

# Public Mass Shooters and Firearms: A Cross-National Study of 171 Countries

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**Objective:** Model the global distribution of public mass shooters around the world. **Method:** Negative binomial regression is used to test the effects of homicide rates, suicide rates, firearm ownership rates, and several control variables on public mass shooters per country from 1966 to 2012. **Results:** The global distribution of public mass shooters appears partially attributable to cross-national differences in firearms availability but not associated with cross-national homicide or suicide rates. **Conclusion:** The United States and other nations with high firearm ownership rates may be particularly susceptible to future public mass shootings, even if they are relatively peaceful or mentally healthy according to other national indicators.

**Keywords:** rampage shooters; public mass shooters; active shooters; firearm ownership; homicide rates

Are public mass shooters predominantly an American problem? For years, people have wondered whether the dark side of American exceptionalism is a cultural propensity for violence. Political activist H. Rap Brown once claimed that “Violence is a part of America’s culture. It is as American as cherry pie” (Lehman, 2014). Similarly, Pulitzer Prize-winning historian Richard Hofstadter (1970b) concluded that the most notable thing “about American violence is its extraordinary frequency, its sheer commonplaceness in our history, its persistence into very recent and contemporary times, and its rather abrupt contrast with our pretensions to singular national virtue” (p. 7). Although United States history includes the killing of indigenous people, a revolutionary war, a civil war, many foreign wars, slavery, race riots, domestic terrorism, and high rates of homicide, perhaps no form of violence is seen as more uniquely American than public mass shootings.

Each new tragedy seems to prompt the same cycle of questions, accusations, and confusion—but few answers. As Leonard and Leonard (2003) detail, after the 1999 Columbine attack, which at that time was the worst school shooting in United States history, “Americans began to seriously question . . . whether violence is indeed a core value of our culture” (p. 100). Similar fears were raised after the 2007 massacre at Virginia Tech, the 2009 shooting at the Fort Hood Army base in Texas, the 2012 attack at a movie theater in Aurora, Colorado, and the 2012 slaughter of 20 children and 6 adults at Sandy Hook Elementary School. Within days of the Sandy Hook incident, *The New Yorker* published a scathing

rebuke of “America’s Culture of Violence,” *U.S. News and World Report* condemned “America’s Culture of Death,” and similar concerns were voiced worldwide (Beres, 2012; Thompson, 2012). But it seems that not much has changed. More than 2 years later, the president of the United States expressed frustration that “We’re the only developed country on Earth where this happens. And it happens now once a week” (White House, 2014, para. 97).

Virtually all countries may have incidents of multiple homicide or mass murder, but 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 (Lankford, 2013). It may be possible for the average person to limit personal risks in many walks of life, but almost everyone goes to school, goes to work, or goes out in public.

How often does this type of crime actually occur in other countries? What explains the cross-national distribution of these offenders around the world? This study will attempt to answer these questions and more, based on its quantitative analysis of all known public mass shooters who attacked anywhere on the globe from 1966 to 2012 and killed a minimum of four victims ( $N = 292$ ).

## AMERICAN EXCEPTIONALISM

The concept of American exceptionalism has a long and notable history. As early as 1840, Alexis de Tocqueville suggested that the United States stood “at the head of the enlightened nations of the Old World” and was “therefore quite exceptional” (de Tocqueville, 1840/1990, p. 18). Other scholars have argued that because of some combination of its history, geography, size, political institutions, economic system, and culture, America has a fundamentally different tradition and set of social values than its Western predecessors (Lipset & Bendix, 1959; Rose, 1989). To this end, Lipset (1996) asserts that compared to European nations, “This country is an outlier. It is the most religious, optimistic, patriotic, rights-oriented, and individualistic” (p. 26). Similarly, Wood (2011) suggests that “Our beliefs in liberty, equality, constitutionalism, and the well-being of ordinary people came out of the Revolutionary era. So too did our idea that we Americans are a special people with a special destiny to lead the world toward liberty and democracy” (p. 2).

However, most scholars agree that even if the United States is indeed fundamentally different from other countries, these differences are not all positive (Hooks & McQueen, 2010; Lipset, 1996; Pease, 2009; Poveda, 2000; Zinn, 1980). For example, Americans have historically enjoyed high levels of political freedom, but they have also struggled with high rates of violence, crime, and incarceration (Courtwright, 1998; Hofstadter, 1970b; Monkkonen, 2006; Tonry, 1999; Whitman, 2005). Some of the same values that can result in positive outcomes can also lead to negative ones and thus create a “double-edged sword” (Lipset, 1996). For example, American individualism may be a great quality for entrepreneurship and innovation, but it may contribute to criminally deviant behaviors as well (Lipset, 1996; Triandis, 1995).

## AMERICAN GUN CULTURE

Along similar lines, America’s “national gun culture” stands out as another double-edged feature that makes the country unique. On the positive side, Hofstadter (1970a) found that

firearms were critical for the survival of early American frontiersmen and farmers, for whom food and resources were scarce, and threats were plentiful. He further suggests that without the improved weaponry and marksmanship skills Americans developed during that early period, they may have lost the Revolutionary War (Hofstadter, 1970a).

Less positive may be the fact that, according to a comparative study of 178 countries, the United States ranks first in gun ownership, with approximately 270 million firearms owned by civilians and a rate of 88.8 firearms per 100 people (Small Arms Survey, 2007). No other country comes close; Yemen is ranked second with 54.8 firearms per 100 people. Notably, it appears that Americans do not simply want guns because they enjoy hunting or sporting activities; they still value firearms for their revolutionary potential. A 2013 national telephone survey found that 65% of Americans believe that the purpose of their right to bear arms is still “to make sure that people are able to protect themselves from tyranny” (Rasmussen Reports, 2013).

Critics suggest that this historical tradition has been exploited by the National Rifle Association, with a range of dangerous consequences. From this perspective, the modern day “tyrants” are not government oppressors—they are the armed criminals who threaten the property, welfare, and lives of innocent civilians. A strong body of literature supports this position. In general, high firearm ownership rates are often correlated with high homicide rates (Hemenway & Miller, 2000; Killias, 1993; Killias, Kesteren, & Rindlisbacher, 2001; Sloan et al., 1988), and a recent study on all 50 U.S. states from 1980 to 2001 found strong correlations between local gun ownership rates and deaths from firearm-related homicides (Siegel, Ross, & King, 2013).

In addition, the widespread availability of firearms in America may be contributing to the nation’s public mass shooting problem. As the president of the United States recently suggested,

We have historically respected gun rights. I respect gun rights. But the idea that, for example, we couldn’t even get a background check bill in . . . so you can’t just walk up to a store and buy a semiautomatic weapon—it makes no sense . . . We kill each other in these mass shootings at rates that are exponentially higher than anyplace else. Well, what’s the difference? The difference is that these guys can stack up a bunch of ammunition in their houses. (White House, 2014, para. 98–103)

By contrast, some would argue that even with comprehensive gun control policies, public mass shooters would still be able to obtain the weapons needed to carry out their attacks. By this view, offenders would just get their firearms illegally, through back alley or black market deals. However, although this may be the likely response to gun control from organized crime groups or gang members, the individuals who commit public mass shootings are typically not well connected (Langman, 2009, 2015a; Lankford, 2013; Newman et al., 2004). Many are so beset by personal problems and mental illness that they may lack the social relationships necessary to acquire firearms through back channels (Langman, 2009, 2015a; Levin & Madfis, 2009; Newman et al., 2004). In fact, a recent investigation of American mass shooters found that the vast majority of their firearms were purchased legally (Follman, Aronsen, Pan, & Caldwell, 2013).

In other countries where firearms are more difficult to obtain, some would-be offenders have explicitly expressed frustration about this fact. For example, in June 2005, German student Sebastian Bosse posted online that he had decided against committing a school shooting because, at least in part, he could not get the firearms he needed. “I decided to leave it alone . . . I don’t know if in the end I would really accomplish anything, and

damn it, I don't know where you get decent weapons in Germany!" (Langman, 2015c). Bosse did not engage in any violence for the next 17 months but then things changed. In November 2006, Bosse posted, "Right now I'm holding a 12-gauge alarm patrol in my godly hands! It's filled with circa 90 grain ass kickin' black powder, which I need for my muzzle loader guns" (Langman, 2015b). Just 2 weeks later, he committed a school shooting in Emsdetten, Germany.

Of course, even if they lack access to firearms, offenders could still be dangerous if they are fully committed to attacking despite this limitation. For instance, China has very strict gun control laws, so when it experiences mass murder, the most common weapons are kitchen knives or blunt instruments (Hilal, Densley, Li, & Ma, 2014). But perhaps not surprisingly, these offenders generally kill and injure fewer victims and thus may constitute a reduced threat to public health (Hilal et al., 2014).

It therefore seems at least possible that cross-national differences in firearms availability may help to explain cross-national differences in rates of public mass shooters. For now, that remains unknown. This study will be the first to provide empirical data on the subject and thus inform the public debate.

## THE PRESENT STUDY

This study will attempt to make several new contributions to the field. First, although it is commonly assumed that public mass shootings are predominantly an American problem, an extensive review of the literature could not uncover a single article that provides global statistics on the subject—perhaps because data are so difficult to obtain. However, this study will provide more than 40 years of data on global offenders to first answer the basic question of how often these attackers strike in the United States as compared to other countries.

Second, it will use negative binomial regression to test the effects of homicide rates, suicide rates, and firearm ownership rates on the number of public mass shooters across nations. By definition, mass shootings are homicide offenses that require firearms as the weapon of attack, and they often end in the offender's suicide or orchestration of "suicide by cop" (Lankford, 2015; Lindsay & Lester, 2004). Therefore, homicide rates, suicide rates, and firearm ownership rates may account for several fundamental aspects of this type of crime. In turn, negative binomial regression is the appropriate method for count data (such as counts of public mass shooters in different countries) and is specifically used for overdispersed outcome variables which may have large numbers of zeros at the low end and outliers at the high end (as this study has).

## Dataset

Data for this study were drawn first from the New York City Police Department's (NYPD) 2012 Active Shooter report. This report employs the Department of Homeland Security's definition of "active shooter": "an individual actively engaged in killing or attempting to kill people in a confined and populated area" (Kelly 2012, p. 1). More commonly, these offenders are referred to as *rampage shooters* or *public mass shooters*. According to the formal definition, their attacks must have (a) involved a firearm, (b) appeared to have struck random strangers or bystanders and not only specific targets, and (c) not occurred solely in domestic settings or have been primarily gang-related, drive-by shootings, hostage-taking incidents, or robberies (Kelly, 2012). For this study, attackers who struck outdoors were

included; attackers who committed sponsored acts of genocide or terrorism were not. This is consistent with the criteria employed by the Federal Bureau of Investigation (FBI) in its 2014 active shooter report (Blair & Schweit, 2014).

Ostensibly, the NYPD report was intended to include all global cases from 1966 to 2012, but it fell well short of this goal. The researchers' primary focus was clearly on offenders in the United States, which is understandable given their location and professional priorities. The report may indeed provide the most comprehensive record of domestic incidents that currently exists, but as the authors openly acknowledge, it is missing many foreign cases (Kelly, 2012).

For this study, the NYPD report was therefore supplemented with additional data from the FBI's 2014 active shooter report (Blair & Schweit, 2014) and with data gathered on incidents from other countries. All efforts were made to ensure that the same data collection methodology employed by the NYPD was used to obtain this information. Fortunately, the NYPD researchers relied entirely on open source material from previous scholarship, government reports, and media reports, so this method was replicated by searching these types of foreign sources. In general, data from open sources are commonly relied on when studying mass shootings, so this approach also has scholarly precedent (Fox & Levin, 1994; Kelly, 2010; Langman, 2009; Lankford, 2015; Lankford & Hakim, 2011; Larkin, 2009; Newman et al., 2004; Newman & Fox, 2009).

Beyond the "active shooter" definition employed for case inclusion, only offenders who killed four or more victims were included in this study. This determination was strictly based on the lethal results of each crime, rather than offenders' intent; there were almost certainly some offenders outside the confines of this study who intended to kill more than four victims but failed to do so. This four-fatality minimum corresponds with a definition of mass murder that has been cited by the FBI (2008). Although excluding attacks below this threshold naturally reduced the total number of cases for analysis, this is offset by the fact that the excluded cases were in some sense the least important, in terms of their lethal and social consequences. An additional benefit of employing the four-fatality minimum is that it helps control for the risk that the cases most likely to be missed in data collection would be those that caused the least amount of death and destruction and thus generated the least amount of media attention and were the least noteworthy in the historical record (Kelly, 2012; Lankford, 2015). In other words, an attempt to study all global offenders, regardless of their lethal impact, would almost certainly result in a higher percentage of missing cases. Excluding those cases that failed to meet a minimum threshold thus helped to protect the overall integrity of the data.

The resulting dataset included 292 public mass shooters who killed a minimum of four victims from 1966 to 2012.

## **Limitations**

The NYPD researchers noted a few important limitations in their data collection method that are relevant to this study. First, although the dataset may be nearly comprehensive in its coverage of recent decades, it may be missing some older cases, which were harder to find through available open source information (Kelly, 2012). This same limitation applies to the supplementary information gathered on incidents from other countries. Second, the researchers occasionally came across cases where there were conflicting reports about a specific detail. Their solution to this challenge seems reasonable: They included the most updated information (Kelly, 2012). Again, the same approach was employed for the supplementary cases from other countries.

It should also be emphasized that public mass shootings, by their very nature, are rare events. This is an inevitable limitation faced by all scholars who study these types of crimes. Past research on school shooters, for example, has used sample sizes of 48 offenders (Langman, 2015a), 41 offenders (Vossekuil, Fein, Reddy, Borum, & Modzeleski, 2002), 27 offenders (Newman et al., 2004), 23 offenders (Larkin, 2009), 17 offenders (Tonso, 2009), 14 offenders (O'Toole, 2000), 10 offenders (Langman, 2009), and 9 offenders (Newman & Fox, 2009). A more broadly defined study by Lankford (2015) used a dataset of 185 active shooters, but it included many offenders who killed fewer than four victims and thus would not meet the definition of mass murder that has been cited by the FBI (2008). By contrast, because of its global focus, this study appears to be based on a larger dataset than all previous scholarship on the subject ( $N = 292$ ).

### Variable Description

For the negative binomial regression of public mass shooter rates across countries, the dependent variable was the number of public mass shooters per country for the entire study period (1966–2012). Data for the independent variables came from several commonly relied on sources. Intentional homicide rates per 100,000 population came from the United Nations *Global Study on Homicide 2013* (United Nations Office on Drugs and Crime [UNODC], 2013), age-standardized suicide rates per 100,000 population came from the World Health Organization (2014), and firearm ownership rates per 100 population came from the Small Arms Survey (2007). The control variables were population (World Factbook, 2014), national sex ratio (World Factbook, 2014), and percentage of the population living in urban areas (World Bank, 2014). These controls have been commonly used by scholars studying cross-national homicide in the past (Dolliver, 2014; Krahn, Hartnagel, & Gartnell, 1986; Pratt & Godsey, 2003; Pridemore, 2008). Although it may have been preferable to use measures that reflected the average values for each country from 1966 to 2012, those data were not available, so the most recent estimates for each measure were employed instead.

### RESULTS

Descriptive statistics appear in Table 1. Complete data were available for 171 countries, and they averaged 1.7 public mass shooters per country from 1966 to 2012. Approximately 31% of global offenders attacked in the United States, whereas 69% attacked in other countries. The United States had by far the most public mass shooters of any country, with 90 offenders. Only four other countries even reached double-digits: the Philippines (18), Russia (15), Yemen (11), and France (10). Homicide rates, suicide rates, and firearm ownership rates varied significantly by country, as did population size and urbanization. Most countries had a sex ratio that was close to 1:1 (male:female).

Table 2 presents the negative binomial regression results for the effects of homicide, suicide, and firearm ownership rates on public mass shooters per country ( $N = 171$ ). Model 1 tested all of the independent variables while controlling for each country's population, sex ratio, and level of urbanization. The results showed a statistically significant association between national firearm ownership rates and the number of public mass shooters per country ( $b = 3.39, p = .002$ ). By contrast, homicide rates and suicide rates did not appear significant. Model 2 tested the effects of firearm ownership rates on public



TABLE 1. Descriptive Statistics

Variable	<i>M</i>	<i>SD</i>	Minimum	Maximum
Public mass shooters per country	1.69	7.24	0	90
Homicide rate per 100,000	8.52	11.47	0.2	90.4
Suicide rate per 100,000	9.81	7.17	0.4	44.2
Firearms owned per 100	10.21	12.18	0.1	88.8
Population (in millions)	41.62	144.60	0.3	1355.7
Sex ratio (male:female)	1.01	0.21	0.8	3.3
Percentage urban	57.28	22.68	8.7	100.0

Note. Countries included in quantitative analysis = 171.

mass shooters per country with the variables for homicide and suicide rates removed and showed that the coefficient and significance level for firearm ownership rate remained very similar ( $b = 3.36, p = .002$ ).

Because the United States had so many public mass shooters (and was such an outlier), a natural question arises: What happens when the United States is omitted from the analysis? Do the results change in any substantial way? Models 3 and 4 suggest they do not. Naturally, the likelihood ratio chi-square tests yield lower coefficients because the model is weaker with one country that had 31% of the offenders removed. However, the relationship

TABLE 2. Negative Binomial Regression Estimates for the Effects of Homicide, Suicide, and Firearm Ownership Rates on Public Mass Shooters Across Nations

Variable	Model 1 ( <i>N</i> = 171)	Model 2 ( <i>N</i> = 171)	Model 3 ( <i>N</i> = 170)	Model 4 ( <i>N</i> = 170)
Homicide rate	−0.30 (1.41)	—	−0.30 (1.43)	—
Suicide rate	1.31 (2.06)	—	1.32 (2.10)	—
Firearm ownership rate	3.39** (1.10)	3.36** (1.08)	3.39** (1.31)	3.31** (1.28)
Controls				
Population	0.61* (.28)	0.60* (.27)	0.62 (.32)	0.59 (.31)
Sex ratio	−365.56 (256.87)	−416.06 (252.19)	−365.67 (259.53)	−415.89 (254.45)
Percent urban	.10 (.65)	.07 (.64)	.10 (.66)	.07 (.65)
Likelihood ratio $\chi^2$	49.49***	48.96***	21.69**	21.17***

Note. Models 3 and 4: United States omitted. Unstandardized coefficients, standard errors in parentheses. To improve readability, coefficients and standard errors were multiplied by 100.

\* $p < .05$ . \*\* $p \leq .01$ . \*\*\* $p < .001$  (two-tailed tests).

between firearm ownership rate and number of public mass shooters remains significant at a similar level (Model 3:  $b = 3.39$ ,  $p = .010$ ; Model 4,  $b = 3.31$ ;  $p = .009$ ). This supports these general findings. Overall, therefore, Model 2, which included the United States and tested firearm ownership rates, but omitted homicide rates and suicide rates, appears to provide the best parsimony and model fit (likelihood ratio  $\chi^2 = 48.96$ ,  $p < .001$ ).

## DISCUSSION

How can the global distribution of public mass shooters be explained? National homicide rates do not seem to explain the cross-national differences. Some of the most dangerous countries in terms of homicide risk—such as Venezuela, Nigeria, and Mexico—had very few offenders. The inverse was common as well.

In retrospect, perhaps this should not have been surprising because public mass shooters tend to differ from other murderers in several fundamental ways. Public mass shooters are commonly mentally ill or suicidal but most other homicide offenders are not (Ames, 2005; Duncan, 1995; Duwe, 2007; Fox & Levin, 1994; Langman, 2009, 2015a; Lankford & Hakim 2011; Lieberman, 2006; Newman & Fox, 2009; Newman et al., 2004; O'Toole, 2000; Rugala, 2003; Vossekuil et al., 2002). Public mass shooters often plan their attacks in advance but other murderers are much more likely to commit crimes of passion or escalation (Langman, 2009; Lankford, 2013; Newman et al., 2004; Vossekuil et al., 2002). And although public mass shooters often kill random strangers or bystanders, most other murderers do not target strangers unless there is something tangible to be gained, such as stolen goods or money (Lankford, 2013; Newman et al., 2004).

National suicide rates also failed to explain the global distribution of public mass shooters. In retrospect, this also seems to make sense. Although mental illness can exacerbate many personal problems, the vast majority of people who are mentally ill and suicidal are nonviolent (Metzl & MacLeish, 2013). Compared to typical suicides, mass shootings are so rare that it is not surprising that these two behaviors do not appear correlated. Perhaps more importantly, one of the key factors that explains variation in nonviolent suicide rates is social approval of suicide as a moral and legitimate way of ending one's own life (Agnew, 1998; Hjelmeland et al., 2008; Joe, Romer, & Jamieson, 2007; Stack & Kposowa, 2008). However, just because a culture approves of nonviolent suicide, that certainly does not mean that it would approve of mass shootings.

On the other hand, a major finding is that firearm ownership rates appeared to be a statistically significant predictor of the distribution of public mass shooters worldwide. Many of the nations in this study that ranked highest in firearm ownership rates also ranked highly in public mass shooters per capita. For example, the Small Arms Survey (2007) lists the United States, Yemen, Switzerland, Finland, and Serbia as the top five countries in civilian firearm ownership rates, and all five countries also ranked in the top 15 in public mass shooters per capita. Again, many of these countries are not particularly dangerous in terms of their overall homicide risk (UNODC, 2013). In fact, Switzerland and Finland are commonly assumed to be extremely peaceful nations, and there may be much merit to those generalizations. However, this study's findings and the availability of firearms within their borders suggests that their relatively high rate of public mass shootings may not simply be attributed to bad luck.

The results further indicated that despite popular assumptions to the contrary, public mass shooters attack in many countries around the globe, and they are actually more likely



to strike beyond American borders than within them. On the other hand, when it comes to total offenders, America clearly is exceptional. From 1966 to 2012, the United States was by far the global leader, with five times the total of the Philippines, which was the second highest country. The United States also had a disproportionately high number of offenders: Despite having less than 5% of the global population (World Factbook, 2014), it had 31% of global public mass shooters. Because of its world-leading firearm ownership rate, America does stand apart—and this appears connected to its high percentage of public mass shootings.

## CONCLUSION

Perhaps the most obvious step the United States could take to reduce public mass shootings may also be the most politically challenging: reduce firearms availability. There is evidence that this approach was successful in Australia, which suffered numerous domestic mass murders and four public mass shootings from 1987 to 1996. Just 12 days after a mass shooter killed 35 victims in the last of these attacks at Port Arthur, the nation agreed to pass comprehensive gun control laws. It also launched a major buyback program that reduced Australia's total number of firearms by approximately 20% (Chapman, Alpers, Agho, & Jones, 2006; Small Arms Survey, 2007). This study's data show that in the wake of these policies, Australia has yet to experience another public mass shooting. Citing the Australian case, the President of the United States has suggested that similar policies could help America as well (White House, 2014).

However, even if limiting firearms availability might be an effective means for reducing public mass shootings, for now, it does not seem politically feasible—at least in the United States. In the aftermath of the Sandy Hook Elementary School shootings, American support for gun control rose considerably, but it has declined in the years since (Pew Research Center, 2014). It may take more cases of unambiguously successful gun control, such as Australia's, to begin to gradually change America's gun culture. Or it may take more scholarly research which provides empirical evidence of the link between firearms availability and public mass shootings and thus shows that policymakers and legislators may be able to directly influence the prevalence of these high-lethality crimes.

Beyond the subject of firearms, future studies of public mass shooters may be able to shed light on additional social and cultural factors that help explain why some countries have significantly more offenders than others. For example, in the United States—perhaps more than in any other country on the globe—there is a tremendous social premium on fame (Pinsky & Young, 2008; Sternheimer, 2011; Twenge, 2014). In fact, according to Pew Research Center surveys, 51% of Americans aged 18–25 years say that “to be famous” is one of their generation's most important goals in life (Pew Research Center, 2007). Unfortunately, many American public mass shooters also seek fame and glory—but they obtain it through killing—and the media coverage they receive in the United States seems to give them exactly what they want (Langman, 2015a; Lankford, 2013; Lankford & Hakim, 2011; Larkin, 2009; Newman et al., 2004). However, like most aspects of this criminological challenge, the impact of fame seeking and media coverage on the frequency of these attacks could be better understood in a global context.

Ultimately, more cross-national studies of public mass shooters could help ensure that future strategies for prevention are based on reliable scientific evidence. Some countries and cultures are clearly safer than others; it would be a shame not to learn from them.

Once the best policies and practices are clearly identified, perhaps they can be increasingly shared and implemented worldwide.

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