Comparing the Global Rate of Mass Public Shootings to the U.S.'s Rate and Comparing their Changes Over time

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Executive Summary

Mass public shootings, cases where four or more people were murdered in a public place and not part of some other crime or civil war, are much less common in the United States in the rest of the world. They have also increased faster in the rest of the world than in the US overtime. Over the 20 years from 1998 to 2017, our list contains 2,772 attacks and at least 5,764 shooters outside the United States and 62 attacks and 66 shooters within our country. By our count, the US makes up less than 1.13% of the mass public shooters, 1.77% of their murders, and 2.19% of their attacks. All these are much less than the US's 4.6% share of the world population. Attacks in the US are not only less frequent than other countries, they are also much less deadly on average.

If we look at the percent of the adult population with guns rather than the Small Arms Survey data on the number of guns per 100 people, higher gun ownership rates seem to be associated with fewer mass public shooters. In addition, the other most consistent results show that countries with higher Muslim populations and those that have been in Civil wars longer also have higher number of mass public shooters.

> *"The one thing we do know is that we have a pattern now of mass shootings in this country that has no parallel anywhere else in the world."* **–President Obama, interview that aired on CBS Evening News, Dec. 2, 2015**
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> "*This doesn't happen anywhere else on the planet.*" -- **California's Governor-elect Gavin Newson, referring to 12 people killed at the Borderline Bar and Grill, Thousand Oaks, California, November 8, 2018**
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> "*We stand alone in the world in the number of mass shootings*," **Representative Carolyn Maloney (D-NY), November 5, 2018**

I. Introduction

President Obama and other politicians have frequently claimed that the United States is unique regarding mass public shootings.[1] It is also a frequent claim by the media.[2]

This belief is constantly used to push for more gun control. If we can only get rid of guns in the United States or have stricter gun control, we will get rid of these mass public shootings and be more like the rest of the world. Of course, it is understandable that the U.S. media doesn´t report about most of the mass public shootings in other countries. Americans are much more interested in news about their own country, but, as we will see, the US is a relatively safe place from these mass public shootings.

We use the FBI's traditional definition of mass public shootings. America is unique regarding the detail of its crime data. For example, almost half the countries in the world don't even report the number of firearm homicides, just the total number of homicides. Few countries provide murder rates as opposed to homicides. Other countries just don't officially collect data on mass public killings, let alone on the category of shootings.

What this means is that we have had to do an extensive search of news stories to collect our cases. For less developed parts of the world such as Africa or Latin America, it can be very difficult to obtain news stories from even a decade or so ago. It is downright impossible to obtain news stories on all of the cases of four or more people killed in the 1970s or 1980s. The problem is that if we have all the mass public shootings from the US but only a fraction of those from the rest of the world, it will make the US look worse than it is. So we examined the last 15 years of his period of study: 1998 to 2015.

The following sections will explain the FBI's definition of mass public shootings, how

we collected the data, how the US compares to the rest of the world and how the rate and severity of these attacks has changed over time and comparing whether countries with the highest gun ownership rates tend to have higher rates of mass public shootings. We will also show how sensitive the results are to decisions on what to include in the count. But even the most generous assumptions produce results show that mass public shooters, shootings, and murders from these attacks are very rare in the US compared to the rest of the world.

II. How Frequently do Mass Public Shootings Occur in the World?

A. Defining Mass Public Shootings

We follow the FBI's definition of mass public shootings.[3]

☐ The FBI (2013) only includes shootings in "public places" such as commercial areas (malls, stores, and other businesses); schools and colleges; open spaces; government properties (including military bases and civilian offices); houses of worship; and healthcare facilities.

☐ The FBI excludes "shootings that resulted from gang or drug violence," occurred in the commission of another ongoing crime such as robbery, or arose primarily from self-defense — primarily a domestic dispute or barricade/hostage situation.

☐ From 1980 to 2013, the original FBI definition of "mass killings" had been "*four or more* victims slain, in one event, in one location," and the offender is not included in the victim count (CRS, July 30, 2015). In 2013, the definition was changed to "three or more killings." Many academics have continued to use the four or more definition.[4] This includes researchers such as James Alan Fox. Even groups such as Bloomberg's Everytown have recently used the four or more definition.[5]

☐ There is no limit on the number of people involved in these attacks. The FBI states: "some incidents involved two or more shooters." For example, the FBI includes the 2015 San Bernardino, California attack by a husband and wife team. Had the report gone back to 1999, the FBI would have included the Columbine High School shooting, which involved two killers.

The New York City Police Department's (NYPD) 2012 Active Shooter report and the Department of Homeland Security's definition of active shooters provide similar definitions with the exception that they don't limit themselves to cases where four or more people have been killed.[6]

Our primary source is the University of Maryland Global Terrorism Database (GTD),

which collected data on over 170,000 terrorist attacks from 1970 to 2017 (Global Terrorism Database, 2017 and LaFree et al, 2015). The GTD defines terrorist attacks as "the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation." The database lists attacks that were carried out using everything from firearms, incendiary, knifes, bombs, vehicles, chemical, biological, or radiological weapons. They divide their attacks into six categories: 1) Terrorism; 2) Insurgency/Guerilla Action; 3) Other Crime Type; 4) Intra/Inter-group conflict; 5) Lack of Intentionality; and 6) State Actor.

The only categories that sometimes meet our criteria for mass public shootings are "terrorism", "other crime type," "intra/inter-group conflict," and "lack of intentionality." Government sponsored or directed/ordered killings, state terrorism (the "State Actor" category), or Civil War cases are completely excluded.

We then reviewed each case using Nexis and web searches to determine whether they met our definition.[7] Less than 50% of the terrorism shooting cases identified by the GTD met the definition of mass public shootings.

One issue that was relatively common among cases in Africa and some other less developed countries is that some news stories only reveal the total killed and the number of places attacked. Without more information, we cannot determine whether each target meets the criterion of four or more people being killed. Twenty people may have been killed on different days in three different towns that are many miles apart. While it is possible that all three attacks satisfy our definition, we took the more conservative route and counted this as only one attack. This causes a slight underestimate of the total number of cases.

Kidnappings are a possible grey area with these cases. At one extreme, attackers start killing people and then take hostages when the police or military arrive. At the other, attackers kidnap people and then kill them. The first type of case is clearly within the purview of this data. The second type is less obvious, though the NYPD includes two cases where a kidnapping preceded a shooting and in one of those cases the kidnapping clearly precipitated the shooting.[8]

While all our cases involve four or more people killed in one place at one time, we have removed most cases where fewer than four people were killed prior to a kidnapping. We have excluded cases where less than four people were killed before anyone was kidnapped unless it is clear that there was no ransom (such as an exchange of hostages) and no negotiations. There are 130 of these cases.

The GTD is also an incomplete source. For the 1998 to 2017 period, we found 62 attacks in the US whereas the GTD lists just 10: the 1999 Columbine High School shooting, the 2009 Fort Hood massacre, the 2012 Sikh Temple attack in Oak Creek, Wisconsin, the 2015 Charleston church shooting, the 2015 Chattanooga shooting,

the 2015 Umpqua Community College shooting, the 2016 Orlando nightclub shooting, the 2016 Dallas shooting, the 2017 Fort Lauderdale airport shooting, and the 2017 Las Vegas shooting. The Columbine attack is classified as "other crime," the Fort Lauderdale airport shooting is classified as "lack of Intentionality" and the other eight are classified as "terrorism." But the GTD readily admits that they do not have a comprehensive list of "other crime types," causing them to miss cases such as the 2012 Sandy Hook Elementary School attack that fall into that category.

While the GTD treats cases such as the Columbine and Fort Hood shootings differently, classifying Columbine as "other crime" and Fort Hood as "terrorism," others who have looked at these types of cases have argued that Columbine is "functionally similar to terrorism."[9] Both types involve premeditated attacks that aim to kill and wound as many people as possible because they know that the more people they harm the more media attention they will receive. They also involve the same type of planning, such as picking targets that aren't able to defend themselves. That some attackers are Muslims, while others are white supremacists or young people who feel that they are not properly appreciated, seems secondary to their goal of killing as many people as possible to get media coverage. The cases also appear the same in terms of any implications for gun control.

Over the **twenty** years studied here, the GTD also misses 39 cases in Europe that they don't identify as terrorist attacks: Albania 1, Austria 1, Belgium 1, Bosnia 1, Croatia 1, Czech Republic 1, England 1, Finland 2, France 6, Germany 2, Italy 1, the Netherlands 1, Russia 12, Serbia 3, Slovakia 1, Switzerland 2, Ukraine 1, and Yugoslavia 1. In Germany, there was two large school shootings (2002 where 18 were killed and 2009 where 15 were killed).[10] Finland, a country with about 1/57th the US's population, suffered ten people shot to death at a college in 2008 and five people fatally shot at a mall in 2009.[11] The GTD also missed all of the cases for some countries such as the Solomon Islands.

To obtain these additional cases missed by the GTD, at the CPRC we used our own Nexis and web searches for mass shootings for Europe and the United States and for large-scale mass public shootings where at least 15 people were killed. For some parts of the world we found Wikipedia entries on rampage and mass shootings.[12] We have also hired people who can speak Chinese, French, Polish, Russian, and Spanish.

We employed Nexis to search for cases by year and our search terms were "mass W/10 shooting," "mass W/10 firearm*," "mass W/10 gun," "multiple W/10 shooting*," "multiple W/10 firearm*," and "multiple W/10 gun." While about 85 percent of cases we found were already identified by GTD and the CPRC, we did pick up another 86 cases.[13]

Still, despite these searches, it is clear that we likely missed many mass public shootings around the world over the 1998 to 2017 period. For example, the GTD has

only listed eleven Central American and Caribbean mass public shootings (2 for Haiti, 4 for Honduras, 4 for Mexico, and 1 for Nicaragua) and we only picked up two more case for Mexico with Nexis and one more for El Salvador, though Haiti and Honduras had homicide rates that were respectively 11.5 and 16.1 times higher than that of the US. Many other countries in this region also have very high homicide rates. While it is possible that countries with high homicide rates don't exhibit unusual rates of mass public shootings, it is also possible that the news media doesn't give much news coverage to a shooting with four fatalities in one of these countries because violence is so common.

Thus, while we have all the mass public shootings for the US and perhaps Europe, we are very unlikely to ever get all of the cases for the rest of the world. No incidents are identified in 79 countries, but that might simply be because we missed them. While we will show that the rate of mass public shootings in the rest of the world is much higher than in the US, that is true despite our numbers underestimating the prevalence of gun violence in the rest of the world.

By comparison, Lankford (2016 and 2019) claims that between 1966 and 2012 there were 200 mass public shooters outside of the United States. We found 3,081 shooters over just 15 years of that period from 1998 to 2012 (Lott and Moody, 2019 and 2020). The large difference between the two sets turns out to be that Lankford generally excluded attacks involving more than one shooter (though that was selective in that he included Columbine and one case involving two shooters in Russia). No explanation was offered for doing this and it doesn't fit either the FBI, Department of Homeland Security, or NYPD definitions of mass public shootings. During the fifteen years from 1998 to 2012, Lankford also improperly excluded 37 foreign mass public shootings involving just one shooter and also 43 attacks involving two shooters that met the definition of mass public shootings (Lott and Moody, 2020).

B. The number of shooters

Out of our 2,772 cases, news reports provide of the number of killers involved in the attack in only 652 instances. In 162 cases, a lone killer was identified, that is 24.8% of the cases that list a number of attackers. Another 72 attacks had two killers and 50 had three, so that indicates 43.6% of the cases where the number of killers was identified had between one and three shooters. 221 were identified as having more than 10 killers. In larger scale attacks, numbers of perpetrators are virtually always reported as multiples of ten, making their accuracy doubtful. Witnesses and reporters are most likely just making a rough guess. News reports for 2,120 of them simply indicate that there were multiple attackers, but no specific number was provided.

In the US, just 66 shooters perpetrated the 62 mass public shootings between 1998 and 2017. If we take the most conservative estimate that there were two killers in

the attacks with an indeterminate or plural number of shooters, our list shows that there would have been 20,635 attackers worldwide from 1998 to 2017. So our best guess is that the number of shooters is **70 times** greater than Lankford's over less than a third of his time period. The US would then account for only 0.32% of attackers.

If we exclude the 221 cases outside the US with more than 10 killers, whose accuracy is circumspect, there would be still be 5,830 killers worldwide. The NYPD (2012) cases are also limited to cases with 10 or fewer killers (the Mumbai, India attack in 2008). That amounts to an average of 2.2 killers per attack. The US share of the world's mass public shooters would be 1.13%, less than a quarter of the US share of the world population. Another reason limiting cases to no more than 10 shooters is because that is the range of cases in the NYPD's report.

While the United State's precise share of the world's mass public shooters is uncertain, it is far below our share of the world's population. Even if one were to eliminate all foreign terrorist attacks on top of all the insurgency ones (and the NYPD dataset clearly includes terrorist cases for both the US and foreign countries), that leaves 524 foreign mass public shooters.[14]

C. How the United States compares to the rest of the World

The list of all of our 2,834 cases from 1998 to 2017 is provided in Appendices 1 and 2. Of those, 62 occurred in the United States and 2,772 happened in the rest of the world. While the US had about 4.6 percent of the world's population during this period, it had just 2.19 percent of the mass public shootings.

Just as we compare crime rates across the United States by adjusting for different state populations, we report the population-adjusted rates across countries. It makes no more sense to compare the raw number of murders in Wyoming with the number in California than it is to compare raw numbers of murders from mass public shootings for the United State and India, a country with almost 4 times the US population.

The United States was host to a still smaller share of people killed in these attacks. Worldwide mass public shooting murders totaled 31,550 people, and the US accounted for 557 (1.8%) of these.

By both measures, the US is substantially below the world average. Per capita, mass public shootings occur with 53.4 percent less frequency and result in 32.1 percent fewer casualties. For 79 countries, no incidents are identified, but for many countries that might simply be because we missed cases.

Table 1 lists the per capita attack and death rates in the 101 countries where we

identified mass public shootings. The US ranks 66th in attack rate and 56th in murder rate. Norway, Finland, France, and Switzerland are major European countries with at least 49 percent higher rates of murder from mass public shootings than the United States. Indeed, France's rate is 48.9 percent higher than the US's. The rates in Pakistan and India are respectively 470% and 13% higher than the US rate. (Appendix 3 shows the absolute number by country.)

Table 1: Countries with Mass Public Shootings from 1998 through 2017: Ranking by per capita rate of attacks and people killed

Rank	Country	Number of Attacks per 100,000 People	Country	Number of People Killed per 100,000 People
1	Northern Mariana Islands	1.569	Central African Republic	17.095
2	Afghanistan	1.114	Iraq	10.802
3	Iraq	1.090	Afghanistan	7.696
4	Central African Republic	1.000	Northern Mariana Islands	6.275
5	Solomon Islands	0.600	Nigeria	6.254
6	Somalia	0.547	South Sudan	5.919
7	Guyana	0.500	Angola	5.221
8	Nigeria	0.425	Somalia	4.233
9	South Sudan	0.345	Guyana	4.000
10	Burundi	0.333	Solomon Islands	4.000
11	Algeria	0.302	Libya	3.397
12	Yemen	0.280	Burundi	3.372
13	West Bank and Gaza Strip	0.271	Sierra Leone	3.309
14	Libya	0.190	Sudan	2.910
15	Colombia	0.187	Algeria	2.820
16	Angola	0.175	West Bank and Gaza Strip	1.988
17	Sudan	0.157	Yemen	1.836
18	Uganda	0.134	Colombia	1.780

19	Armenia	0.133	Uganda	1.524
20	Mali	0.133	Niger	1.521
21	Sri Lanka	0.132	Kenya	1.488
22	Lebanon	0.132	Syria	1.484
23	Pakistan	0.130	Norway	1.457
24	Israel	0.127	Democratic Republic of the Congo	1.449
25	Niger	0.114	Sri Lanka	1.335
26	Sierra Leone	0.109	Mali	1.141
27	Syria	0.109	Guinea	1.126
28	Democratic Republic of the Congo	0.099	Pakistan	1.072
29	Philippines	0.086	Chad	1.062
30	Kenya	0.083	Cameroon	1.012
31	Chad	0.062	Armenia	0.900
32	Tajikistan	0.059	Rwanda	0.874
33	Kosovo	0.059	Lebanon	0.789
34	Finland	0.058	Egypt	0.697
35	Honduras	0.056	Philippines	0.683
36	Cameroon	0.055	Honduras	0.667
37	Nepal	0.051	Israel	0.662
38	Macedonia	0.050	Nepal	0.630
39	Namibia	0.050	Mauritania	0.581
40	Azerbaijan	0.048	Ethiopia	0.499
41	Georgia	0.044	Tunisia	0.470

42	Switzerland	0.041	Finland		0.442
43	Jordan	0.034	Liberia		0.364
44	Rwanda	0.034	Congo		0.350
45	Egypt	0.034	Azerbaijan		0.321
46	Ivory Coast (Cote d'Ivoire)	0.033	Ivory Coast (Cote d'Ivoire)		0.313
47	Thailand	0.032	Switzerland		0.297
48	Mauritania	0.032	Kosovo		0.293
49	Albania	0.031	France		0.280
50	Liberia	0.030	Tajikistan		0.279
51	Tunisia	0.030	Burkina Faso		0.252
52	Peru	0.029	Macedonia		0.250
53	Serbia	0.028	India		0.212
54	Bosnia	0.026	Georgia		0.200
55	Russia	0.026	Namibia		0.200
56	Ethiopia	0.026	**United States**		**0.188**
57	Mozambique	0.026	Turkey		0.181
58	South Africa	0.026	Serbia		0.178
59	Congo	0.025	Jordan		0.172
60	Haiti	0.024	Laos		0.169
61	Croatia	0.023	Russia		0.169
62	Norway	0.022	Yugoslavia		0.169
63	Burkina Faso	0.022	Thailand		0.165
64	India	0.021	Croatia		0.159
65	Guinea	0.021	Bosnia		0.158
66	**United States**	**0.021**	South Africa		0.158
67	Kyrgyzstan	0.019	Peru		0.154
68	Belgium	0.019	Iran		0.151

69	Yugoslavia	0.019	Saudi Arabia	0.146
70	Slovakia	0.019	Kazakhstan	0.139
71	Nicaragua	0.017	Slovakia	0.130
72	Senegal	0.017	Senegal	0.128
73	Laos	0.017	Albania	0.125
74	Iran	0.016	Haiti	0.120
75	Turkey	0.015	Mozambique	0.103
76	Ukraine	0.015	El Salvador	0.101
77	El Salvador	0.014	Kyrgyzstan	0.096
78	Kazakhstan	0.013	Belgium	0.095
79	France	0.013	Ukraine	0.089
80	Austria	0.012	Czech Republic	0.078
81	Saudi Arabia	0.012	Nicaragua	0.069
82	Myanmar	0.010	Venezuela	0.067
83	Czech Republic	0.010	Myanmar	0.067
84	Zimbabwe	0.008	Uzbekistan	0.064
85	Uzbekistan	0.008	Zimbabwe	0.054
86	Venezuela	0.007	Germany	0.051
87	Canada	0.006	Austria	0.049
88	South Korea	0.006	Mexico	0.046
89	Netherlands	0.006	Tanzania	0.041
90	Mexico	0.006	Indonesia	0.039
91	Tanzania	0.005	Netherlands	0.037
92	Indonesia	0.005	South Korea	0.035
93	Malaysia	0.004	Canada	0.031
94	Germany	0.004	Brazil	0.025
95	Argentina	0.003	United Kingdom	0.020
96	Bangladesh	0.002	Malaysia	0.019

97	Italy	0.002	Bangladesh	0.015
98	United Kingdom	0.002	Argentina	0.010
99	Brazil	0.002	Italy	0.009
100	Vietnam	0.001	Vietnam	0.005
101	China	0.000	China	0.000

Even with all of the cases identified as "Insurgency/Guerilla Action" removed from the sample, Afghanistan and Iraq are still on top of the lists for the most attacks and deaths per capita. If we had data for the Solomon Islands over all 15 years, it may well place first.

While we relied on GTD for classifying whether cases for Afghanistan and Iraq involved insurgency, removing non-insurgency cases for those two countries doesn't appreciably alter our results. Removing all those cases reduces the number of attacks outside the United States from 2,772 to 2,125, and would raise the US share of attacks from 2.19 to 2.83 percent. The share of murders rises from 1.77 to about 2.13 percent. Both rates are still well below the US share of the world population.

Breaking down the cases by geographic regions, we find that the United States ranks roughly in the middle in number of mass public shootings (Figures 1A-D). We use the sixteen geographic regions provided by the Population Reference Bureau (See Appendix 4). Not surprisingly, Western Asia ranks high since it is largely comprised of Middle Eastern countries such as Iraq, which has per capita rates of attacks and deaths that are respectively 865 and 915 percent higher than those of the United States. Africa (both Northern and sub-Saharan) also has dramatically higher rates than the US. While attacks occur more frequently in Northern Africa, they are more deadly in sub-Saharan Africa (the average number of people killed per attack is 15.01 in sub-Saharan Africa and 11.91 in Northern Africa).

In South America, people are twice as likely to die from mass public shootings and attacks occur 33 percent more frequently. And there is a serious lack of news coverage of crime in South and Central America. Homicide rates are so high in some areas that the local media appear to ignore most murders. Central America's average homicide rate in 2008 was 5.8 times higher than in the United States that same year. Honduras' homicide rate was 11.3 times higher, and El Salvador's was 9.6 times higher. These high homicide countries just don't systematically report mass public shootings or even firearm homicides in general.

In Venezuela, not only was the official homicide rate 9.6 times higher than the US rate, but the government has gone to great lengths to prevent the media from reporting on murders. The newspaper El Universal reported that, starting in 2009,

the Venezuelan police were supposed to tell "relatives of victims who are in the morgue of Caracas (Venezuela), not to make statements to the press in exchange for expediting the procedures to recover the bodies."[15]
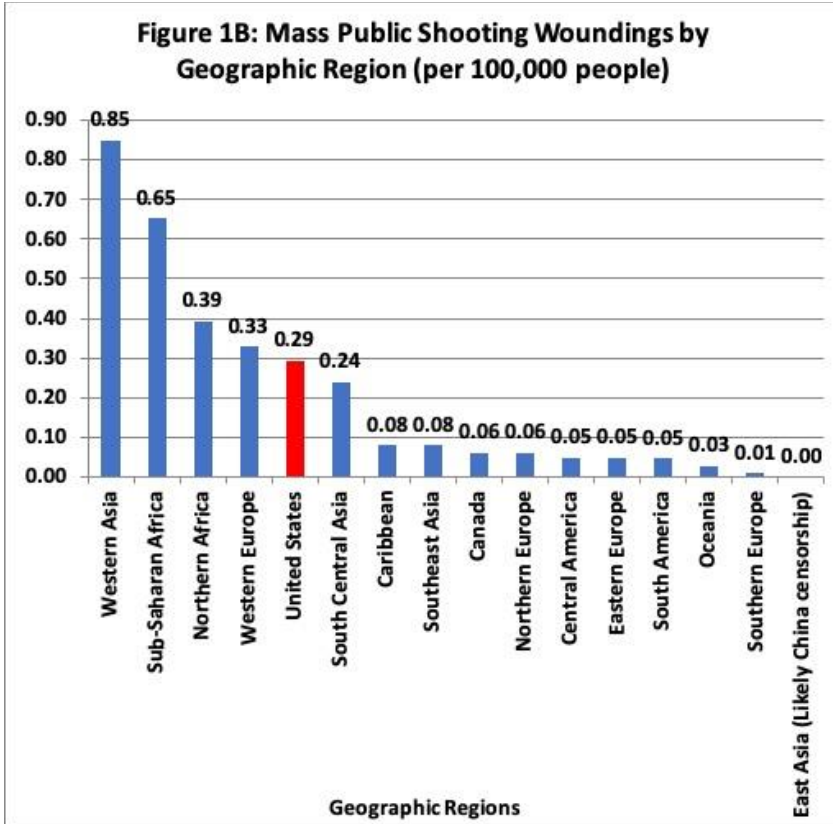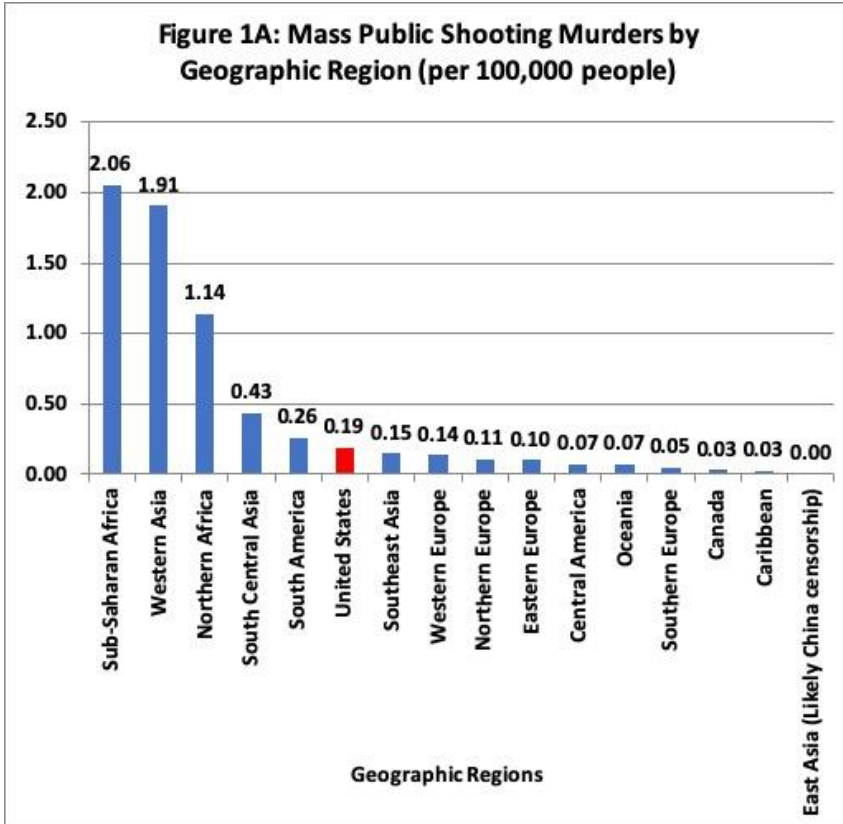
There is evidence of this also happening in China. We have found three large-scale mass public shootings in China in years outside of the 1998 to 2017 period: 1994, 28 killed; 1981, 21 killed; and 1979, 16 killed.[16] We know of no other country that exhibited only such large mass public shootings, and none with between 4 and 15 fatalities. Victor Mair, a University of Pennsylvania professor who specializes in China, told us:

> I'm almost certain that they had mass public shootings of all sizes up to the three big ones, but such things just don't get recorded in the media. . . . The Chinese government is very good about hiding the news. Of course, it's easier to hide the news for smaller incidents, but much harder for larger incidents, because more people would have noticed them.[17]

As an example, Mair claims that friends of his in China have been "forbidden to talk about" a recent knife attack on school children.[18]

As discussed previously, the Solomon Islands only provided information for 5 of the 15 years we examined. Even if there were no other missing cases in the rest of Oceania, missing cases from the Solomon Islands could greatly affect our overall estimate for this part of the world. All these points provide yet more indications that the United States has a smaller share of mass public shootings than our results show.

Probably of particular interest to people are comparisons between Europe and the United States. There are huge differences in mass public shooting rates across Northern, Western, Eastern, and Southern Europe. While the attack rate in Northern Europe is only 25 percent of the rate in the US, 20.4 people were killed per attack in Northern Europe versus 9.0 in the US. The fatality rate in Northern Europe is 43% lower than the rate in the US, and the rate in Eastern Europe was 46 percent lower.

Figure 1A: Mass Public Shooting Murders by Geographic Region (per 100,000 people)

Figure 1B: Mass Public Shooting Woundings by Geographic Region (per 100,000 people)

Figure 1C: Mass Public Shooting Casualties by Geographic Region (per 100,000 people)

Figure 1D: Mass Public Shooting Attacks by Geographic Region (per 1 million people)
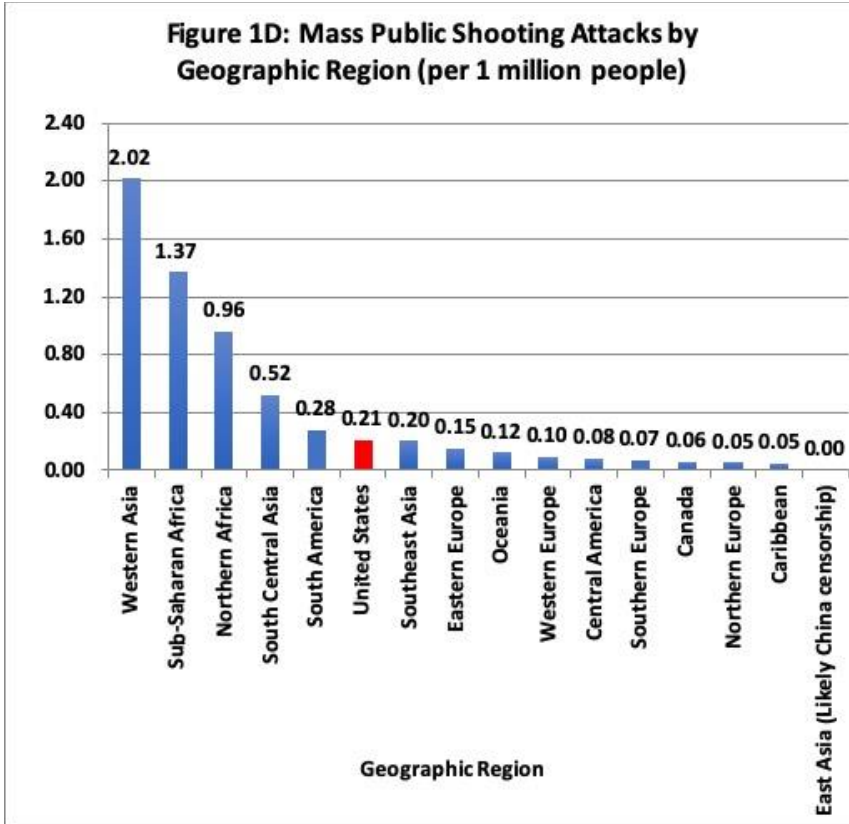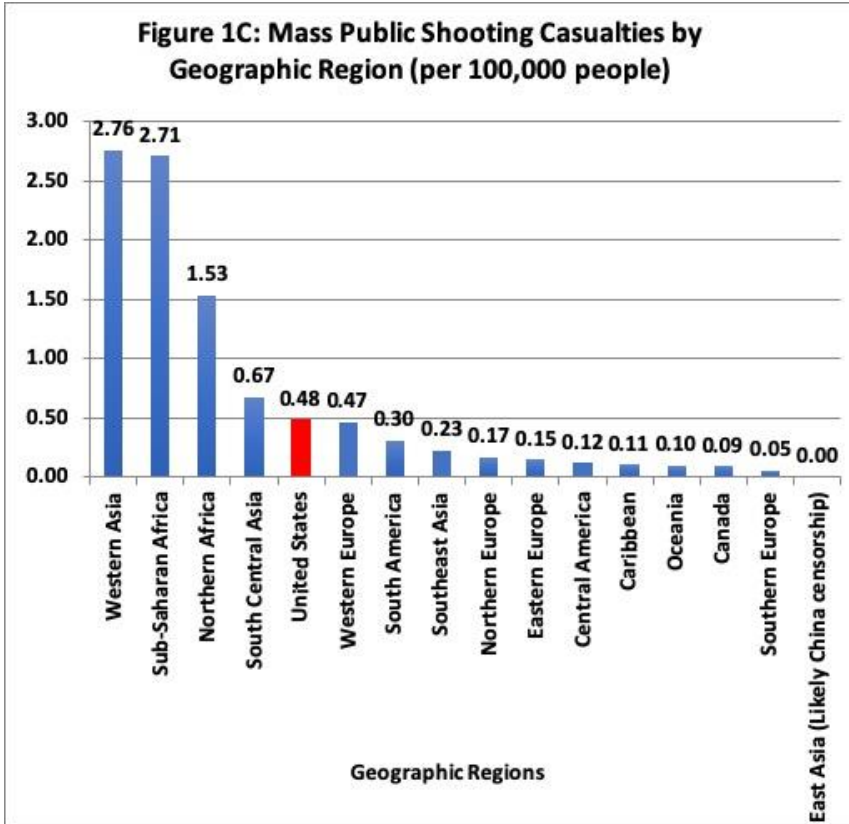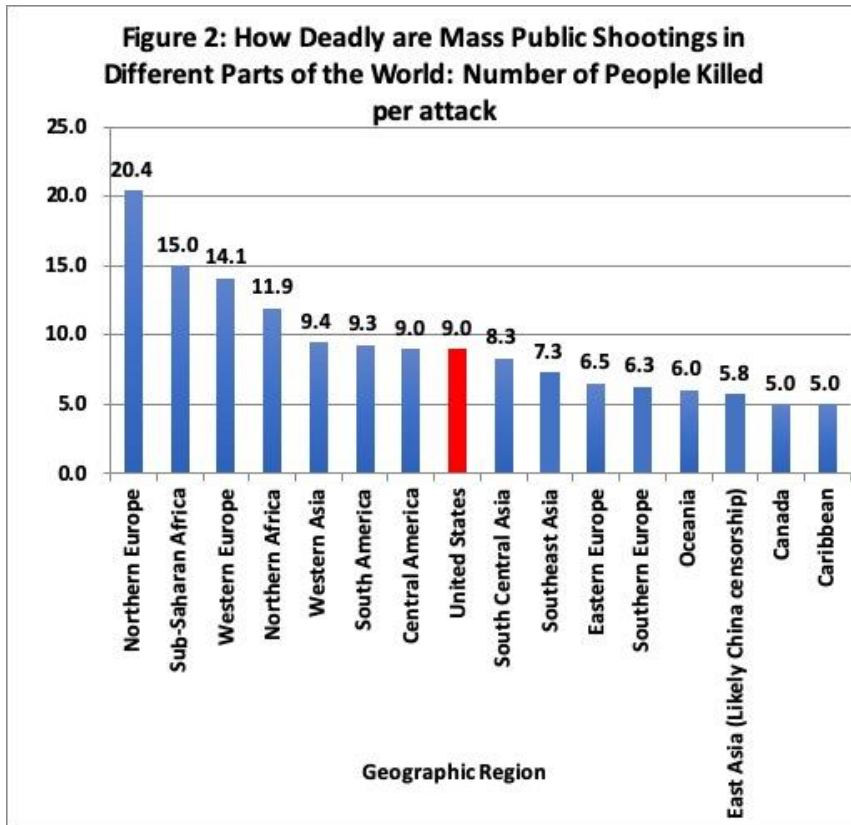
Figure 2 shows that attacks in the United States are relatively less deadly than in most of the rest of the world. There are lots of possible explanations for this. One is that better medical care means that fewer wounded people end up dying.

Figure 2: How Deadly are Mass Public Shootings in Different Parts of the World: Number of People Killed per attack

Figures 3A-B show that while Americans are understandably concerned with the increased frequency and severity of mass public shootings, the rest of the world has experienced a much larger increase in their per capita rates than the United States. For the US we use attacks from the beginning of 1998 through 2018. For the rest of the world we use our data from 1998 through 2017. The rate of growth for the frequency of mass public shootings in the rest of the world is 291 percent faster than for the US.[19] The growth rate for murders is 106 percent faster.[20]

The rate of attacks in the rest of the world started rising in 2012, but became particularly noticeable in 2013, 2014, and 2015. While the per capita rate of mass public shootings in 2012 was 0.025 per million people, up from the previous high of 0.021 in 2001, by 2013 it had risen to 0.032, 0.056 in 2014 and back down to 0.042 in 2015. By contrast, the US reached its peak in terms of the rate of these attacks in 2012.

The five countries with the largest percentage increases in the yearly rate between 1998 and 2012 versus 2013 and 2017 were the Central African Republic, Cameroon,
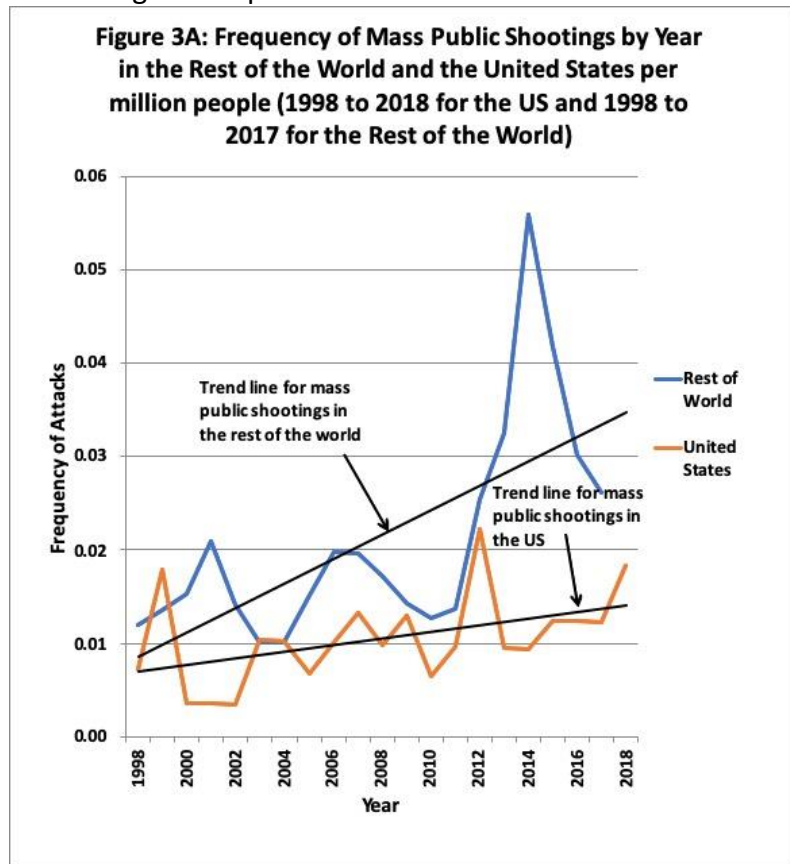
Tunisia, France and Ukraine. The United States ranked 29th, well behind countries such as Belgium (16th) and Switzerland (18th).
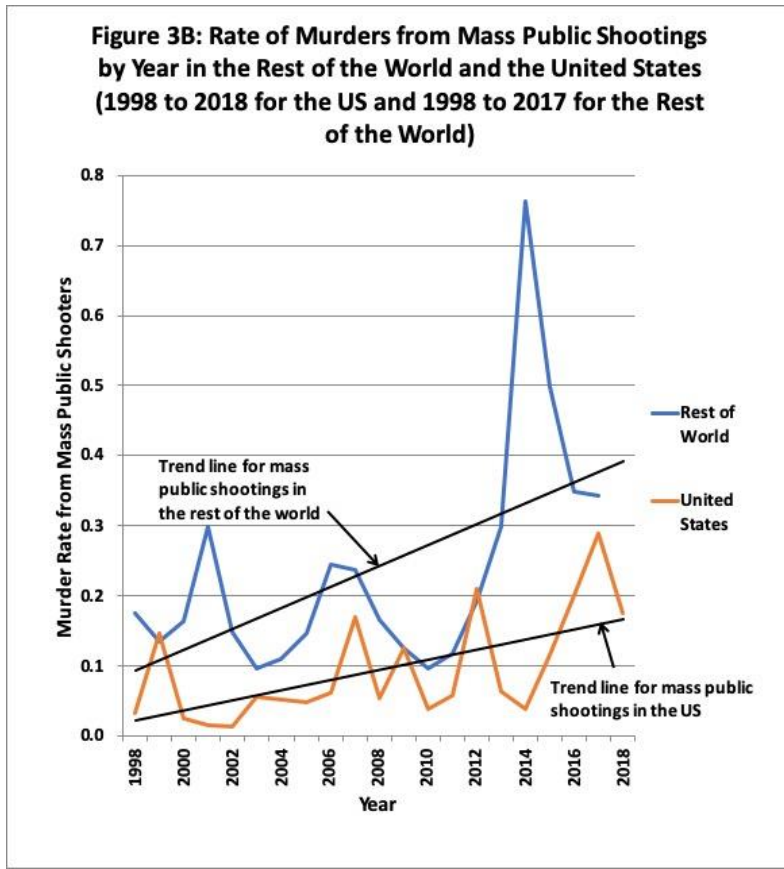
While news coverage of mass public shootings might miss many attacks during the beginning of this period, the quality of coverage seems to have done.

It seems unlikely that the large growth in mass public shootings in the rest of the world starting in 2012 could be explained by better news coverage.

But before one concludes that there has really been a worldwide increase in mass public shootings, we believe that at least some of this increase is due to the greater difficulty in finding older cases. In Africa and other parts of the world, searching news coverage on attacks prior to 2000 is an extremely difficult task.

Better news coverage in later years might not only explain the increase in recorded attacks but also why the number of people killed per attack appears to be falling over time. Cases with fewer victims might be getting coverage and that will reduce the average killed per attack.

Figure 3A: Frequency of Mass Public Shootings by Year in the Rest of the World and the United States per million people (1998 to 2018 for the US and 1998 to 2017 for the Rest of the World)

Figure 3B: Rate of Murders from Mass Public Shootings by Year in the Rest of the World and the United States (1998 to 2018 for the US and 1998 to 2017 for the Rest of the World)

III. Gun ownership and Mass Public Shootings

The Small Arms Survey is the most commonly cited source for data on gun ownership rates, with claims that the United States has by far the highest level of gun ownership, with 88.8 guns per 100 people.[21] Unfortunately, the only citations that the Small Arms Survey offers are to the European Union Survey on gun ownership rates and in email discussions they point to the International Crime Victimization Survey (ICVS).[22] The EU survey covers only 28 countries in the European Union.[23] The ICVS only covers five countries past 2005, and those are all countries that are already in the later EU survey. The only other information has been that they rely on gun ownership numbers, not gun possession numbers, for Israel and Switzerland, though no sources were provided.[24]

While the Small Arms Survey is used extensively by both academics and the media, there are real problems with their data. Both Israel and Switzerland have guns issued by the government to civilians, but the government technically owns the guns. In Switzerland, all able-bodied Swiss males between the age of 18 and 34 kept their military weapons in their homes.[25] After age 34, they could apply for permission to continue to keep their military weapons and the majority opts to do so.[26] Only at age 65 are the Swiss given the option of purchasing these guns for their
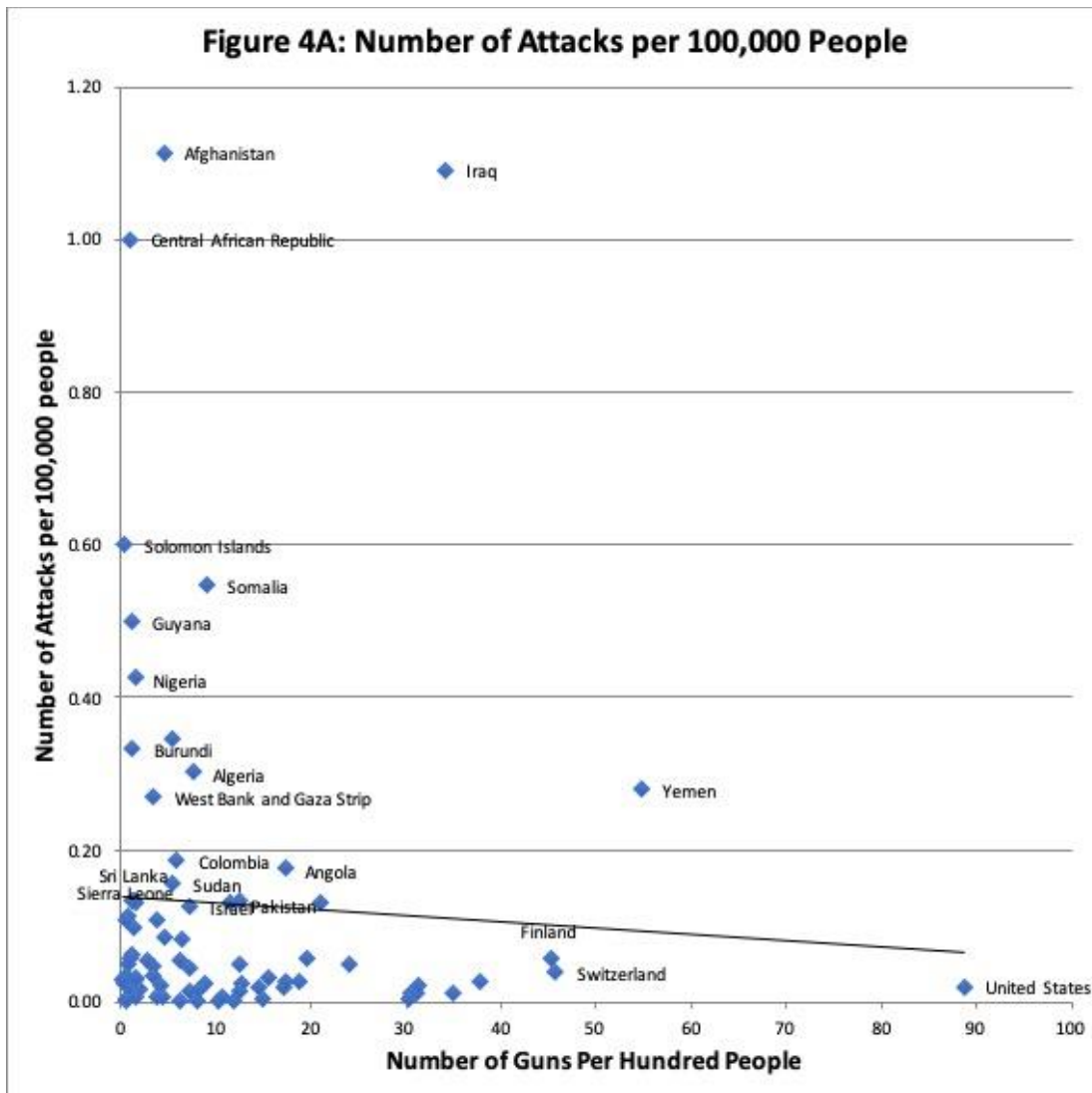
own private ownership. Israeli guns are also excluded for the same reason. In Israel, the government owns most guns and people apply to have them issued to them.
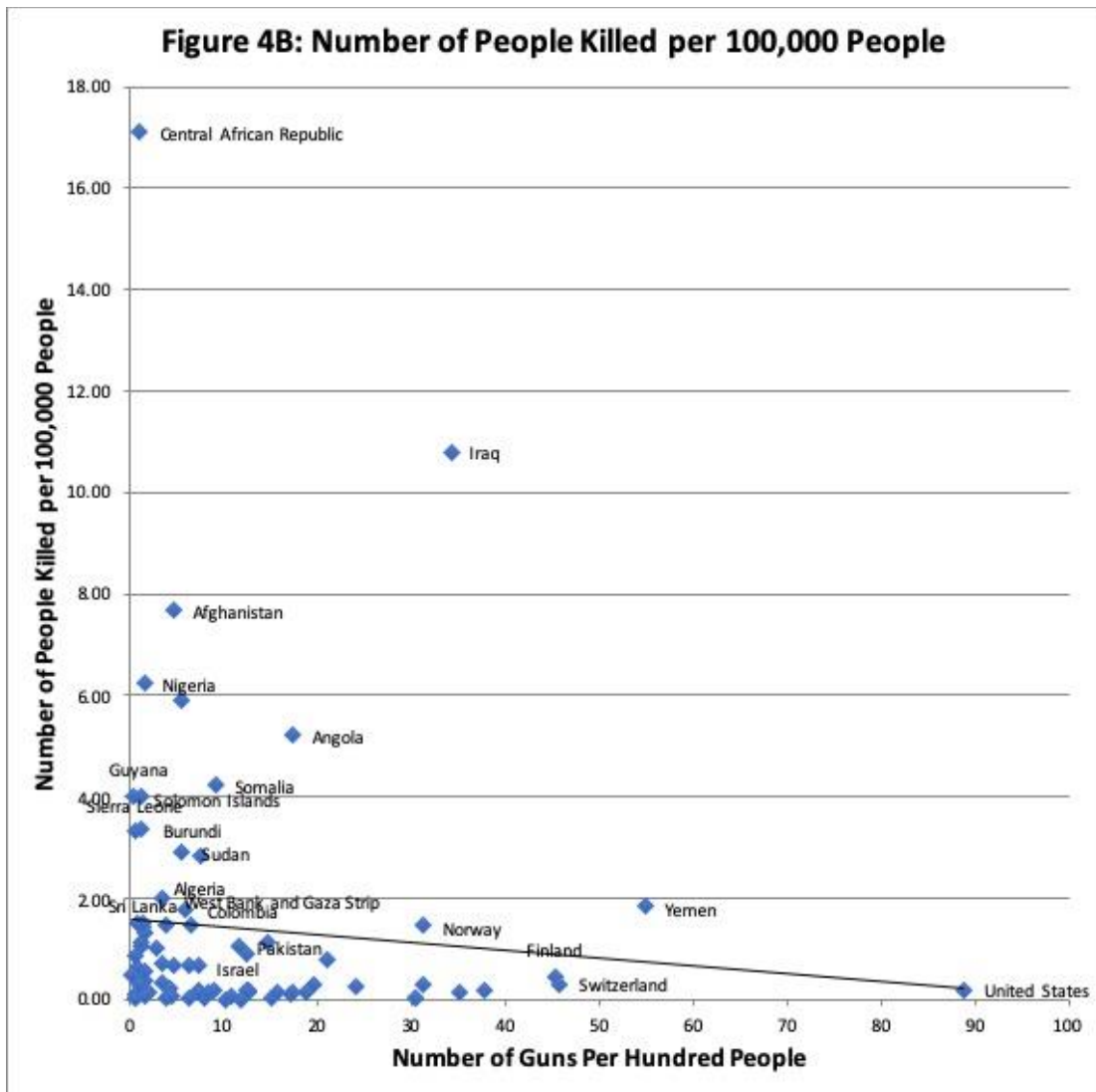
Even surveys and registration numbers have problems. When Canada tried in the late 1990s to register its estimated 15 million to 20 million long guns, about 7 million were actually registered.[27] In the 1970s, Germany registered 3.2 million of the country's estimated 17 million guns.[28] In the 1980s, England registered only about 50,000 of the estimated 300,000 pump-action and semiautomatic shotguns in the country.[29]
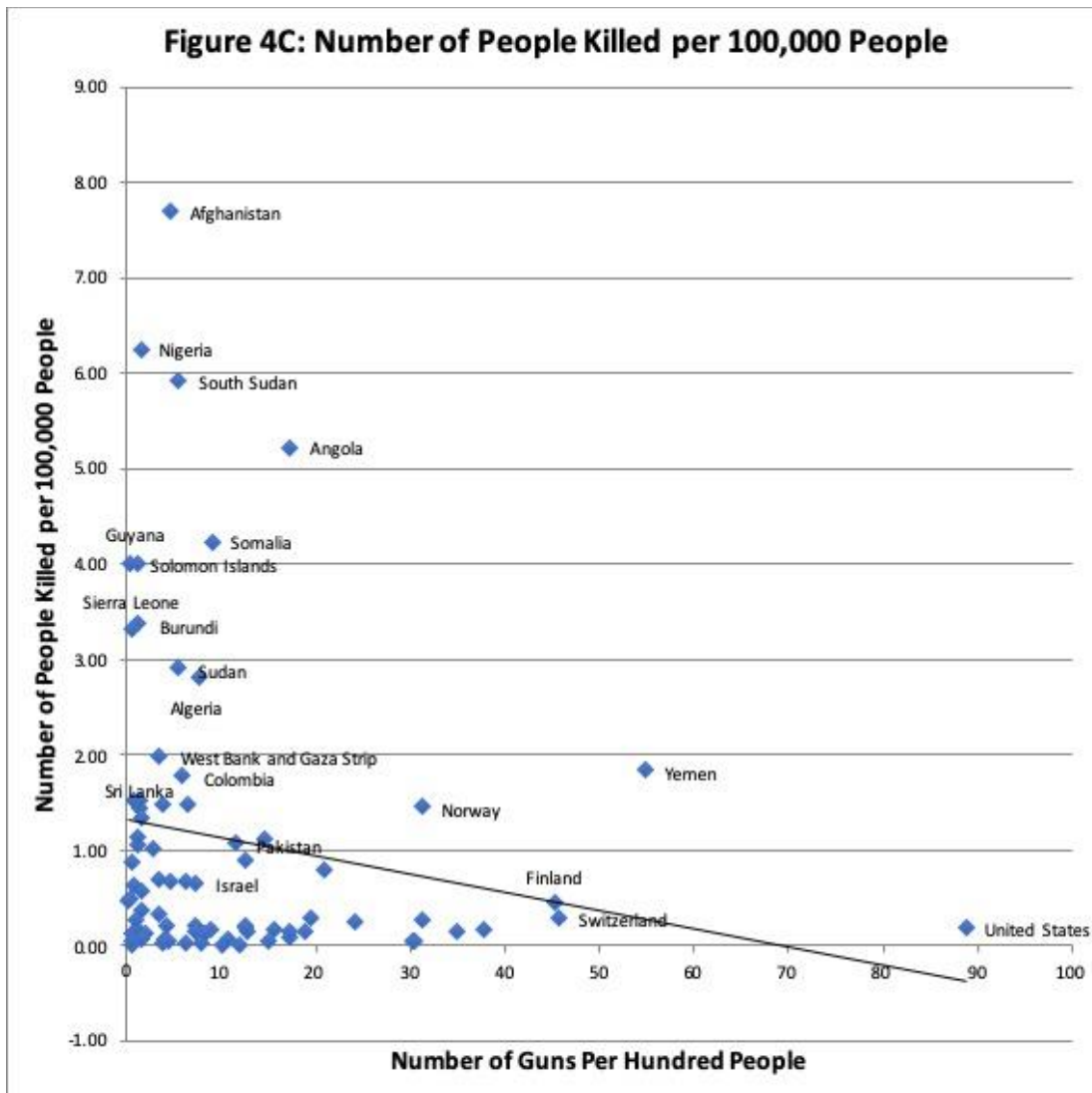
There are also other problems with the survey. For example, a much better measure of gun ownership would be the percentage of the population owning guns, and not the number of guns per 100 people as used by the Small Arms Survey. Presumably, the issue is whether people have access to guns, not the number of guns greater than one that an individual has access to.

That said, the Small Arms Survey is regularly used by academics and the press (for a brief survey of academics using it see Kleck (2020)). As to the media, these estimates were used in the New York Times graphs have occurred in the last couple of years.[30] We combine this estimate of gun ownership with the estimates of both the frequency and severity of mass public shootings shown in Table 1.

Figures 4A-C show that the more guns owned in a country, the lower the frequency and severity of mass public shootings. Figure 4C illustrates that even removing the extreme cases of the Central African Republic and Iraq continues to show the same relationship. More sophisticated regression results demonstrate that higher rates of gun ownership are not associated with more mass public shooters on mass public shooters (Lott, 2018).

Figure 4A: Number of Attacks per 100,000 People

Figure 4B: Number of People Killed per 100,000 People

Figure 4C: Number of People Killed per 100,000 People

IV. More Systematically Explaining Mass Public Shootings

Even a casual examination of the data indicates that countries with high Muslim populations have relatively high rates of mass public shootings and places that are engaged in civil wars. The University of Maryland's Global Terrorism Database may exclude attacks involving those fighting directly fighting in civil wars, but there might be people harmed by these fights who are indirectly motivated by these conflicts. Since those who commit these attacks are often doing it as a way of committing suicide, factors that explain higher overall suicide rates might also explain rates of mass public shootings. A similar argument can be made for homicide rates – countries with high homicide rates might experience more mass public shootings because this is just another way of killing people. The overwhelming majority of these shooters are male, and in at least the United States and Canada, some of these killers appear motivated by their inability to have relationships with women.

Table 2 provides the summary statistics for these variables (the sources are shown in Appendix 5). The results in Table 3 shows negative binomial estimates in two parts: the first four redo estimates provided by Lankford (2016) and the next four estimates include the percent of the population that is Muslim, the percent of years in Civil War, and in one case continent fixed effects. While the Small Arms Survey data is never statistically significantly related to the number of mass public shooters, homicide rates, suicide rates, the percent of the population living in urban areas, the percent of years during which a civil war was occurring, and the percent of the population that is Muslim all tended to be significantly related to the number of mass public shooters. The relationship between gun ownership and the number of mass public shooters shows that a one percentage point increase in the number of guns is associated with between a 1.4 percent drop to a 2.8 percent increase in the number of mass public shooters.

One problem with the results in Table 3 is that the endogenous variable is a count variable but the other variables are all in rates. Table 4 then redoes the estimates for the first, fifth, and eighth columns in Table 3, but it uses the count values for homicides, suicides, males, population living in urban areas, and Muslims. Again, none of the estimates show that the small arms survey data are statistically significantly related to the number of mass public shooters in a country. With the exception of the regression that accounts for continent fixed effects, the results are generally statistically significant for all the other variables.

Table 5 then redoes the estimates in Table 4 by looking at the number of attacks, number killed, number wounded, and number of casualties and shows the coefficients and z-statistics for firearm ownership variable. In none of these estimates are those variables statistically significant.

Finally, given the myriad problems with the Small Arms Survey data, Table 6 uses our own data on gun ownership rates based on the number of firearm licenses granted in 68 countries to calculate the percent of the adult population with a license to own a gun.[31] Since the United States doesn't have national gun licensing, the US's rate was obtained from a 2019 survey by Gallup.[32] While the Small Arms Survey and our measure are positively correlated, there is some noise in the correlation with a correlation coefficient of .699.

The results here are somewhat more consistent and show that a six to ten percent drop in the number of mass public shooters for each one percentage point increase in the percent of adults owning guns. The other results that are most significant show that a higher percent of the population that is Muslim and the longer that Civil Wars take place, the greater the number of mass public shooters.

TABLE 2. Descriptive Statistics

Variable	Average	Standard Deviation	Minimum	Maximum	Number of observations
Number of Shooters	113.8	497.2123	0	5,297	180
Number of attacks	15.66	59.125	0	558	180
Number of people killed in mass public shootings	174.54	716.76	0	8,154	180
Number of guns -- Small Arms Survey	3.805	20.709	0.002	263.292	178
Percent of Adults with Guns	4.41	5.38	0.014	30.0	68
Number of Homicides	2539.802	5774.775	0	41,962.23	175
Number of Suicides	4.569	19.727	0.0066	194.234	173
Population in millions	35.63119	130.2814	0.038682	1,303.7	182
Number of males	18.575	68.101	0.0438	670.836	175
Number of people living in urban areas	18.141	54.524	0.0511	554.359	174
Percent of Period in Civil War	0.07161	0.207605	0	1	182
Number of Muslim	8.220	26.025	0	194.995	177
Homicide rate per 100,000	10.204	12.48998	0	61.25	177
Suicide rate per 100,000	10.56326	8.14227	1.6	51.6	175
Population in millions	36.027	130.953	0.1	1,303.7	180
Sex ratio (male:female)	0.998	0.1026	0.78	1.88	177
Percentage urban	54.7249	23.2236	9.375	100	174
Percent of Period in Civil War	0.0716117	0.2076054	0	1	182
Percent of the Population that is Muslim	27.20863	37.7278	0	99.8	179

TABLE 3. Negative Binomial Regression Estimates for the Effects of Homicide, Suicide, and Firearm Ownership Rates on Mass Public Shooters Across Nations. Coefficients shown are Incident Rate Ratios (Absolute t-statistics in parentheses)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Redoing Lankford Estimates				New Control Variables			
	All Countries		Excluding US		All Countries			
Small Arms Survey	1.02799 (1.21)	1.00685 (0.31)	1.0333 (1.39)	1.0123 (0.53)	0.98668 (0.65)	1.0111 (0.51)	0.99344 (0.31)	1.0198 (0.75)
Homicide rate per 100,000	1.04799 (2.16)**		1.04976 (2.24)**		1.0487 (1.74)	1.0856 (3.73)***	1.0667 (2.33)**	1.02016 (0.84)
Suicide rate per 100,000	0.9185 (3.02)***		0.91674 (3.06)***		0.9355 (2.28)***	0.9475 (2.03)**	0.9472 (1.86)*	1.00487 (0.12)
Population in millions	1.0264 (3.70)***	1.0206 (2.7)***	1.0282 (3.84)***	1.0227 (2.9)***	1.0229 (4.22)***	1.0246 (3.93)***	1.0239 (4.26)***	1.0166 (3.27)***
Sex ratio (male/ female)	0.19211 (0.30)	17.95 (0.37)	0.1958 (0.29)	8.41137 (0.28)	0.2911 (0.30)	0.00827 (1.12)	0.03511 (0.86)	0.02044 (1.07)
Percentage urban	0.95756 (3.54)***	0.96612 (2.39)**	0.95679 (3.64)***	0.9649 (2.50)**	0.966 (2.59)***	0.9625 (3.61)***	0.9668 (2.69)***	0.98809 (0.84)
Percent of years in Civil War					31.52 (3.56)***		13.7786 (2.65)***	59.496 (4.33)***
Percent of Population Muslims						1.0257 (3.83)***	1.01339 (1.80)*	1.00428 (0.50)
Constant	1034.77 (1.15)	9.6277 (0.28)	951.35 (1.14)	19.485 (0.37)	294.033 (1.34)**	4189.63 (1.83)*	1067.78 (1.74)*	30.14 (0.90)
Continent Fixed effects	No	No	No	No	No	No	No	Yes
Number of Observations	171	173	170	172	171	171	171	171
Log likelihood	-573.9	-589.1	-566.5	-581.96	-562.87	-566.50	-561.17	-545.02
Chi-square	40.78	27.29	42.09	28.04	62.83	55.56	66.22	98.53

* means *p* < .10, ** means *p* < .05, *** means *p* < .01 (two-tailed tests)

TABLE 4. Negative Binomial Regression Estimates for the Effects of Homicide, Suicide, and Firearm Ownership Rates on Public Mass Shooters Across Nations. Coefficients shown are Incident Rate Ratios (Absolute t-statistics in parentheses)

Variable	(1)	(2)	(3)
Number of Guns -- Small Arms Survey	1.0213 (0.41)	1.0065 (0.37)	1.00219 (0.12)
Number of Homicides	1.000138 (1.72)*	1.00026 (2.60)***	1.000151 (1.72)*
Number of Suicides	0.86547 (2.55)**	0.8852 (3.10)***	0.978 (0.38)
Population in millions	2.1933 (2.28)**	1.6777 (1.92)*	1.4255 (1.04)
Number of males	0.24057 (2.24)**	0.3907 (1.87)*	0.98125 (1.07)
Number living in Urban areas	0.90888 (2.92)***	0.9358 (1.97)**	-0.0189 (0.53)
Percent of years in Civil War		23.325 (3.11)***	47.89168 (3.98)***
Number of Muslims		1.023 (1.38)	1.0192 (1.35)
Constant	26.557 (10.13)***	8.8667 (7.60)***	0.4908 (0.76)
Continent Fixed effects	No	No	Yes
Number of Observations	171	171	171
Log likelihood	-576.06	-559.86	-538.25
Chi-square	36.44	68.84	112.07

* means $p < .10$, ** means $p < .05$, *** means $p < .01$ (two-tailed tests)

TABLE 5. Negative Binomial Regression Estimates for the Effects of Firearm Ownership Rates on Number of Attacks, Killed, Wounded, and Casualties Across Nations				
	Coefficient for the number of guns in millions			
	Number of Attacks	Number Killed	Number Wounded	Number of Casualties
Control variables that correspond to column (1) in Table (4)	.0618164 (1.19)	.0718986 (1.10)	.1038193 (1.38)	.084021 (1.28)
Control variables that correspond to column (2) in Table (4)	.0134853 (1.07)	.0210239 (1.01)	.0449394 (0.72)	.0253469 (0.79)
Control variables that correspond to column (3) in Table (4)	.0052068 (0.41)	.0110619 (0.60)	.0112562 (0.61)	.011807 (0.61)

TABLE 6. Negative Binomial Regression Estimates of the number of Mass Public Shooters Using the Percent of Adults who Own Guns Coefficients shown are Incident Rate Ratios (Absolute t-statistics in parentheses)

Variable	(1)	(2)	(3)	(4)
Percent of Adults with Guns	0.9009 (2.55)**	0.9103 (1.85)*	0.9362 (1.65)*	Did not converge
Homicide rate per 100,000	0.9372 (2.10)**	0.96057 (1.07)	0.97555 (0.84)	
Suicide rate per 100,000	0.94556 (2.55)**	0.9613 (1.56)	0.9554 (2.19)**	
Population in millions	1.0236 (4.60)***	1.0240 (3.95)***	1.0195 (4.27)***	
Sex ratio (male/ female)	0.06436 (0.91)	0.000031 (2.29)	0.00051 (2.16)**	
Percentage urban	0.98496 (1.30)	0.9863 (1.04)	1.00023 (0.02)	
Percent of years in Civil War	412.6 (4.75)***		113.39 (4.15)***	
Percent of Population Muslims		1.0451 (4.96)***	1.02095 (2.74)*	
Constant	359.76 (1.83)**	224089.3 (2.75)**	5786.179 (2.59)*	
Continent Fixed effects	No	No	No	Yes
Number of Observations	68	68	68	68
Log likelihood	-188.77	-194.39	-185.08	
Chi-square	76.29	65.04	83.66	
* means $p < .10$, ** means $p < .05$, *** means $p < .01$ (two-tailed				

tests)

V. Conclusion

Over the 20 years that we studied, we find 2,772 attacks outside the United States, with at least 5,764 killers and 30,993 killed. The US makes up less than 1.13% of the mass public shooters, 1.77% of their murders, and 2.19% of their attacks. These results show that the U.S. clearly has fewer mass public shootings and murders from these attacks than the average rate for the rest of the world. Yet, these results overestimate the U.S.'s share of these attacks because while we have gotten all the cases from the U.S., we are certain that we have not gotten all the cases from the rest of the world.

This data not only has implication for how the United States compares to other countries but also shows that higher rates of gun ownership are not associated with more mass public shooters. However, if we look at the percent of the adult population with guns rather than the Small Arms Survey data on the number of guns per 100 people, higher gun ownership rates seem to be associated with fewer mass public shooters. In addition, the other most consistent results show that countries with higher Muslim populations and those that have been in Civil wars longer also have higher number of mass public shooters.

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Appendix 1: List of Mass Public Shootings and references for other countries besides the United States

This appendix is 423 pages long and contains the list of news stories upon which each case is based and some descriptive information on each case.

Appendix 2: List of Mass Public Shootings and references for the United States

Both Appendixes 1 and 2 are available here:

https://crimeresearch.org/wp-content/uploads/2018/08/Appendix-1-US-Cases.pdf

https://crimeresearch.org/wp-content/uploads/2018/08/Appendix-2-US-Cases.pdf

Appendix 3: Countries with Mass Public Shootings from 1998 through 2017: Ranking by per capita rate of attacks and people killed

Rank	Country	Number of Attacks	Country	Killed
1	Nigeria	559	Nigeria	8224
2	Afghanistan	333	Iraq	3111
3	Iraq	314	India	2345
4	India	235	Afghanistan	2301
5	Pakistan	211	Pakistan	1741
6	Algeria	99	Sudan	1170
7	Colombia	86	Algeria	925
8	Philippines	73	Democratic Republic of the Congo	881
9	Sudan	63	Colombia	819
10	United States	62	Angola	804
11	Democratic Republic of the Congo	60	Central African Republic	718
12	Yemen	58	Philippines	579
13	Somalia	47	United States	557
14	Central African Republic	42	Egypt	516
15	Russia	37	Kenya	503
16	Uganda	36	South Sudan	480
17	Kenya	28	Uganda	410
18	South Sudan	28	Ethiopia	386
19	Angola	27	Yemen	380
20	Burundi	26	Somalia	364

21	Sri Lanka	26	Syria	273	
22	Egypt	25	Burundi	263	
23	Thailand	21	Sri Lanka	263	
24	Ethiopia	20	Russia	242	
25	Syria	20	Niger	213	
26	Mali	18	Libya	197	
27	Niger	16	Sierra Leone	182	
28	Nepal	13	France	170	
29	South Africa	12	Cameroon	166	
30	Indonesia	11	Nepal	160	
31	Iran	11	Mali	154	
32	Libya	11	Turkey	132	
33	Turkey	11	Guinea	107	
34	Cameroon	9	Thailand	107	
35	Israel	9	Iran	105	
36	West Bank and Gaza Strip	9	Chad	103	
37	France	8	Indonesia	87	
38	Peru	8	Rwanda	76	
39	Ukraine	7	South Africa	74	
40	Chad	6	Norway	67	
41	Ivory Coast (Cote d'Ivoire)	6	West Bank and Gaza Strip	66	
42	Mexico	6	Ivory Coast (Cote d'Ivoire)	57	
43	Sierra Leone	6	Mexico	49	
44	Lebanon	5	Honduras	48	
45	Mozambique	5	Israel	47	
46	Myanmar	5	Tunisia	47	
47	Armenia	4	Brazil	46	
48	Azerbaijan	4	Peru	43	
49	Guyana	4	Germany	42	
50	Honduras	4	Ukraine	42	
51	Tajikistan	4	Saudi Arabia	36	
52	Bangladesh	3	Burkina Faso	35	
53	Brazil	3	Myanmar	34	
54	Burkina Faso	3	Guyana	32	
55	Finland	3	Lebanon	30	
56	Germany	3	Armenia	27	
57	Rwanda	3	Azerbaijan	27	
58	Saudi Arabia	3	Finland	23	
59	Serbia	3	Switzerland	22	
60	Solomon Islands	3	Bangladesh	21	

61	South Korea	3		Kazakhstan	21
62	Switzerland	3		Mozambique	20
63	Tunisia	3		Solomon Islands	20
64	Belgium	2		Serbia	19
65	Canada	2		Tajikistan	19
66	Georgia	2		Mauritania	18
67	Guinea	2		Venezuela	18
68	Haiti	2		Yugoslavia	18
69	Jordan	2		South Korea	17
70	Kazakhstan	2		Uzbekistan	17
71	Senegal	2		Senegal	15
72	Tanzania	2		Tanzania	15
73	Uzbekistan	2		Congo	14
74	Venezuela	2		Liberia	12
75	Yugoslavia	2		United Kingdom	12
76	Albania	1		Belgium	10
77	Argentina	1		Canada	10
78	Austria	1		Haiti	10
79	Bosnia	1		Jordan	10
80	China	1		Laos	10
81	Congo	1		Georgia	9
82	Croatia	1		Czech Republic	8
83	Czech Republic	1		Croatia	7
84	El Salvador	1		El Salvador	7
85	Italy	1		Slovakia	7
86	Kosovo	1		Zimbabwe	7
87	Kyrgyzstan	1		Bosnia	6
88	Laos	1		China	6
89	Liberia	1		Netherlands	6
90	Macedonia	1		Italy	5
91	Malaysia	1		Kosovo	5
92	Mauritania	1		Kyrgyzstan	5
93	Namibia	1		Macedonia	5
94	Netherlands	1		Malaysia	5
95	Nicaragua	1		Albania	4
96	Northern Mariana Islands	1		Argentina	4
97	Norway	1		Austria	4
98	Slovakia	1		Namibia	4
99	United Kingdom	1		Nicaragua	4
100	Vietnam	1		Northern Mariana Islands	4
101	Zimbabwe	1		Vietnam	4

Appendix 4: List of Countries by Region

Here is the list of countries by region as provided by the Population Reference Bureau (https://assets.prb.org/pdf05/05WorldDataSheet_Eng.pdf).

- Northern Africa (exclude Sudan): Algeria, Egypt, Libya, Morocco, Tunisia, Western Sahara, West Bank and Gaza Strip;
- Sub-Saharan Africa: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Democratic Republic of the Congo, Cote d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mayotte, Mozambique, Namibia, Niger, Nigeria, Reunion, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe;
- Northern America: Canada, United States;
- Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama;
- Caribbean: Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Netherlands Antilles, Puerto Rico, Saint Lucia, St. Kitts-Nevis, St. Vincent/Grenadines, Trinidad and Tobago;
- South America: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela;
- Western Asia: Armenia, Azerbaijan, Bahrain, Cyprus, Georgia, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestinian Territory, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, Yemen;
- South Central Asia: Afghanistan, Bangladesh, Bhutan, India, Iran, Kazakhstan, Kyrgyzstan, Maldives, Nepal, Pakistan, Sri Lanka, Tajikistan, Turkmenistan, Uzbekistan;
- Southeast Asia: Brunei, Cambodia, East Timor, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam;
- East Asia: China, Hong Kong (China), Macao (China), Japan, North Korea, South Korea, Mongolia, Taiwan;
- Northern Europe: Channel Islands, Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Norway, Sweden, United Kingdom;
- Western Europe: Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Monaco, Netherlands, Switzerland;
- Eastern Europe: Belarus, Bulgaria, Czech Republic, Hungary, Moldova, Poland, Romania, Russia, Slovakia, Ukraine;

☐ Southern Europe: Albania, Andorra, Bosnia-Herzegovina, Croatia, Greece, Italy, Kosovo, Macedonia, Malta, Portugal, San Marino, Serbia and Montenegro, Slovenia, Spain, Yugoslavia;

☐ Oceania: Australia, Fed. States of Micronesia, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu.

Appendix 5: Data Sources

Data for the independent variables came from the following sources. We collected Intentional homicide rates per 100,000 population from the United Nations Global Study on Homicide (United Nations Office on Drugs and Crime [UNODC], 2008 (http://www.unodc.org/unodc/en/data-and-analysis/homicide.html)), age-standardized suicide rates per 100,000 population from the World Health Organization (2005) (http://apps.who.int/gho/data/view.main.MHSUICIDEASDRv?lang=en), and firearm ownership rates per 100 population from the Small Arms Survey (2007) (http://www.smallarmssurvey.org/fileadmin/docs/A-Yearbook/2007/en/Small-Arms-Survey-2007-Chapter-02-annexe-4-EN.pdf), The control variables were population (World Bank, 2008), national sex ratio (World Bank, 2008 (https://data.worldbank.org/indicator/SP.POP.TOTL.FE.ZS)), percentage of the population living in urban areas (World Bank, 2008 (https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS)), GDP per capita (World Bank, 2008 (https://data.worldbank.org/indicator/NY.GDP.MKTP.PP.KD)), Muslim population (Pew Research Center, 2011 (https://www.pewforum.org/2011/01/27/table-muslim-population-by-country/)), and years in war (Major episodes of political violence by Center for Systemic Peace; Armed conflict by Peace Research Institute Oslo; Intra-state conflict by Correlates of War Dataset). Data for Region Population is taken from the World Population Data Sheet (Population Reference Bureau, 2008 (https://www.prb.org/2008wpds/)).

End Notes

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[1] Other similar quotes by Obama that relied on Lankford's claim include:
"We are the only advanced country on Earth that sees these kinds of mass shootings every few months." –Obama, statement on shootings at Umpqua Community College, Roseburg, Ore., Oct. 1, 2015
"At some point, we as a country will have to reckon with the fact that this type of mass violence does not happen in other advanced countries. It doesn't happen in other places with this kind of frequency." –Obama, statement on the shooting in Charleston, S.C., June 18, 2015
The Obama administration would point to work by Lankford (2016) to justify his claims.
[2] Major media regularly make this claim. Headlines include: *The Wall Street Journal*: "U.S. Leads World in Mass Shootings." Joe Palazzolo and Alexis Flynn, "US Leads World in Mass Shootings," *Wall Street Journal*, October 3, 2015 (http://www.wsj.com/articles/u-s-leads-world-in-mass-shootings-1443905359); *The Wall Street Journal (subheading)*: "U.S. produces more mass shootings than other countries." This is the first sub-headline in the article. Joe Palazzolo and Alexis Flynn, "5 Things About Mass Shootings in the U.S.," *Wall Street Journal*, October 2, 2015 (https://blogs.wsj.com/briefly/2015/10/02/oreshoot/). *The Los Angeles Times*: "Why the U.S. is No. 1—in mass shootings." Melissa Healy, "Why the U.S. is No. 1—in mass shootings," *Los Angeles Times*, August 24, 2015 (http://www.latimes.com/science/sciencenow/la-sci-sn-united-states-mass-shooting-20150824-story.html); *Time magazine*: "Why the US has 31% of the World's Mass Shootings." Tanya Basu, "Why the U.S. Has 31% of the World's Mass Shootings," *Time*, August 24, 2015 (http://time.com/4007909/gun-violence-mass-shootings/), *Newsweek magazine*: "Study Sees Mass Shootings as 'Exceptionally American Problem'." Peter Oumanski, "Study: Mass Shootings 'Exceptionally American Problem'," Newsweek, August 23, 2015 (http://www.newsweek.com/2015/09/11/study-sees-mass-shootings-exceptionally-american-problem-365260.html); *Washington Post*: "American exceptionalism and the 'exceptionally American' problem of mass shootings." Sarah Kaplan, "American exceptionalism and the 'exceptionally American' problem of mass shootings," Washington Post, August 27, 2015; *CNN*: "Why the U.S. has the most mass shootings." Jen Christensen, "Why the U.S. has the most mass shootings," CNN, August 28, 2015 (http://www.cnn.com/2015/08/27/health/u-s-most-mass-shootings/); and *Sunday Morning Herald* (Australia): "Why the U.S. is No. 1 in Mass Shootings." Melissa Healy, "Why the US is No. 1 in mass shootings: study," The Sydney Morning Herald, August 28, 2015 (https://www.smh.com.au/world/why-the-us-is-no-1-in-mass-shootings-study-20150828-gj9oi8.html).
[3] This is the same definition that was used by Lott and Landes (2001) and Lott (2010).
[4] For statements by James Alan Fox see "'This is not an epidemic' Northeastern researchers say about school shootings," WCVB ABC Channel 5, March 1, 2018 (https://www.wcvb.com/article/this-is-not-an-epidemic-northeastern-researchers-say-

about-school-shootings/19037921). See also studies years ago such as Tom Kovandzic and Carl Moody, "The Impact of Right-to-Carry Concealed Firearm Laws on Mass Public Shootings," Homicide Studies, Nov. 1, 2012. Adam Lankford, "Public Mass Shooters and Firearms: A Cross-National Study of 171 Countries," *Violence and Victims*, January 2016: 1-13.

[5] Everytown for Gun Safety, "Analysis of Recent Mass Shootings," Everytown for Gun Safety, July 2014 (https://crimeresearch.org/wp-content/uploads/2014/10/everytown-mass-shooting-analysis1.pdf).

[6] The Department of Homeland Security publication adds a weak qualifier to that sentence: "in most cases, active shooters use firearms(s) and there is no pattern or method to their selection of victims." This is a "weak" qualifier because there are plenty of cases where the FBI's list of active shooters had a grudge against someone, and that person was the only person killed. Take the shooting at the Crawford County Courthouse in Girard, Kansas on September 13, 2011. Jesse Ray Palmer, the killer, "inquired about the location of a specific judge, who was not in the building, and then shot and wounded the judge's secretary. No one was killed; one person was wounded." It wasn't even necessary that others be shot at for that case to be included in the list. Or take a shooting at another bar — the Sandbar Sports Grill in Vail, Colorado, on November 7, 2009. "Before the attack, Moreau had an argument inside the bar and was escorted out by security." He returned to the bar and killed the person who he had the argument with. This last case is also included in the NYPD list of cases (Case #54 on p. 44). A number of the NYPD cases involve the killers specifically shooting security guards, which are hardly random individuals (Case #282 on p. 181, Case 292 on pp. 186-7). See Federal Bureau of Investigation, "A Study of Active Shooter Incidents in the United States Between 2000 and 2013," U.S. Department of Justice, Washington Navy Yard, Washington, D.C., September 16, 2013. New York City Police Department, "Active Shooter: Recommendations and Analysis for Risk Mitigation, 2012 Edition."

[7] This is exactly the same as Lankford (2016) used, minus insurgency-related shootings.

[8] The one case where the kidnapping and sexual assault clearly precipitated the shooting was the NYPD's case 276 (NYPD, 2012, p. 177), where the police officers were shot while investigating the crime.

[9] Lankford correctly argues that the Columbine and Fort Hood type shootings are essentially the same, even if one is labeled as terrorism and the other as "other crime." Lankford (2016, p. 188) writes: "these public mass shootings—which are also sometimes referred to as active shootings or rampage shootings—stand out as particularly concerning because they are typically premeditated attacks that strike random, innocent victims (Newman, Fox, Roth, Mehta, & Harding, 2004). This makes them functionally similar to terrorism."
He has made similar comments to the press: "Lankford said that whatever mass killers' particular motivations might be, they tend to share certain psychological traits that may be more important than their agendas. Such traits include a sense of victimization, a pattern of seeking negative attention, and being suicidal or not caring whether they

live" (Devlin Barrett and Mark Berman, "Austin bombings renew debate: What crimes do we label as terrorism?" Washington Post, March 23, 2018).

[10] These two school shootings in Germany were at Erfurt, Germany, April 26, 2002 and Winnenden, Germany, March 11, 2009.

[11] These two attacks in Finland were at a vocational college in Kauhajoki, Finland, Sept. 23, 2008 and the Sello shopping center in Espoo, Finland, Dec. 31, 2009,

[12] https://en.wikipedia.org/wiki/List_of_rampage_killers, https://en.wikipedia.org/wiki/Category:Mass_shootings_by_country, https://en.wikipedia.org/wiki/Category:Mass_shootings_by_continent

[13] Neither the NYPD report nor Lankford (2016 and 2019) discuss what search terms that they used.

[14] Presumably all terrorist attacks shouldn't be excluded, both because the NYPD and FBI reports include terrorist attacks and Lankford claiming that terrorist and non-terrorist attacks were "functionally similar." An email from Glenn Kessler at the Washington Post (Thursday, August 30, 2018) noted Lankford "did not respond to my requests to offer his full list and it took some prodding to get the Mumbai admission out of him." This was presumably because he deemed it to be a "sponsored" terrorist activity, though that is not obvious. If the San Bernardino killers got training in the Middle East, are they sponsored? Is the first Ft Hood shooter "sponsored" because he was in communication with one of the influential clerics associated with ISIS? Is the Pulse nightclub shooter "sponsored" because he was inspired by information put out over the Internet by ISIS? Is funding required to list attacks as "sponsored"? Without information on these questions, it is only possible to provide a range of possible estimates.

[15] "Venezuela favorece a los familiares de fallecidos que no informan a la prensa." El Mundo, August 22, 2010 (http://www.elmundo.es/america/2010/08/22/venezuela/1282502008.html).

[16] Beijing and Jianguomen, China, September 9, 1994; Fudong, China, February 17, 1981 (http://news.sina.com.cn/s/2009-09-08/070216258800s.shtml); and Qingyang, China, September 24 & 25, 1979. (http://www.360doc.com/content/16/1214/11/29240584_614574394.shtml).

[17] Email correspondence on May 1, 2018. Victor Mair contacted other academics who made similar statements.

[18] In an email from Victor Mair dated June 30, 2018.

[19] This is from simple regressions that compare the trend lines for the frequency of mass public shootings in the rest of the world and the United States. T-statistics are shown in parentheses.

Frequency in the Rest of the World = 0.001299 (3.72) Year – 2.5872 (3.69)
F-statistic = 13.84 adjusted-R2= 0.4034

Frequency in the United States = 0.0003325 (2.09) Year – 0.6571662 (2.06)
F-statistic = 4.37 adjusted-R2= 0.1442

[20] This is from simple regressions that compare the trend lines for the murder rate from mass public shootings in the rest of the world and the United States. T-statistics are shown in parentheses.

Murder Rate in the Rest of the World = 0.0148722 (2.72) Year -29.6211 (2.70)
F-statistic = 7.42 adjusted-R2= 0. 2525

Murder Rate in the United States = 0.0072325 (3.15) Year -14.42856 (3.13)
F-statistic = 9.95 adjusted-R2= 0.3091

[21] Small Arms Survey. (2007). The largest civilian firearms arsenals for 178 countries. Retrieved from http://www.smallarmssurvey.org/fileadmin/docs/A-Yearbook/2007/en/Small-Arms-Survey-2007-Chapter-02-annexe-4-EN.pdf
[22] Aaron Karp, "Estimating global Civilian- Held Firearms numbers," Small Arms Survey, briefing paper June 2018 (http://www.smallarmssurvey.org/fileadmin/docs/T-Briefing-Papers/SAS-BP-Civilian-Firearms-Numbers.pdf).
[23] European Commission. 2013. Flash Eurobarometer 383: Firearms in the European Union. Brussels: European Commission (http://ec.europa.eu/commfrontoffice/publicopinion/flash/fl_383_en.pdf).
[24] I have had a series of email exchanges with people at the Small Arms Survey, and have obtained virtually no additional information than can be found in their original reports. My last email exchanges were with Aaron Karp on September 13, 2018.
[25] Emma Jane Kirby, "Switzerland guns: Living with firearms the Swiss way," BBC News, February 11, 2013 (https://www.bbc.com/news/magazine-21379912).
[26] "Swiss vote to keep their guns at home," DW, Akademia, 2011 (https://www.dw.com/en/swiss-vote-to-keep-their-guns-at-home/a-14840041).
[27] Daniel Fisher, "Canada Tried Registering Long Guns -- And Gave Up," Forbes, January 22, 2013 (https://www.forbes.com/sites/danielfisher/2013/01/22/canada-tried-registering-long-guns-and-gave-up/#6e1b331c5a1b). See also this list of estimates on the number of long guns in Canada before the registration by the Law-abiding Unregistered Firearms Association, January 20, 2013 (https://archive.is/20130120204109/http://www.lufa.ca/quickfacts.asp).
[28] Ibid.
[29] Ibid.
[30] "What Explains U. S. Mass Shootings? International Comparisons Suggest an Answer," New York Times, November 8, 2017 and "What's Going On in This Graph?" New York Times, March 13, 2018.
[31] The licensing data was available for the following countries: Afghanistan, Albania, Algeria, Argentina, Armenia, Australia, Austria, Belarus, Bosnia and Herzigovina, Bulgaria, Burkina, Faso, Canada, Croatia, Cyprus, Czech, Republic, Denmark, Egypt, El, Salvador, Estonia, Finland, France, Georgia, Germany, Guatemala, Iran, Iraq, Ireland,

Israel, Italy, Jamaica, Jordan, Kazakhstan, Kuwait, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Montenegro, Morocco, Netherlands, New, Zealand, Norway, Pakistan, Palestine, Panama, Peru, Poland, Romania, Russia, Rwanda, Saudi, Arabia, Serbia, Slovakia, Slovenia, Spain, Switzerland, Syria, Tunisia, Turkey, Ukraine, United Arab Emirates, United Kingdom, and Yemen.

Since the US doesn't have licensing data, survey data are used there. rcThe Appendix with all the sources for these data is available from the author.

[32] Lydia Saad, "What Percentage of Americans Own Guns?" Gallup, August 14, 2019 (https://news.gallup.com/poll/264932/percentage-americans-own-guns.aspx).