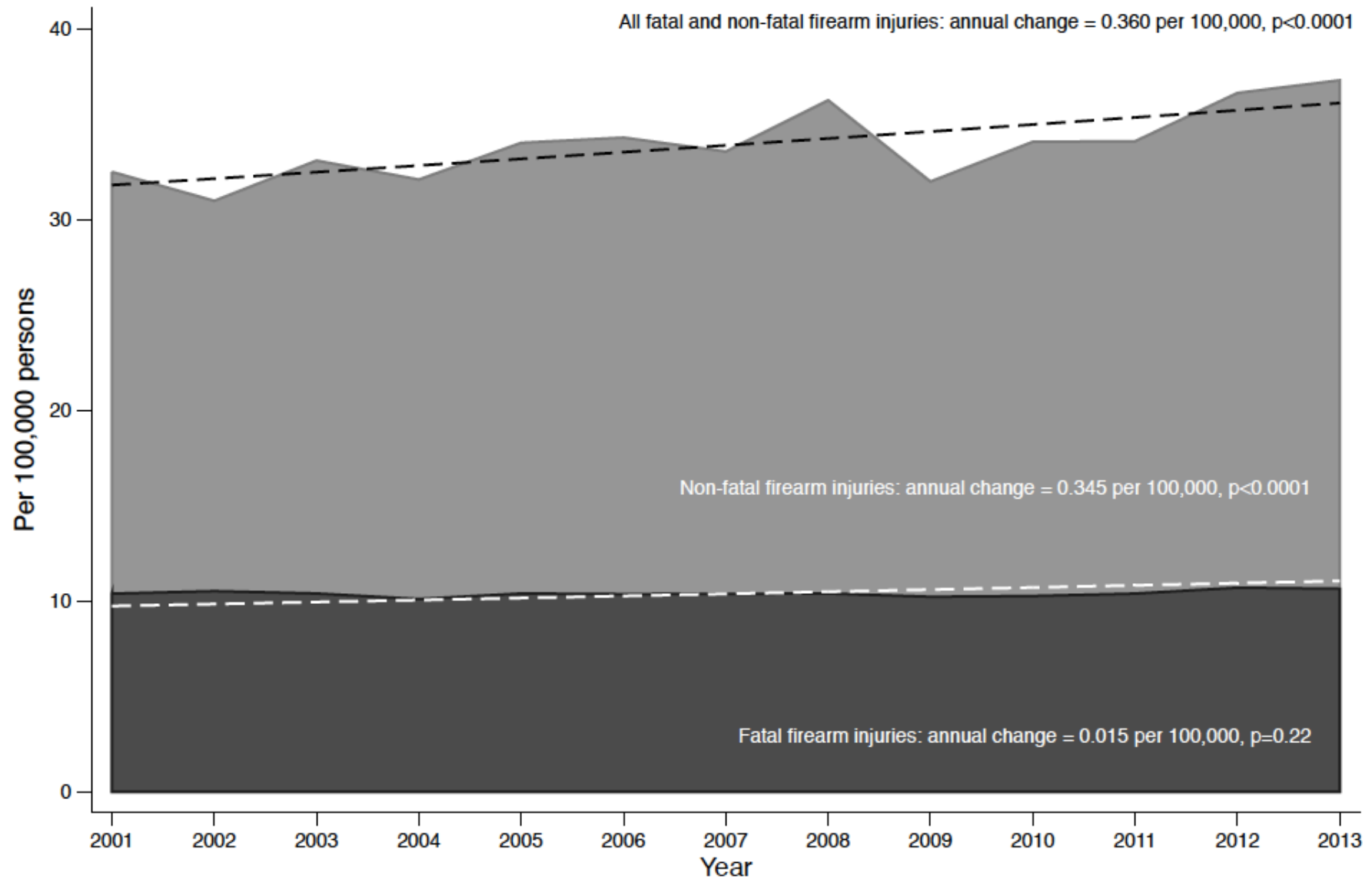


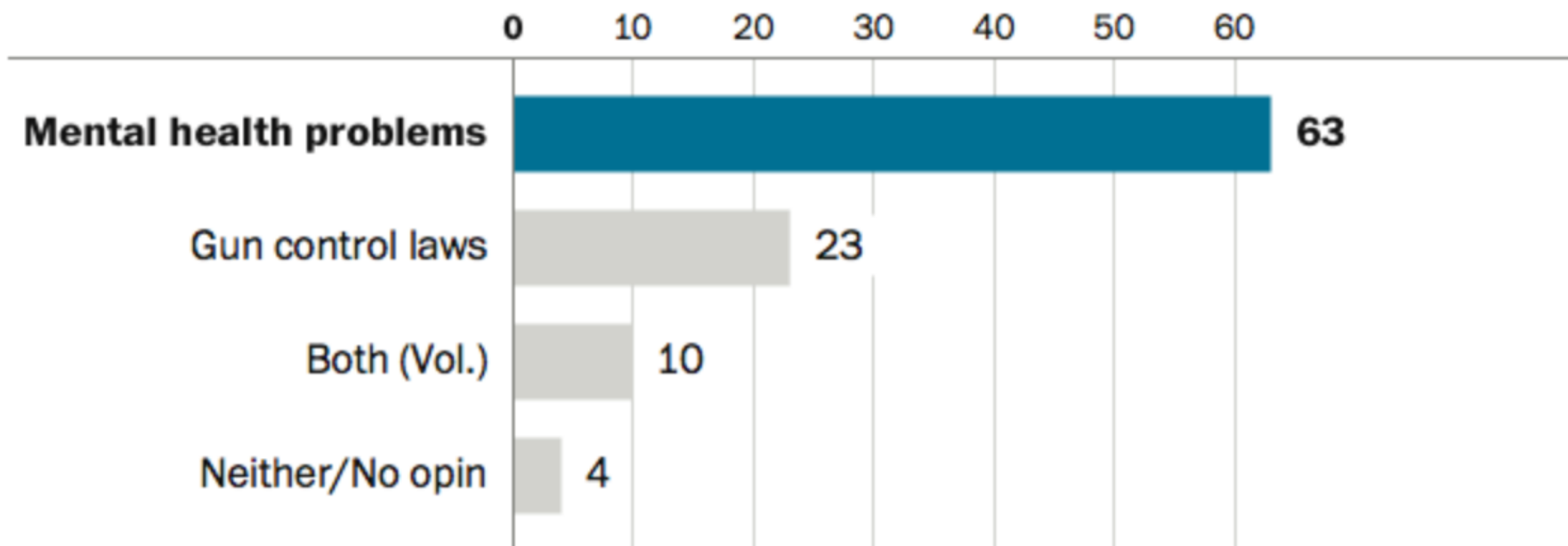
Figure 1: Temporal trends of fatal and non-fatal firearm injuries from 2001 to 2013



6. The mental health myth

Mass shootings sign of mental health or gun law failures?

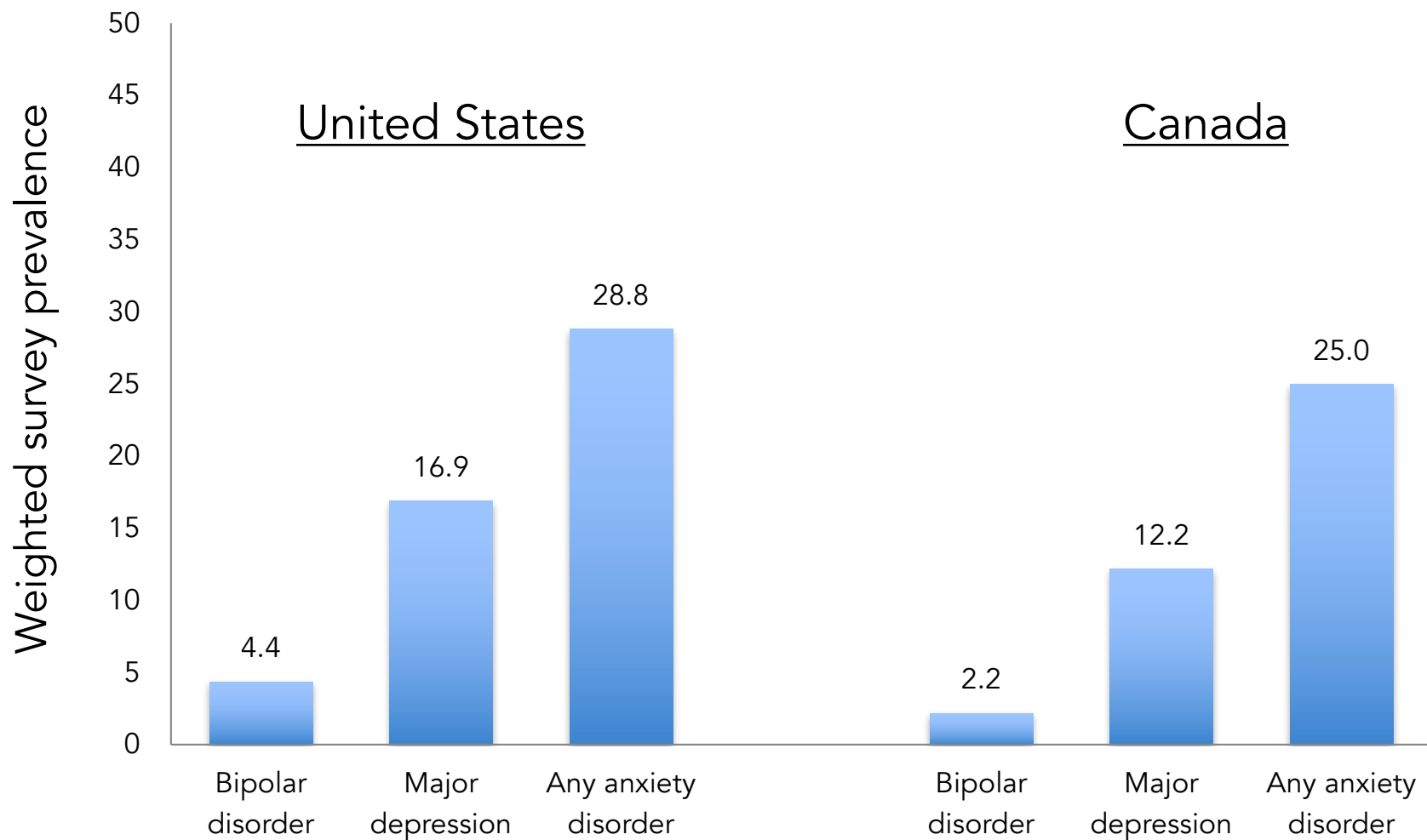
Do you think that mass shootings in this country are more a reflection of problems identifying and treating people with mental health problems or inadequate gun control laws?



Source: Washington Post-ABC News poll Oct. 15-18, 2015

THE WASHINGTON POST

Lifetime prevalence of psychiatric disorders are comparable in Canada and the U.S.

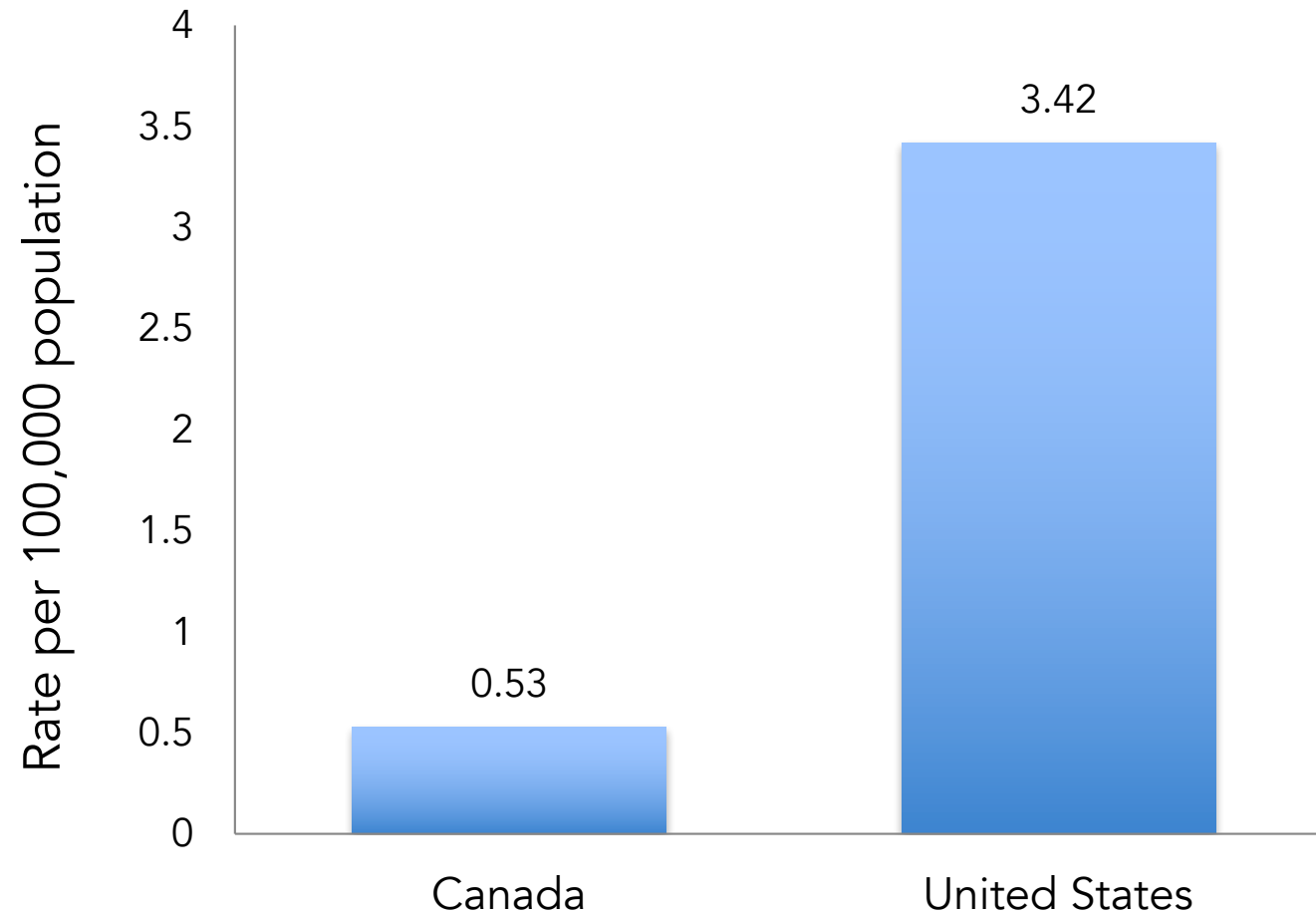


Schaffer A et al. Community survey of bipolar disorder in Canada: lifetime prevalence and illness characteristics. *Can J Psychiatry* 2006; 51(1): 9-16.

Patten SB et al. Descriptive Epidemiology of Major Depression in Canada. *The Canadian Journal of Psychiatry* February 2006.

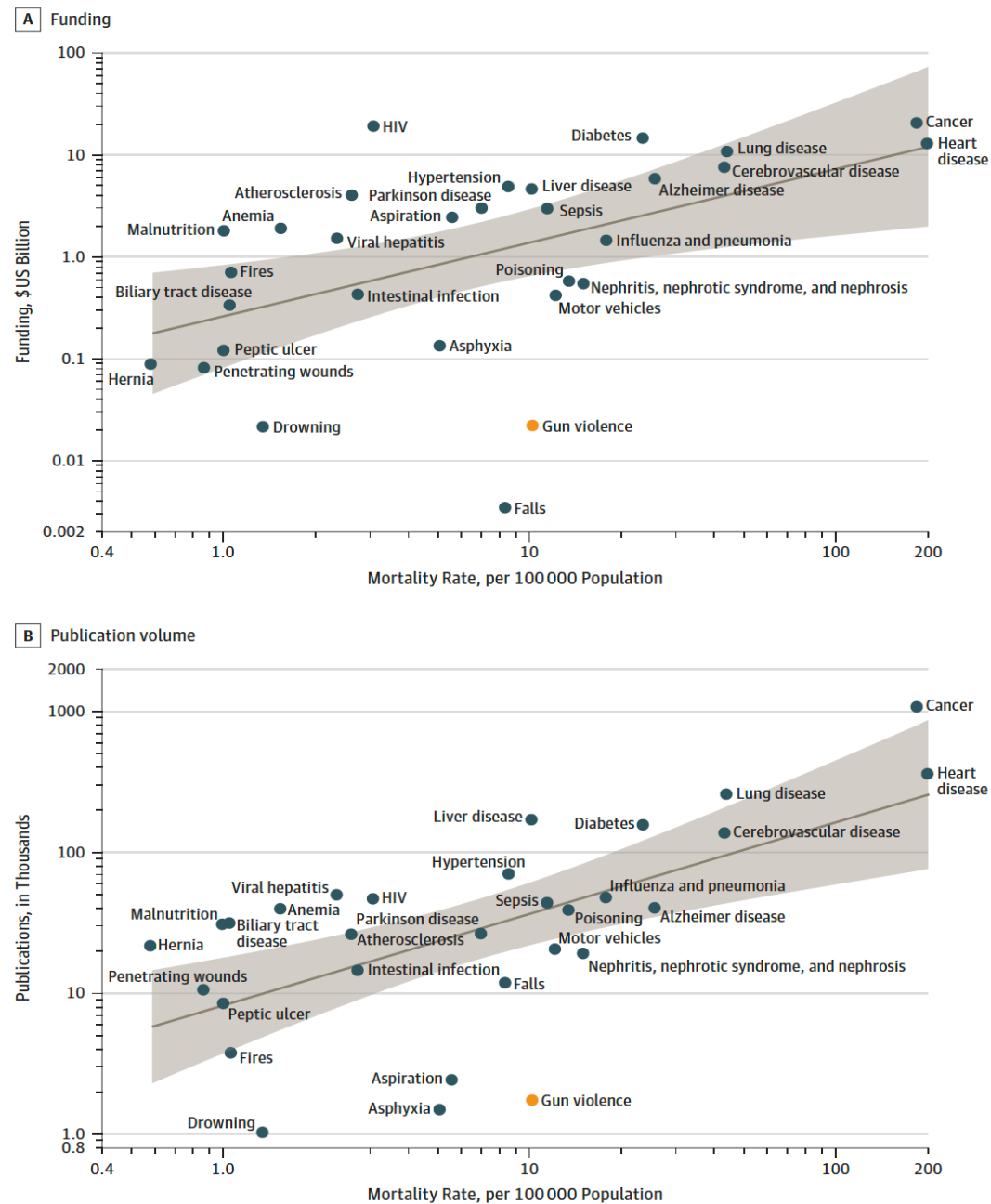
Kessler RC et al. Lifetime Prevalence and Age-of-Onset Distributions of DSM-IV Disorders in the National Comorbidity Survey Replication. *JAMA* 2005; 62 (6). "Mental Health and Mental Illness". Anxiety Disorders Association of Canada. <<http://anxietycanada.ca/english/pdf/kirby.pdf>> Accessed November 21, 2014.

Firearm homicide rate per 100,000 in 2009



7. On research

Figure 1. Mortality Rate vs Funding and Publication Volume for 30 Leading Causes of Death in the United States

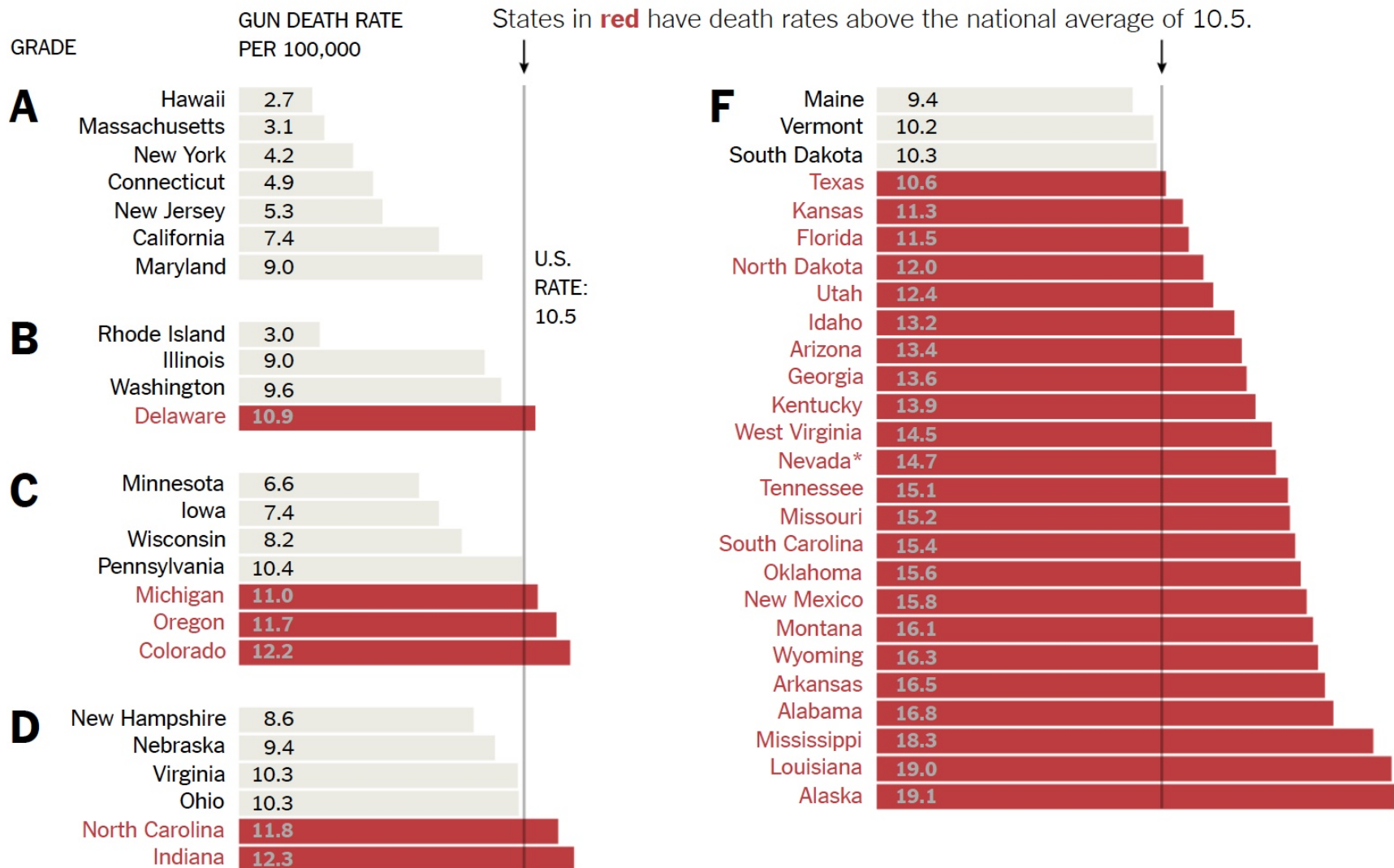


Stark DE, Shah NH. Funding and Publication of Research on Gun Violence and Other Leading Causes of Death. *JAMA: The Journal of the American Medical Association*. 2017; 317(1): 84–85.

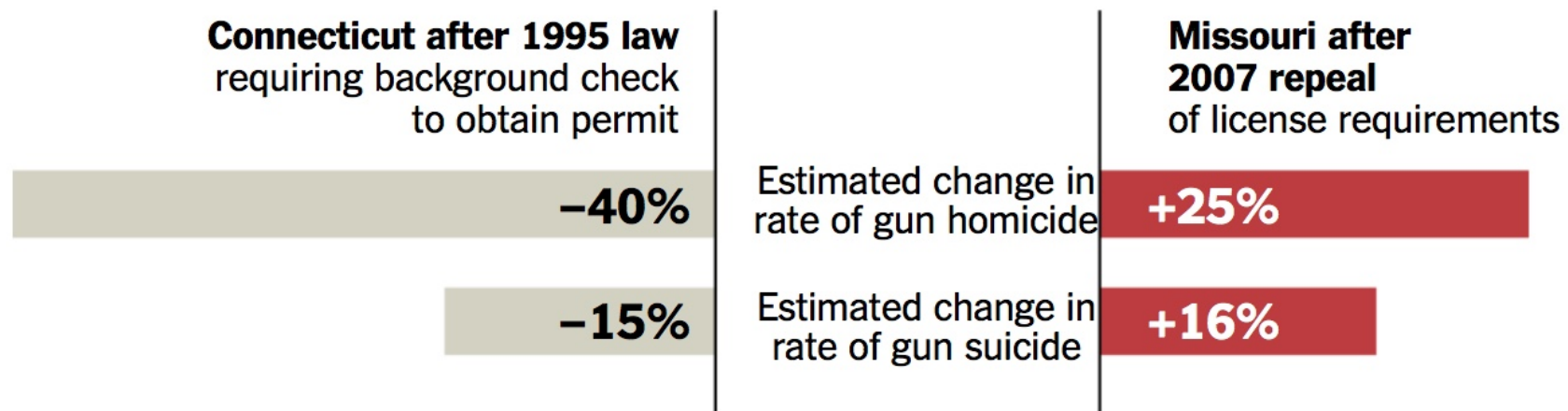
8. On potential solutions

Gun Law 'Grades' and Gun Death Rates

The Law Center to Prevent Gun Violence finds that states where guns are more regulated tend to have lower gun death rates. In its grading system, the strongest gun regulations get an "A;" the weakest, an "F."



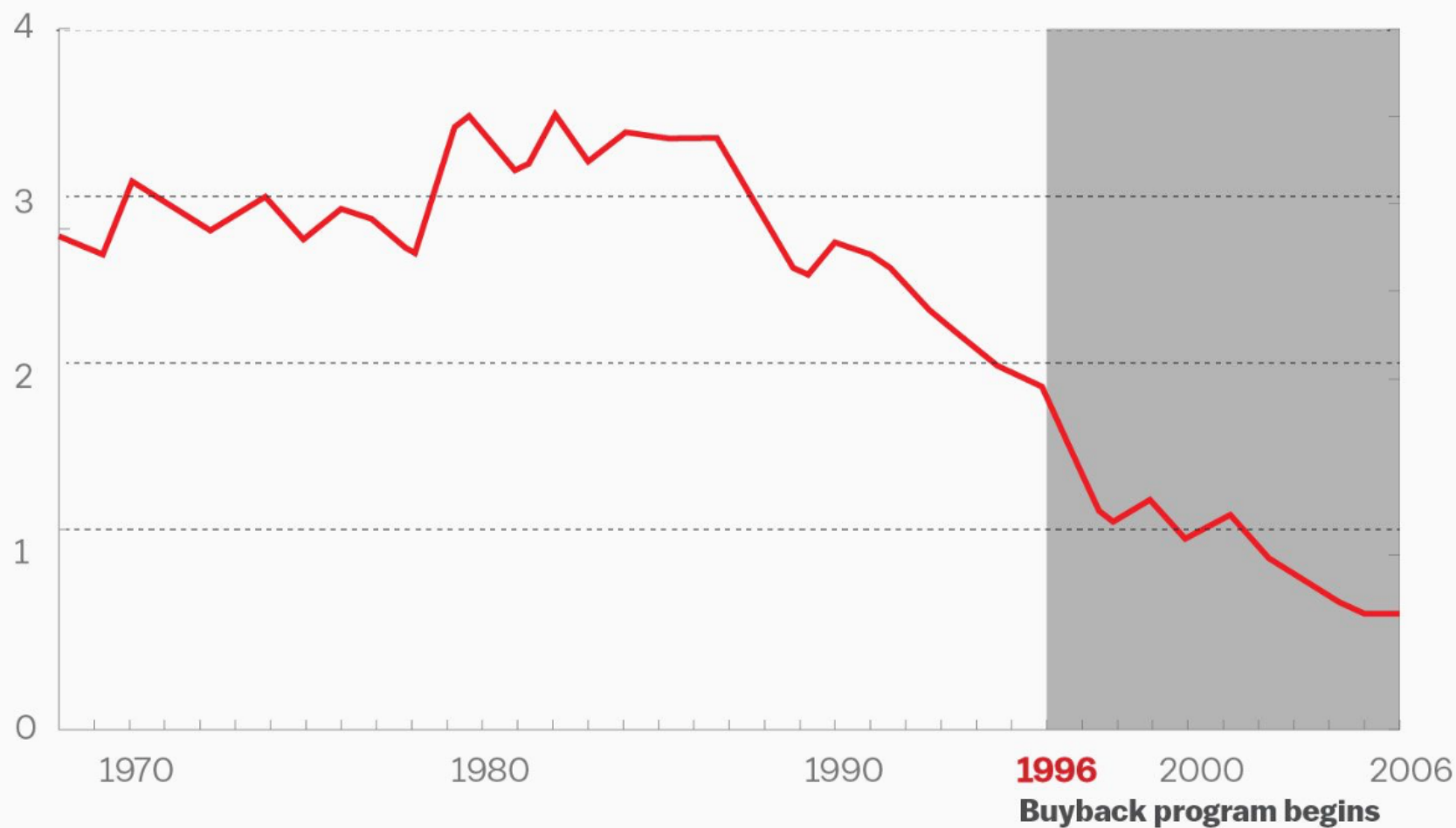
*Nevada's grade of F would improve to a C-minus if a recently passed ballot initiative mandating universal background checks is implemented. So far, the state has failed to do so. Source: Law Center to Prevent Gun Violence.



The New York Times | Source: John Hopkins School of Public Health

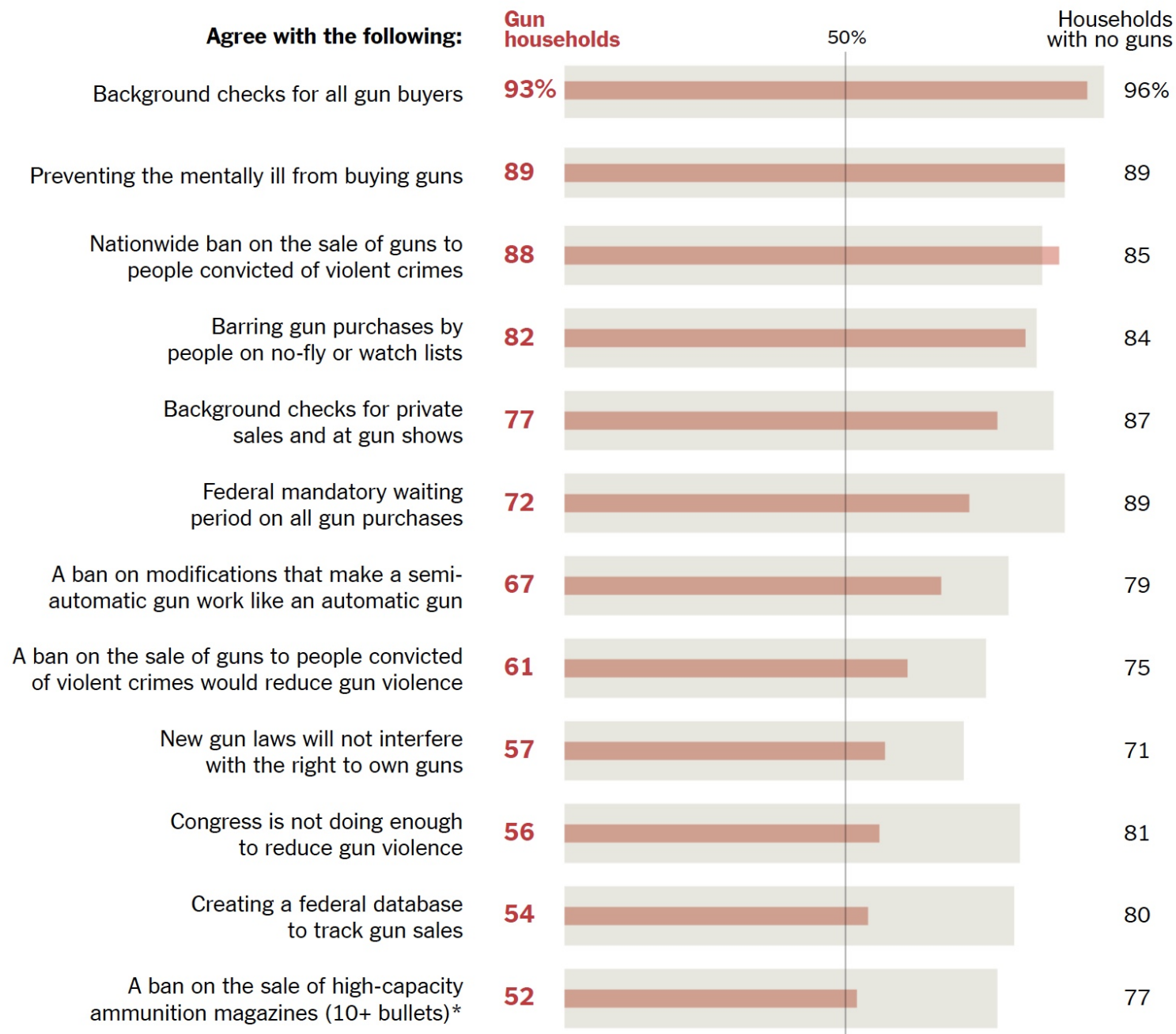
Rate of firearm suicides after Australia's gun buyback program

Firearm suicides per 100,000 residents

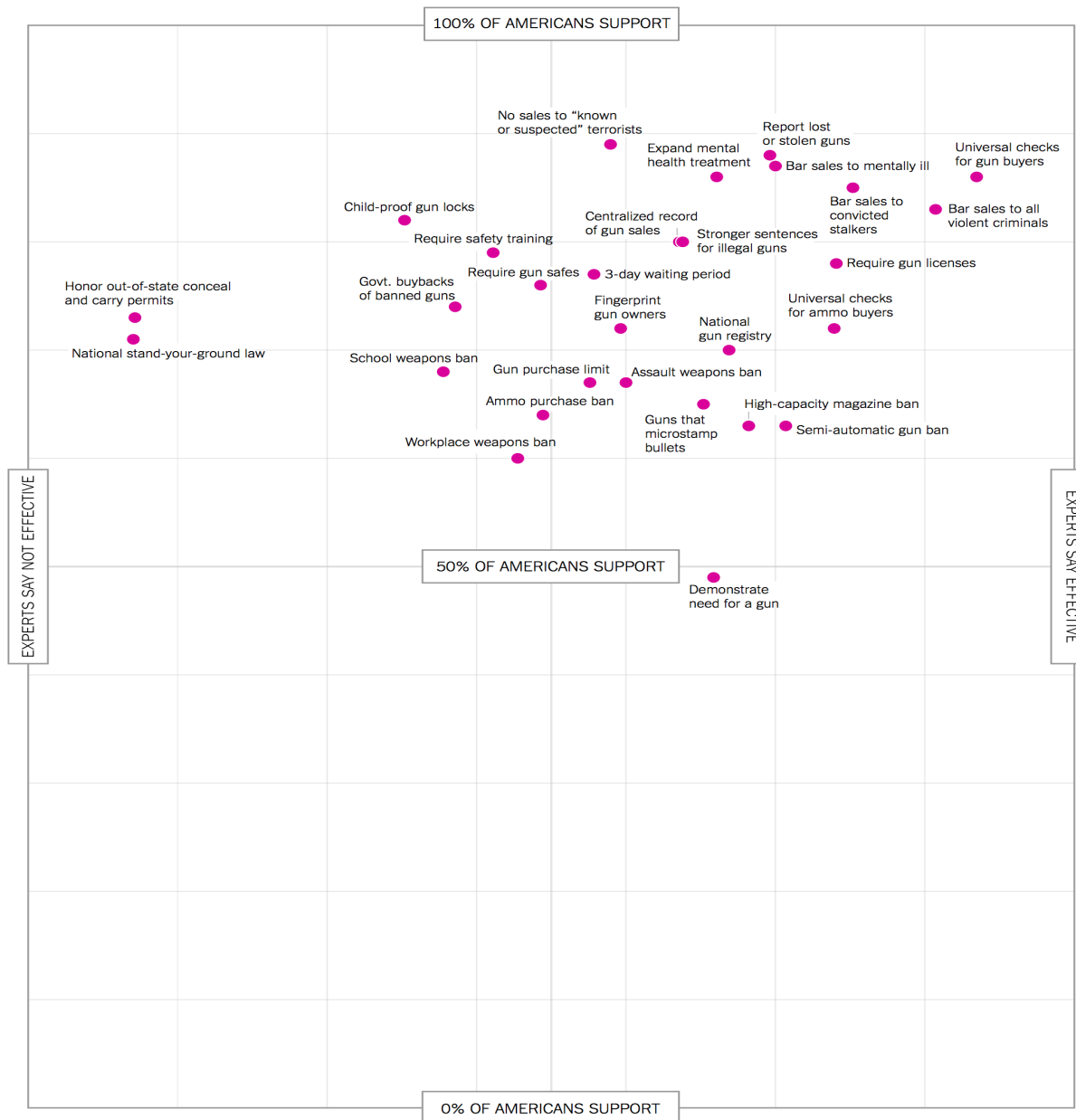


SOURCE: IZA

Vox



The New York Times | Sources: Pew Research Center survey conducted in March and April (questions on mental illness, no-fly lists, background checks for private sales and federal database); Quinnipiac University National Poll conducted Oct. 5-10 (all other questions)



Bui Q, Sanger-Katz M. How to Prevent Gun Deaths? Where Experts and the Public Agree. *The New York Times*. January 10, 2017. http://www.nytimes.com/interactive/2017/01/10/upshot/How-to-Prevent-Gun-Deaths-The-Views-of-Experts-and-the-Public.html?hp&action=click&pgtype=Homepage&clickSource=story-heading&module=second-column-region@ion=top-news&WT.nav=top-news&_r=1 Accessed January 10, 2017.

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