Crime and Philanthropy: Antisocial and Prosocial Responses to Mass Shootings

Claude Berrebi[a], Hanan Yonah[a]

[a]The Hebrew University of Jerusalem, The Federmann School of Public Policy and Government, Mount Scopus, Jerusalem, Israel

Abstract

Mass shootings have a strong impact on public discourse and perception, affecting more than their direct victims. We use data on charitable contributions and criminal activity in the U.S. over the last decade to identify and quantify the effect of mass shootings on prosocial and antisocial behavior. We find that the effect of mass shootings on prosocial behavior is positive and statistically significant. However, the directly affected localities react to mass shootings differently than their neighboring communities, decreasing their charitable contributions. Additionally, we show that mass shootings are different than any other criminal behavior, including all other violent offenses, in terms of its effect on prosocial and antisocial behavior.

Introduction

Mass shootings are distinctive events compared to other deadly types of events. They are unpredicted, practically impossible to forecast, occur without warning and frequently end abruptly with the death of the shooter. Unlike other types of deadly crimes such as homicides, robberies or burglaries most mass shootings are premeditated and indented to kill as many random individuals as possible with whom the predator has no direct specific conflict (Langman, 2009; Newman, 2004; Wilson and Petersilia, 2011).

Mass shootings are always geographically constricted to a single community, taking place within a single location such as a school, workplace, theatre, shopping center etc., and although these events are relatively rare, the frequent and sensational media coverage distributes and amplifies its impact far beyond the immediate victims involved and the surrounding community.[1]

Lankford (2016a), finds that more public mass shootings occurred in the U.S. than in any other country in the world. According to the FBI's 2014 active shooter report, mass shootings in the United States have increased three-fold in the last fifteen years (Blair and Schweit, 2014). The issue of mass shooting has crossed the political spectrum. In his statement following the traumatic event in Oregon in 2015, president Obama expressed his frustration with the repeated mass shootings during his tenure, stating that "somehow this has become routine".[2] President Donald Trump recently said that "mass shootings have been going too long in our country" as he offered his first public remarks on the school shooting in Santa Fe, Texas.[3]

For most of the population the event will be conveyed through the media which heavily influences the public's perception (Duwe, 2005; Shultz et al., 2014). Previous research on traumatic events, such as terrorist attacks and natural disasters, shows that the psychological effects of these events are not limited only to the direct victims. Residents of the afflicted communities and even people living far away can become psychologically affected (Berrebi and Yonah, 2016; Bonanno et al., 2007; Silver et al., 2002; Schlenger et al., 2002; Schuster et al., 2001). Media coverage following collective traumas has been observed to have public health effects, particularly in terms of stress-related symptoms (Holman et al., 2014). The shooting at Utøya Island seemed to have had a significant effect on the entire Norwegian population, creating sadness and insecurity, at least in the short term. Psychological proximity was associated with stress reactions in the general population (Shultz et al., 2014).

Two different types of reactions of the victims and the afflicted communities as a result of mass shooting tragedies are well documented. Major depression and anxiety on one hand, and solidarity and support on the other hand. Depression and anxiety are frequently documented in many studies that found Post-Traumatic Stress disorder (PTSD) symptoms in the aftermath of mass shooting events. Hough et al. (1990), argued that traumatic events provoke PTSD symptoms in the afflicted community in which the event occurs. Media attention keeps the trauma alive and fresh not only for the survival victims, but also for those who were exposed to the events through the extensive and repetitive media coverage, which lasts for a much longer time. On the other hand, there is also documentation of prosocial behavior as a reaction to traumatic events, stating, for example, that in the aftermath of the tragedy, residents of the afflicted community came together holding hands and talking, creating spontaneous shrines by placing candles near site (Collins, 2004; Eyre, 2007; Hawdon et al., 2010; Hawdon et al., 2012; Nurmi et al., 2012; Turkel, 2002).

In this study, we aim to investigate the relationship between mass shootings and individuals and communities' social behavior in the United States. Using longitudinal data with multiple treatment periods and differing treatment intensities across time and space in a fixed effects approach, we analyze mass shootings by

[1] Mass shootings are rare and distinctive events compared to the background frequency and death toll associated with single-victim or "targeted" firearm homicides. In the U.S. for example, "random/rampage" shootings are responsible for a small fraction of 1 % of firearm homicides (Shultz et al., 2014).
[2] https://obamawhitehouse.archives.gov/blog/2015/10/01/watch-president-obamas-statement-shooting-oregon.
[3] https://edition.cnn.com/2018/05/18/politics/trump-texas-school-shooting/index.html

date, geographic location, and other characteristics, along with information about charitable giving following these events. This allows us to study and identify potential changes in aggregate giving patterns by donors in communities that were affected directly by mass shootings, compared to a control group of donors in other communities not subjected to these events, while holding constant income, other demographic variables as well as particular regional characteristics. The analysis herein is, to the best of our knowledge, the first attempt to investigate the effect of mass shootings on prosocial behavior and specifically on philanthropy, beyond the affected community, over a relatively long period.

Theory and Conceptual Framework

Behavioral responses to traumatic events may be displayed in different ways. While some individuals react by holding back on their financial activity (including charitable giving) following stressful events, others may express more generosity by increasing their giving due to solidarity and empathy with the victims. To explain the potentially feasible range of behavioral outcomes expected following mass shootings, we rely on the following theories: terror management theory (TMT), the identifiable victim effect, the conservation of resources model (COR), and blame and the diffusion of responsibility theories from the field of psychology.

Terror management theory (TMT), first articulated by Greenberg et al. (1986) and based on Becker (1971), suggests that self-esteem, the belief that one is a valuable person within the context of one's cultural conception of reality, shields people from the fear of death. In other words, the awareness of one's mortality (the salience mortality paradigm) intensifies desires to express prosocial attitudes and to engage in prosocial behavior (Jonas et al., 2002). The identifiable victim effect suggests that people are inclined to spend more to save the lives of recognizable victims than to save equal numbers of anonymous or statistical victims (Jenni and Loewenstein, 1997). The extensive media coverage of mass shooting incidents turns many of the victims to identifiable victims, as well as the affected community as a whole. According to this theory people would potentially increase their charitable giving due to a heightened compassion and empathy towards the victims and the suffering communities. In other words, "the more we know the more we care" (Schelling, 1968). Prosocial behavior in the aftermath of traumatic events is also supported by previous empirical studies. In recent empirical research studying the effect of terror attacks on philanthropy, Berrebi and Yonah (2016) show that individuals and households increase their charitable giving following these events, and that proximity to the event was a contributing factor. Chamlee-Wright and Storr (2010), in a study of natural disaster, presented a similar effect in the aftermath of Hurricane Katrina.

On the other hand, according to the COR model and blame theories, a counter behavioral response to mass shootings may be observed. The COR model suggests that people strive to build and protect their assets, which include both psychological and material resources, and stress can threaten or result in a potential or actual loss of these assets, (Hobfoll, 1989, 2001, 2011). This model provides a framework for examining the impact of adverse experiences on individuals' actions following a major stress event, predicting a decrease in philanthropic activity engagement due to the heightened perceived need of individuals to preserve their resources.

Several psychological theories emphasize the role of blame, and suggest that following negative traumatic events, people (observers or bystanders) will tend to have two possible contradicting reactions toward victims. They might either express compassion and sympathy, or alternatively assign responsibility and blame to the victims for their unfortunate outcome. The blame is the result of the observer's attempt to maintain his/her belief in a just world, where people get what they deserve, or conversely, deserve what they get (Appelbaum, 2002; Furnham, 1995; Heider, 1958; Lerner and Simmons, 1966). Shaver (1985) and later Alicke (2008) emphasized the role of foreseeability and intentionality in the process of victim blame. In our context, these elements exist simultaneously. The long standing public discourse and criticism in the United States regarding gun control policy and the ease at which firearms are accessible, demonstrate the foreseeability of the potential destructive outcome among those in the public who believe that there is a link between the vast gun ownership and mass shootings. The second element seems to be obvious as there is no doubt about the intention of the predator to kill as many random victims as possible. According to these theories, following mass shooting events, people may potentially decrease their charitable giving due to a heightened blame towards the victims which overcomes the feelings of compassion and empathy.

The diffusion of responsibility theory suggests that in the event of an emergency situation, when an individual is aware of other observers, he or she feels less compelled or responsible to help as it is assumed that help would

be provided by the other observers. Not only the responsibility for helping is diffused among the observers, but also there is diffusion of potential blame for not taking action (Darley and Latne, 1968). According to this theory, it is possible that individuals in the affected community would be less likely to engage in prosocial behavior, and the responsibility to help, including contributing monetary donations, could be diffused among the members of the community. Previous research on the relationship between diffusion of responsibility and charitable giving demonstrated that indeed, individuals who were either in a group or aware of other observers were found to be less likely to donate (Blair et al., 2005; Garcia et al., 2002; Levine and Crowther, 2008; Wiesenthal et al., 1983).

As described above, theory alone does not provide a definitive behavioral prediction for possible prosocial reactions by individuals and households following mass shooting events. Additionally, there are some particular factors in the context of the 21st century in the United States which should be taken into consideration when analyzing these contradicting effects. Accordingly, there exists a complex relationship between guns, prosocial behavior and mass shootings, with various potential underlying mechanisms at play. Firstly, assuming these events were completely random probabilistic events, as the number of guns increase, the likelihood of a mass shooting event would increase as well. Indeed, in the aftermath of a mass shooting event, public groups, politicians and others often call for stricter gun control measures. Interestingly, the public discourse induces more gun purchases as people proceed to acquire firearms as they either believe owning a gun would increase their ability to protect themselves, or due to fear that such restrictions will apply in the near future (Depetris-Chauvin, 2015; Wallace, 2015). This again could potentially increase the likelihood of a mass shooting event, contributing to a cyclical exemplifying pattern. On the other hand, some may argue that the proliferation of firearm ownership by individuals could potentially decrease the likelihood of mass shootings. President Trump commented in an interview with the press (during his candidacy) after the mass shooting event in Oregon, that if more people had guns, fewer people would have died, as the response to the predator could have been faster.[4] The idea underlying this claim is that the vast distribution of firearms may deter potential perpetrators, realizing they could face immediate response by other armed individuals and fail in their mission.

Secondly, there is a clear political divide in the U.S. with respect to private ownership of firearms. Over 58% of gun owners identify as Republican or Republican leaning, with only 39% Democrat or Democrat leaning. This divide is even greater when examining members of the National Rifle Association (NRA), with over 77% of it's members being Republican or Republican leaning.[5] As such, the Republican share of voters tends to be highly correlated with the number of firearms per capita, while the share of Democrat voters tends to be negatively correlated with it ($r=0.39$ and $r=-0.31$ respectively).[6] The relationship between political affiliation and charitable contributions is mixed, with Republicans on average being more generous. However, one should be careful when interpreting this finding as this tendency is often argued to be driven by greater religiosity (Margolis and Sances, 2017).

Thirdly, media reports can potentially influence donations to charitable causes following mass shooting events, as coverage usually focuses on the victims' tragedy, evoking empathy toward the survivors and emphasis on their immediate needs.[7] Mass shootings differ from other types of homicides in the media coverage it receives and in the public's response to these reports. Mass shootings receive disproportionally large amounts of coverage across all media outlets. While this could increase charitable giving (in all forms) both within and from outside of the community, the language used in reporting these events typically focuses on the victimized communities as opposed to single personally identified victims, ("Las Vegas is under attack").[8] Thus, it is plausible that residents of an affected community might feel their own safety and resources threatened, and intra-community accusations of responsibility for the act might fracture solidarity and cause a decline in charitable giving.

Combining these factors and their underlying mechanisms illustrates the complexity of the inter-relationship between politics, guns, charitable giving and mass shootings. As noted earlier, the behavioral reaction of the surrounding communities to these stressful events is not easy to predict since the combination of these factors have the potential to affect prosocial and antisocial behavior in different directions.

[4] https://www.nbcnews.com/meet-the-press/video/full-brennan-a-lot-the-public-doesn-t-know-about-trump-tower-meeting-1235455555944.
[5] http://www.pewresearch.org/fact-tank/2017/07/05/among-gun-owners-nra-members-have-a-unique-set-of-views-and-experiences/.
[6] Author's calculations, cross state correlation in the 2012 presidential elections. $p<0.05$ in both estimates.
[7] http://www.ktnv.com/news/las-vegas-shooting/2-clark-county-red-cross-locations-filled-to-capacity-with-donations
[8] https://www.theglobeandmail.com/news/world/las-vegas-shooting/article36455626/.

This allows us to address various questions: (1) As there are contradicting theories with respect to the potential behavioral outcome following stressful events, what is the relationship between mass shootings and charitable giving? (2) Given the political divide in the U.S. regarding controlled firearms and the role of government (as opposed to individualism and community responsibility), are there differing responses to mass shootings across political lines? (3) Based on the above-described mechanisms, is an increase in gun ownership linked with higher or lower charitable giving? (4) Based on the blame theories discussed above, to what extent does community fracturing and polarization follow mass shooting events? (5) Are there different responses to mass shootings by victimized communities that were affected directly, versus more distanced communities? and finally, (6) Since prosocial response to mass shootings could be displayed in different forms, do we observe a substitution effect between monetary giving and other forms of philanthropic behavior such as volunteering in the aftermath of mass shootings?

Data and Empirical Framework

For our main analyses of the links between mass shootings and philanthropy in the United States, we constructed a panel dataset consisting of charitable contributions of household and individual tax itemizers, at a state level, for each year from 2004 to 2015, and combined it with supplementary economic and demographic information.[9] This donor information was merged with mass shooting data for the respective period.

Mass shootings data

Mass shootings data was obtained from the "Stanford Mass Shootings of America" (MSA) data project (Stanford Geospatial Center, 2017). The MSA contains detailed listings for each reported mass shooting event in our sample period, the decade spanning 2004-2015. The MSA's definition of a "Mass Shooting" is a shooting event with at least three victims (injured or murdered). In the period between 2004 and 2015, 149 mass shootings occurred claiming 1161 victims, of them 688 deaths. Other control variables included in our analysis were chosen based on the theories and mechanisms described above and are the adjusted gross income (*AGI*) of all individuals and households who submitted tax returns (retrieved from the SOI); the number of residents (*Population*); number of residents below the poverty line (*Poor*); *Unemployment* rate in each state as reported by the Bureau of Labor Statistics; the number of adults holding a *BA* (or equivalent) degree or higher as reported by the Census Bureau; *Republican* is used as an indicator variable which equals 1 if the republican presidential candidate won in the state's most recent elections; and the state's number of background checks for firearm purchases (*NICS*), as reported by the FBI National Background Checks system.

Following Depetris-Chauvin (2015), we use the FBI's National Instant Criminal Background Check System (NICS) state annual data to proxy for the prevalence of fire-arms. Federal regulation requires each gun purchaser to go through a background check. It should be noted that a single background check does not equate to a single firearm purchased, as one might purchase several firearms or none. Nevertheless, the NICS data is regularly used by the firearms industry itself and is highly correlated with the national annual gun sales. It should also be noted that the NICS figures represent flows (increases) rather than the stocks of firearms in a state. The underlying assumption is that the purchase level of firearms is highly correlated with the local existing stock of firearms (summary statistics is not presented, but available upon request).

Philanthropy data

The data about philanthropy in the United States was retrieved from the IRS Statistics of Income (SOI) division.[10] The data is based on the annual tax returns submitted by U.S. citizens (at zip level), aggregated at the state level.[11] [12] The data contains, detailed information including, but not limited to, the adjusted gross income of all individuals and households who itemize deductions, the number of itemized returns reporting contributions, and the amount of charitable contributions made to qualified organizations, as reported to the IRS (summary statistics is not presented, but available upon request).[13]

[9] As some of our key covariates are only available at the state level, this is our main level of analysis. However, since both mass shootings and charitable contributions are available at a more granular level, we also employ several drill downs to the county level.
[10] https://www.irs.gov/statistics/soi-tax-stats-individual-income-tax-statistics-zip-code-data-soi.
[11] We followed SOI's recommendations and instructions to aggregate the data to the county level.
[12] As mentioned earlier, our data is available at a more granular level, therefore we employ further analyses at a higher resolution at the county level as well
[13] Form 1040, Schedule A

Empirical Strategy

To study the relationship between mass shooting events and the scope of giving by philanthropists, we use the spatial and temporal variation in philanthropic donations and mass shootings within and across states. We are therefore able to statistically compare victim states (treatment group) over time with other states (control group) as we control for other relevant economic, demographic and political variables, and while controlling for the state's and period's particularities. This allows us to isolate and quantify the local effect of mass shooting on the scope of giving. Our baseline methodological approach relies on a Panel Fixed Effects model. Formally, our main model specification is:

$$D_{i\,t+1} = \alpha Mass\_shoot_{i\,t} + \gamma X_{i\,t} + \mu_i + \tau_t + \epsilon$$

Where:

$D_{i\,t+1}$ is the scope of giving by all philanthropists in states *i* in year *t+1*. $Mass\_shoot_{i\,t}$ is the number of mass shooting events that occurred in state *i* at year *t*, $X_{i\,t}$ is a vector of socio-economic, demographic, and political control variables that vary across space and time (such as adjusted gross income, voting preferences, and the number of firearms). μ_i is a geographical fixed effect unique to states *i*, and τ_t is a temporal fixed effect unique to year *t*. Accordingly, our main coefficient of interest is α. Standard errors are clustered at the state level, as this is the level in which treatment of mass shooting events are applied (for more of this methodological approach see Abadie et al., 2017).

We estimated the effect of mass shootings on philanthropy using a panel dataset of the 49 mainland U.S. states over a decade between 2004 and 2015.[14] Our specifications utilize a panel ordinary least squares (Panel-OLS) framework with both state and year fixed effects, which mitigate many of the concerns for potential omitted variable bias. Once we control for time and state fixed factors, and for all other socio-economic, demographic, and political variables, the assumption for a valid identification is that any remaining within-state variation in mass shootings is likely to be exogenous.

Since our data is aggregated at the state level, it is subject to the "ecological fallacy" risk. An average state contribution does not represent the actual distribution of monetary donations by individuals and households or their characteristics. Although it is impossible to completely eliminate this concern, we alleviate it considerably by running several robustness checks such as analyzing the relationship between mass shootings and charitable giving at the county level, which is a much smaller and relatively more homogeneous aggregate unit than the state unit (see further analysis in section 5.2). It should also be noted that our main focus in this study is on the national and community level responses and not on the effect of mass shootings on any particular individual.

Empirical Results

Main specification

Table 1 reports the results for our baseline model in which we estimate the effect of lagged mass shooting attacks on the scope of charitable contributions by American donors.[15] The first row shows the coefficients for the effect of mass shootings within a state, which is our main variable of interest. Our preferred specification is presented in column eight and includes the full set of explanatory variables. The results presented in the table support our hypothesis that mass shootings positively affect philanthropy, thus an additional mass shooting event is associated with a mean increase of 207.9 million USD in charitable contributions in the affected state in the following year.

[14] 48 mainland states and the District of Columbia

[15] Though the mechanism for reverse causality between contributions and mass shooting fatalities seems unlikely, we lag the explanatory variables both to ascertain the chronological order of the events, in which mass shooting events occurred prior to contributions, and in order to better address endogeneity concerns.

Table 1. Mass shootings and contributions by states

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	Contributions amount (t+1)							
Shootings	326525.1*	264083.3*	240426.2*	187302.2**	197619.0**	209031.0**	209001.6**	207931.4**
	(180364.8)	(133130.0)	(131596.1)	(80013.4)	(76716.7)	(83859.9)	(83885.1)	(84176.4)
AGI		0.0148***	0.0135***	0.0182***	0.0160***	0.0165***	0.0165***	0.0164***
		(0.00221)	(0.00347)	(0.00568)	(0.00506)	(0.00441)	(0.00440)	(0.00443)
Population			159.9	-517.2	-474.0	-287.5	-288.6	-284.6
			(165.8)	(590.6)	(566.8)	(545.3)	(544.8)	(545.4)
#Poor				1497.2*	1649.8*	1976.1**	1985.6**	2001.8**
				(884.5)	(919.6)	(796.9)	(798.0)	(766.5)
Unemployment rate (%)					-124425.7*	-122686.3*	-123043.0*	-116686.4*
					(65565.1)	(64899.9)	(65229.6)	(67123.3)
BA or higher						-805.8**	-803.4**	-807.1**
						(337.6)	(337.8)	(339.5)
NICS							643954.6**	587552.1*
							(309481.9)	(325381.4)
Republican								134994.6
								(124969.2)
Constant	4448304.2***	1923390.6***	1203986.6**	3296336.5†	3955167.3*	3384309.4†	3359196.6†	3234017.1
	(93395.9)	(369980.7)	(524437.3)	(2131714.9)	(2315086.5)	(2266585.9)	(2261658.9)	(2300166.8)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	539	539	539	539	539	539	539	539
R^2	0.255	0.355	0.358	0.385	0.400	0.406	0.407	0.408

Standard errors clustered at the state level in parentheses

†p<0.15 * p<0.1 ** p<0.05 *** p<0.01

To put this result into perspective, 200 million USD amount to 5% of the mean contribution across states. The average yearly number of mass shooting events between 2004-2014 is 7.6, thus the mean total annual effect of mass shootings on charitable contributions is approximately 1.5 billion USD. Our main model results are in line with previous study's findings (Berrebi and Yonah, 2016) that suggest that extreme events, such as terrorist attacks, generated a net increase in philanthropic donations in affected communities.

County level

As a robustness test to our main specification findings, we further analyzed our data on a county level. There are 3,108 counties and county equivalents in the mainland U.S. Counties are significantly smaller units compare to states, and supposedly more homogeneous on several dimensions, such as culture, economic activity, religiosity and political division. Being highly homogenous on one hand, but very different from the state level on the other hand, allows us to better analyze factors for which differences are only indicative at the county level, when estimating the relationship between mass shootings and charitable giving. More importantly, analyzing relatively homogenous units (particularly when compared to states) allow us to alleviate many of the concerns associated with potential ecological fallacy at the state level, and can yield interesting results.

Our analysis at the county level uses zip level tax data from the IRS's SOI, aggregated at the county level. All other covariates are culled at the county level, except the NICS (firearm background checks) which remains at the state level (since this information is not available at a county level and cannot possibly be omitted). Counties that suffered from mass shootings are used as a treatment group that allows us to analyze the variation in philanthropy across time, in comparison with other counties (control group) while controlling for all other relevant economic, demographic and political variables. This empirical approach allows us to estimate the local effect of mass shooting on the scope of giving. Our methodological approach relies on a Panel Fixed Effects model. Formally, our model specification is:

$$D_{i\,t+1} = \alpha Mass\_shoot_{i\,t} + \beta \sum Mass\_shoot_{j \neq i\,t \mid r \leq 3000} + \gamma X_{i\,t} + \mu_i + \tau_t + \epsilon$$

Where:

$D_{i\,t+1}$ is the scope of giving by all philanthropists in county *i* in year *t+1*. $Mass\_shoot_{i\,t}$ is the number of mass shooting events that occurred in county *i* at year *t*. $Mass\_shoot_{j \neq i\,t}$ is the number of mass shootings in counties bordering or nearing county *i* within a radius of up to 3000 km.[16] $X_{i\,t}$ is a vector of socio-economic, demographic, and political control variables in county *i* at year *t*, that vary across space and time (such as adjusted gross income, voting preferences, or number of firearms). μ_i is a geographical fixed effect unique to state *i*, and τ_t is a year fixed effect. Accordingly, our main coefficients of interest are α and β. While α remains the coefficient for the direct effect of mass shooting on the local affected community, the β coefficient allows us to test the effect of mass shootings that occur outside the local community, on charitable giving. The segment of the equation $\sum Mass\_shoot_{j \neq i\,t \mid r \leq 3000}$ allows us to test the effect of mass shootings on charitable giving in counties where mass shootings did not occur, thus, isolating this effect for counties where the mechanisms of blame and conservation of resources are less likely to be in effect due to the distance from the event.

Ideally, we would have estimated a model in which β captures the effect of all mass shootings which occur at year *t* outside county *i*, yet this is technically impossible as it would be collinear with the time fixed effects. Therefore, limiting the radius and aggregating events to a distance of 3000 KM from the affected county, solves the collinearity problem while keeping the basic approach that allows us to estimate the effect of mass shootings on philanthropy in counties outside of the victim county. More than 95% of counties are located at a distance of up to 3000 KM from each other, however, our results are robust to other ranges of radius distances and are available upon request. Standard errors are clustered at the county level, as this is the level in which treatment of mass shooting events are applied (Abadie et al., 2017).

Row 1 in Table 2 presents the coefficient for *Shootings* which is the number of mass shootings that occurred in the county. Row 2 shows the coefficient for *Shootings-Out* which is the number of mass shootings that occurred

[16] The results are robust to other ranges of radius distances and are available upon request.

within a distance of 3000 KM from the affected county. All models include state and year fixed effects.[17] Interestingly, when measuring the effect of mass shootings on charitable giving by the geographical distance of these events, we find a negative and statistically significant effect on the amount of dollars donated within the county (row 1 of Table 2). However, the coefficient for mass shootings in outside counties (row 2) is positive and statistically significant and is consistent with our main specifications model (at the state level). These findings suggest that the local community reacts differently to a mass shooting when compared to the surrounding communities, by reducing charitable contributions. However, the total average effect is still positive due to the positive response by communities not directly affected, multiplied by the greater number of surrounding communities.

Table 2. Mass shootings and contributions by counties

	(1)	(2)
Dependent variable:	Contributions amount (t+1)	
Shootings	-26038.8**	-25275.3**
	(12541.6)	(12517.5)
Shootings-Out		738.1***
		(216.2)
AGI	0.0168***	0.0169***
	(0.00309)	(0.00310)
Population	182.9†	179.5
	(126.7)	(127.4)
# Poor	-237.2	-226.9
	(264.7)	(266.8)
Unemployment rate (%)	-411.2*	-343.4†
	(213.9)	(221.3)
BA or higher	742.9***	756.5***
	(170.2)	(171.3)
NICS	160.1***	165.5***
	(23.95)	(24.56)
Republican	1460.4**	1420.6**
	(624.1)	(621.4)
Constant	9230.0*	7490.4†
	(4841.0)	(4904.9)
Year FE	Yes	Yes
State FE	Yes	Yes
Observations	33992	33992
R^2	0.0431	0.0432

Shootings = mass shootings in county;
Shootings-Out = total mass shootings in counties up to a distance of 3000 km donor's locality; Standard errors clustered at the county level in parentheses;
† p<0.15 * p<0.1 ** p<0.05 *** p<0.01

[17] Due to insufficient variation in mass shootings at the county level in our data, we are unable to include county fixed effects. In order to control for geographic variation, we include state fixed effects. In addition, we cluster our standard errors at the county level as recommended by Abadie et al. (2017).

Theory suggests that when responsibility for the source of an extreme event can be tied to factors from within the affected community, empathy tends to diminish and a decrease of prosocial behavior becomes plausible. Bieneck and Krahé (2011), in research on rape victims, showed that victims are blamed more, the closer a prior relationship between the victims and the perpetrator. It is possible that traumatic events are more tangible to the local community within a county, since as mentioned before, counties are relatively smaller units and homogenous, thus the tendency toward blame within the affected community is more probable. Kogut (2011) summarized this theory: "…when the victim is perceived as responsible for his/her plight, identifiability decreases helping…attribution of blame mediates the identifiability effect such that an increase in blame decreases helping an identifiable victim". The COR model suggests that those who were exposed to fatal traumatic events are also more likely to feel vulnerable and threatened by the potential loss of emotional and material resources. According to the combination of these theories, the households in the affected county are expected to be less inclined to donate. In addition, according to the Diffusion of Responsibility theory, it is possible that residents of the affected county diffuse responsibility assuming that others will provide help, while those who live in distant counties would not necessarily be subject to this effect, and therefore increase their philanthropic behavior.

Another interesting result is related to the political variable. The predicted coefficient of *Republican* is positive and statistically significant indicating that counties where the majority of voters are Republican leaning are found to be more generous. There are several possible explanations for these results which have been discussed in the literature. Firstly, differences in giving patterns between Republicans and Democrats may be observed due to differences in income and wealth. Since we control for income, this is unlikely to be the driving mechanism in our analysis. Secondly, such differences may emerge due to differences in policy agendas. Republicans and Democrats both support prosocial behavior such as helping the poor (Campbell and Sances, 2013), yet Republicans are more likely to favor private charities than governmental intervention (Brooks, 2006). Thirdly, these results may be driven by differences in religiosity levels, with Republicans considered to be more religious than democrats. As some religious affiliations require or encourage charitable giving to churches and other religious organizations, Republicans may be found to be more generous than Democrats. In a recent study, this mechanism was found to be the most salient (Margolis and Sances, 2017). Unfortunately, our data does not include information about religiosity, and thus we cannot test this mechanism.

Table 3 presents our county level analysis which we extended to focus on politics. As mentioned earlier, there exists a complex relationship between firearms, mass shootings, politics and charitable contributions. In order to investigate this relationship, we use county level voting data for both the presidential and the gubernatorial elections,[18] and define the following indicator variables (models 1-2 in Table 3): *Republican-President* and *Republican-Governor*, are each equal to 1, if the majority of the voters in the county voted for the Republican nominee in the most recent presidential and gubernatorial elections, respectively.

[18] As Washington DC is not a state, it has no governor. Instead, we use voting data for the office of mayor of the District of Columbia, as its mayor is considered equivalent in many aspects to a state governor.

Table 3. Mass shootings, Contributions and Politics – Counties

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Contributions amount (t+1)					
Shootings	-25275.3**	-25179.0**	-25209.7**	-37219.5**	-59560.5***	-38506.0**
	(12517.5)	ß(12484.1)	(12518.4)	(18436.0)	(17702.0)	(16078.0)
Shootings-Out	738.1***	736.5***	743.0***	754.0***	730.2***	750.5***
	(216.2)	(215.6)	(216.7)	(220.2)	(215.0)	(218.5)
Republican President	1420.6**			1363.3**		
	(621.4)			(608.6)		
Republican Governor		2086.4*			1915.7*	
		(1143.5)			(1122.5)	
Republican President & Governor			1027.9**			981.4*
			(514.6)			(512.8)
Shootings × Republican President				27288.5		
				(22648.9)		
Shootings × Republican Governor					70637.3***	
					(18534.4)	
Shootings × Republican President & Governor						40897.7**
						(17245.0)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	33992	33992	33992	33992	33992	33992
R^2	0.0432	0.0428	0.0433	0.0444	0.0431	0.0433

Shootings = mass shootings in county;
Shootings-Out = total mass shootings in counties up to a distance of 3000 km from county;
Republican President = 1 if county voted for a Republican presidential candidate in most recent elections;
Republican Governor = 1 if county voted for a Republican gubernatorial candidate in most recent elections;
Republican Governor & President = 1 if county voted for both a Republican gubernatorial and presidential candidate in most recent elections;
Standard errors clustered at the county level in parentheses;
* p<0.1 ** p<0.05 *** p<0.01

Presidential elections occurred in all counties and states at the same time, while gubernatorial elections occurred at different times across states.[19] This variation across states and time, and the differing factors influencing political affiliation at the state and presidential level allow us to estimate these variables separately.[20] Finally, we define *Republican President & Governor*, which is equal to 1 if the majority of voters in the county voted for both a presidential and gubernatorial Republican candidate in the most recent respective elections, and 0 otherwise (model 3). This variable indicates strong Republican leanings of the county's residents at both the state and federal level.

The effect of mass shootings on charitable contributions is virtually unchanged from our baseline model. The political indicators across all models are positive and statistically significant. To put this in perspective, Republican affiliated counties contributed 1.02 to 2.08 million dollars more on average than Democratic affiliated counties (depending on the chosen model).

In columns 4-6 we present interaction terms between political affiliation and mass shootings which occurred within the county. This allows us to test for differing effects of mass shootings on charitable contributions conditional upon the political affiliation of the majority of the counties' residents. The interaction terms are positive in all models and statistically significant in columns 5 and 6. The combined magnitude of our variables of interest (mass shootings, political indicators and interaction terms) suggests a net positive effect in Republican affiliated counties. Focusing on model 5 for example, the combined net effect of a mass shooting occurring in a county which voted for the Republican gubernatorial candidate is an increase of 12.9 million USD in charitable contributions, while in a county which voted for the Democratic gubernatorial candidate is a decrease of 59.6 million USD in charitable contributions. It is also possible that Republican leaning donors contribute more as they do not attribute mass shooting events to the proliferation of firearms in the local community, and therefore the victims and the affected communities are not to be blamed and held responsible for the tragedy.

Crime

Mass shootings are a subset of the most heinous of crimes - murders. In the background section of this paper we have argued that although mass shootings are murders, their effect on the populace in general, and on charitable and prosocial behavior in particular, is most likely unique and different from other types of murders due to the impact of large and extensive media attention following mass shooting events. The literature investigating the relationship between crime and monetary donations is scarce and no evidence was found for such a relationship (Britto et al., 2011). Table 4 presents various models which test the sensitivity of our main specification results to other types of crimes, hence we include the yearly number of various types of crimes reported in each state as control variables. The information about the number and type of crime is collected and reported by the FBI at the state level in its annual publication - Uniform Crime Reporting Program (UCR).

In all our models, the coefficient of mass shootings remains positive and statistically significant even after accounting for the corresponding levels of criminal activities. The estimated magnitude of the effect of mass shootings on charitable contributions is positive and qualitatively similar to the one reported in the first column of the table, where we do not control for the type of crime. This result does not depend on the particular type of crime analyzed, as the result holds true for crime altogether as well as violent and property crimes separately.[21]

One might argue that mass shootings are similar or correlate with other types of crimes. If this was the case, then the estimated coefficients of mass shooting could have been biased as they would include the effect of other types of crime. Controlling for different criminal behavior allows us to isolate the effect of mass shootings on charitable contributions from the effect of other types of crime and therefore to refute this concern. For example,

[19] For example, in our sample period, Texas had four gubernatorial elections: 2002, 2006, 2010, 2014. New Hampshire had seven gubernatorial elections: 2002, 2004, 2006, 2008, 2010, 2012, 2014.

[20] For example, while California voted for Democratic candidates in all presidential elections in our sample period, both Republican and Democratic governors held office during this time.

[21] Violent crimes include murder, rape, robbery and aggravated assault. Property crime includes burglary, larceny and motor vehicle thefts.

Table 4. Accounting for other criminal behavior

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:				Contributions amount (t+1)				
Crime type		Aggregated			Violent Crimes			
Crime variable	None	All crimes	Violent crimes	Property crimes	Murders	Rapes	Aggravated assaults	Robberies
Shootings	207931.4**	195474.2**	208254.2**	194451.8**	210573.5**	217149.4**	214311.7**	223504.4**
	(84176.4)	(77761.8)	(90296.3)	(76259.7)	(91355.0)	(96419.1)	(101457.4)	(97562.6)
Crime		5.471	36.88	5.897	1084.1	219.8†	92.34†	-147.8
		(5.491)	(34.02)	(5.964)	(2280.2)	(141.5)	(60.58)	(107.1)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	539	539	539	539	539	539	539	539
R^2	0.408	0.431	0.423	0.430	0.413	0.421	0.462	0.443

Standard errors clustered at the state level in parentheses

† p<0.15 * p<0.1 ** p<0.05 *** p<0.01

the inclusion of the total number of violent crimes in the state has a negligible effect on the estimated coefficient of mass shootings, as the difference is statistically insignificant (*p=0.97*)[22] and is not contributing to the overall effect on philanthropic donations separately (the difference between the coefficient of mass shootings without the inclusion of crime and the inclusion of all and property crimes is also statistically insignificant with *p=0.47* for both). These results emphasize the salient distinction between mass shootings and other types of crimes, and strongly support our claim that mass shootings present a unique and distinct phenomenon.

After we have established the distinction between mass shootings and other forms of criminal behavior and have shown mass shooting's unique relationship to prosocial behavior, we further investigate the relationship between mass shootings and antisocial behavior. If one was to view charitable contributions and criminal activity as extreme ends on the spectrum of social behavior, the first being prosocial and the second antisocial, then a positive effect of mass shootings on prosocial behavior may indicate a negative effect of mass shootings on antisocial behavior. In Table 5 we test this conjecture, whereby we use state's annual crime rates (per 1,000 residents) as dependent variables in the year following mass shootings.[23]

A common perception about social behavior in disaster events is that individuals exploit the chaotic situation and the survivors' vulnerability and become hostile and aggressive towards one another. It is suggested that under extreme and traumatic circumstances, antisocial behavior such as looting, violent crime and exploitive behavior increase. However, studies about disasters in the United States refute this image, arguing that in emergency periods this behavior is found to be rare, and in the aftermath of disasters altruism and prosocial behavior more often prevail (Heide, 2004; Rodríguez et al., 2006; Scanlon et al., 2014).

Our results suggest a null effect of mass shootings on crime rates, regardless of the type of crime. A possible explanation for this result could be that mass shootings increase charitable contributions through the mechanisms we have discussed earlier in our theoretical and conceptual framework – mainly identification with the victims and TMT. These mechanisms appear to be unrelated to antisocial behavioral response.

Table 5. Mass shootings and antisocial behavior

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	Contributions amount (t+1)	Crime rate (t+1)	Violent crime rate (t+1)	Property crime rate (t+1)	Murder rate (t+1)	Rape rate (t+1)	Aggravated Assaults rate (t+1)	Robbery rate (t+1)
Shootings	207931.4**	0.297	0.0467	0.250	-0.00249	0.00553	0.0434	0.000219
	(84176.4)	(0.261)	(0.0444)	(0.241)	(0.00152)	(0.00713)	(0.0377)	(0.0230)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	539	539	539	539	539	539	539	539
R^2	0.408	0.574	0.380	0.570	0.142	0.380	0.254	0.507

Standard errors clustered at the state level in parentheses.
+ p<0.15 * p<0.1 ** p<0.05 *** p<0.01

Mass shooting types

This section aims to answer the question of how different types of mass shooting events affect prosocial behavior. Since we find blame to be a key factor in determining behavioral response by individuals to mass shootings, it is possible that the context of the event (i.e., the type) might evoke different perceptions of blame. Accordingly, we would expect blame to diminish in situations where the victims' attendance could not have been avoided (for example in schools), versus situations where victims could be perceived as partially responsible for

[22] The difference between the coefficient of mass shootings without the inclusion of crime and the inclusion of all and property crimes is also statistically insignificant with *p=0.47* for both.
[23] Contemporaneous models were also estimated. The results are virtually identical and are available upon request from the authors.

the tragic outcome (such as in the case of neighbors' disputes), when the blame mechanism may come into effect and overcome feelings of empathy.

In Table 6, we provide further analysis, using different types of mass shootings, stemming from the characteristics of the shooters or the location in which the shooting occurred. Column 1 presents our main model, replicating column 8 of Table 1. Column 2 presents the estimated coefficient for events which occurred in schools. The coefficient is positive, statistically significant and higher than the main model predicted coefficient, indicating that donors are more sensitive to mass shootings in public locations and specifically to events were child victims are involved. In addition, schools are an example of a location where attendance is mandatory. Therefore, victims cannot avoid the tragic event, as opposed to other locations which are attended by choice (e.g., malls, theatres, etc.). Both the involvement of children and the nature of the location are associated with heightened empathy and a reduction of the blame mechanism, resulting in an increase in the scope of giving.

Table 6. Main variable types

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	Contributions amount (t+1)				
All shootings	207931.4**				
	(84176.4)				
School shootings		215527.6**			
		(93547.0)			
Adult shooter			237381.6**		
			(96338.4)		
Shooter fired from workplace				268921.8***	
				(56728.7)	
Shooting due to social dispute					-231350.9**
					(111199.8)
Control Variables	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes
Observations	539	539	539	539	539
R^2	0.408	0.400	0.410	0.402	0.399

Standard errors clustered at the state level in parentheses.
* p<0.1 ** p<0.05 *** p<0.01

Column 3 shows the estimated coefficient for mass shootings performed by adult shooters (18 years or older). The coefficient is positive, statistically significant and higher than the main model coefficient. It seems that unlike in the case of mass shootings performed by juveniles, which might evoke some blame towards the parents or the educational system, here, it is less likely to find someone specifically on which to put the blame, other than the society as a whole of which donors are a part. Thus, in such cases, heightened empathy tends to overcome blame and increases philanthropic behavior.

Column 4 tests the effect of mass shootings on charitable giving in the case where a shooter was fired from his or her workplace. This type of event provides an additional dimension, as presumably there is a clear cause for the event. It can possibly be perceived as an act of revenge by the shooter against his or her former employers, which is unjustly performed against uninvolved victims. The salient lack of a direct link between the perpetrator and the victims, emphasizes the sense that this type of event could happen to anyone who happened to be in the wrong place at the wrong time. An increase in charitable giving in this case is probably not only due to empathy with the victims, but an act of social solidarity as well.

The last column of Table 6 presents the estimated coefficient for mass shootings which occurred due to social disputes (e.g., neighbors' conflict). As expected, the coefficient estimate shows a decline in contributions following such events. The theories of blame provide once again a possible explanation for the negative result of this particular type of event. These events tend to be perceived by the public as a localized private dispute between two parties which translates into blame, attributed directly to the parties involved. In such cases, the

sense of blame offsets and overcomes the empathy toward the victims and reduces the willingness to contribute.

Philanthropy variations

Since theory suggests that there might be substitution between different types of philanthropic and prosocial behaviors, Table 7 presents eight different variations for measuring our dependent variable - philanthropy. Column 1 presents our main specification model (similar to Column 8 of Table 1).

Table 7. Dependent variable variations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	Contributions amount (t+1)	Contributions amount (t)	Log contributions amount (t+1)	#Returns reporting contributions (t+1)	Contributions amount per capita (t+1)	Generosity (t+1)	#Volunteers (t+1)	#Volunteer hours (t+1)
Shootings	207931.4**	92743.07 **	0.0135*	8499.8*	11.04***	0.0341†	-91.67*	-10718.7
	(84176.4)	(36808.75)	(0.00725)	(4254.3)	(3.274)	(0.0223)	(46.45)	(9420.4)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	539	588	539	539	539	539	539	539
R^2	0.408	0.720	0.074	0.623	0.351	0.078	0.468	0.248

Model 5 and has all control variables (excluding Republican) in state-averages and is weighted by state population.
Model 6 dependent variable is contributions amount divided by AGI.
Model 7 dependent variable is number of volunteers divided by contributions amount.
Model 8 dependent variable is number of volunteering hours divided by contributions amount.
Standard errors clustered at the state level in parentheses.
† p<0.15 * p<0.1 ** p<0.05 *** p<0.01

Column 2 tests the contemporaneous relationship between mass shootings and giving (in the same year) as a robustness check to our preferred model results (where the explanatory variables are lagged). The estimated coefficient remains positive, statistically significant and is about half in magnitude compared to that of our main model coefficient. Under the assumption that donations and mass shootings are distributed on average equally throughout the year, this result is consistent with our main model results, showing a positive and statistically significant relationship between mass shootings and charitable contributions.

In column 3 we test whether the effect of mass shootings on contributions could be non-linear, by using the natural logarithm of charitable contributions as the dependent variable. This kind of model assumes that a mass shooting event would have a greater effect on large donors and would therefore be proportional to the state's contributed amount (as opposed to a fixed incremental amount). The estimated coefficient indicates that an additional mass shooting event is associated with a 1.35% increase in charitable contributions. This result is in line and emphasizes our main finding of a statistically positive effect of mass shootings on charitable giving.

Allegedly, we could have assumed that the increase in donations is due to larger amounts contributed by existing donors. However, it is possible that such traumatic events drive individuals who had not previously engaged in philanthropy to join the giving circles. The SOI data includes, in addition to the annual total monetary contribution amounts in each state, the number of individuals and households who reported charitable contributions. This is a measure of the number of donor households in each state. The positive and statistically significant coefficient in Column 4 indicates that each additional mass shooting event relates to an increase of 8,500 new donor households on average. In other words, mass shootings not only increase the scope of giving by existing donors, but also increase the number of new individuals and households engaging in philanthropic activity.

In column 5 the dependent variable and all control variables are in state's means and the regressions are weighted by each state's population. We show that even when data is normalized by the states' total population, mass shootings are associated with a statistically significant increase in charitable giving. The estimated coefficient indicates that a mass shooting is associated with an $11 increase in contributions per capita.[24] For example, an additional mass shooting in California translates on average to a 429 million USD increase in charitable contributions in that state.

In column 6 we use the amount contributed and the adjusted gross income to create a new variable of contributions relative to income which we define as "state generosity", as is customary in the philanthropic literature. Although our data is not detailed enough to investigate the generosity of individual philanthropists since it lacks crucial information about their wealth, annual income and charitable giving, it provides us a proxy measurement at the state level. The estimated coefficient is positive and marginally significant, indicating that on average mass shooting relates not only to an increase in charitable giving, but also to an increase in contributions as a percentage of the reported income.

In columns 7 and 8 we use the total number of volunteers reported in each state (by year) and volunteer hours respectively, retrieved from "Volunteering in America".[25] In these models we divided these measures by the total contribution amount per capita, in order to construct new variables indicating the number of volunteers and volunteer hours per dollar contributed, so as to model possible substitution effects between monetary and non-monetary contributions. The estimated coefficients indicate that indeed, mass shootings are associated with a relative decrease in the number of volunteers compared to the amount of charitable contributions per capita. This result is in line with Freeman's (1997) study, finding evidence for labor supply substitution effect in hours volunteered relative to charitable donations.

A possible explanation for this result could be that individuals might prefer to contribute money rather than time due to the geographical distance constraint, or due to the lack of professional qualifications required for assistance when mass shootings are involved. Other studies that investigated the trade-off between giving time and money are

[24] One should be careful interpreting this finding as a relationship between mass shootings and charitable giving on individual level, since the data is aggregated on the state level and is subject to "ecological Fallacy" risk.

[25] Unlike the monetary data which was retrieved from administrative datasets, volunteering data is based on surveys and questionnaires and therefore may be subject to a survey bias.

scarce and yielded mixed results (Bekkers, 2001; Freeman, 1997; Lee et al., 1999; Reed et al., 2016). A common belief is that volunteering has a significant role in the development of a healthy society. Indeed, in many cases volunteer activity is crucial (for example collecting and delivering food and clothes to the needy), yet in the case of mass shootings, the need for non-professional volunteers is questionable. However, it is possible that raising monetary contributions to provide professional treatment and rehabilitation services (e.g., psychologists and social worker) could better benefit the victims and the affected community.

In this section, we have provided further evidence to our main model results that mass shootings increase monetary contribution, by testing the relationship between mass shootings and philanthropy over several different variations of the dependent variable. In addition, we provide an indication of an increase in the number of individuals engaging in philanthropic activity following these traumatic events.

Robustness and Falsifications

As presented earlier, our main model results show that each additional mass shooting event is associated with an increase in charitable giving. In order to further strengthen our results and to verify the sensitivity of our findings, we perform a series of robustness and placebo tests. In our robustness analyses, we include alternate measures for donations as well as for measuring the extent of the mass shooting events, and we test our results' robustness to alternate specifications, econometric models, including non-linear models and to alternative data source of mass shootings. Additionally, Placebo falsification tests were used to address endogeneity concerns and reject the possibility of reverse causality.[26] All the results are highly robust and support our main model's findings. The results are not presented and available upon request.

Conclusions and Discussion

This study has assessed empirically the relationship between mass shootings and charitable giving by individuals and households in the United States over a period of 12 years between 2004-2015. Our main results show that the effect of mass shootings on charitable giving in the local victimized community is negative and statistically significant, while it is found to be positive and statistically significant in surrounding communities, leading to an average total positive effect (at the state level). In other words, the locally affected community reacts differently to mass shootings when compared to the surrounding communities' prosocial behavior, by reducing charitable contributions. A plausible explanation for this finding could be elucidated by the blame theory which suggests that in the affected communities, victim blaming tends to overcome prosocial behavior (as might have been predicted by TMT and the identifiable victim effect theory), and accordingly diminishes empathy towards the victims, which translates to a decrease in charitable giving within the victimized communities. It is also possible that residents of the affected community diffuse responsibility assuming that others will provide help, and therefore would be less likely to donate. Our findings are robust across a multitude of model specifications and different measures of both mass shootings and philanthropy. We provide further evidence to the blame mechanism as we show that when mass shooting events occurred in instances that could have been avoided such as the cases of neighbor disputes, prosocial behavior decreases, as opposed to events that occurred in locations where victims' attendance was mandatory, such as schools.

Communities characterized by a higher proportion of Republican voters and those with higher gun ownership are found to be more generous, contributing on average larger amounts following mass shooting events. A possible explanation for this finding might be due to political divide on the subject of the second amendment (i.e., gun control and gun ownership) and its' relation to the public discourse regarding mass shootings. The underlying mechanism for this could be that Republican leaning donors do not attribute mass shooting events to the proliferation of firearms in the local community, and therefore the victims and the affected communities are not to be blamed and held responsible for the tragedy.

Additionally, we show that mass shooting is a distinct phenomenon unlike any other type of crime, and its effect on prosocial behavior is unique compared to other types of criminal activities, including violent offences such as murder. The effect of mass shootings on philanthropy remains positive and statistically significant, even after accounting for different types of crime. Testing for various criminal activities, we find crime to be unrelated to

[26] The inclusion of other major events into our model, such as natural disasters, doesn't alter our results, and the coefficients for mass shootings remain qualitatively similar.

charitable giving. The distinct effect of mass shootings as opposed to other types of crime is possibly driven by the large and extensive media attention following such events. We further show that mass shootings appear to be unrelated to other antisocial behavioral activity as our results suggest a null effect of mass shootings on crime rates, regardless of the type of crime.

In the aftermath of tragic events, societies have developed mechanisms for aid and relief for victims and the affected community. There is a long-standing debate whether such activity should be under the state's responsibility similar to other public goods or provided by non-governmental organizations which rely on the generosity of individuals. In some cases, governments deliberately shift some of their social responsibilities to civil organizations, and in other cases such organizations fill the vacuum of inadequate services that should have been provided by the government. The results of this study show that in the unique case of mass shooting, unlike any other type of crime, social responsibility and solidarity come into effect and on average willingness to help increases, both in the amount donated and in the number of individuals engaging in philanthropic activity, especially when blame is not attributed to the victims or to the affected community. However, this prosocial behavior is implemented through monetary contributions and does not translate to volunteer activity.

The decrease in philanthropic behavior within the locally affected community could be a warning of broader social implications which should be a concern for professionals and policy makers. These include the damage to the affected community's social fabric, polarization and decline of residents' trust in their neighbors, decrease in solidarity, social cohesion and the willingness of one to intervene for the common good. A possible policy intervention should be not only focused on the individual victims and their families but extended to the local and surrounding communities as well. Tax incentives and monetary matching programs can be useful tools to encourage contributions in both local and external communities. Treating mass shootings in a similar fashion to "disaster event" will allow the allocation of resources for coping with traumatic results in the aftermath of these tragedies. These measures might also be helpful in encouraging relief organizations (as well as other non-profit organizations) to increase their involvement in the affected areas, and to specialize in this specific field.

References

Abadie, A., Athey, S., Imbens, G. W., & Wooldridge, J. (2017). *When Should You Adjust Standard Errors for Clustering?* https://doi.org/10.3386/w24003

Abrams, B. A., & Schmitz, M. D. (1984). The Crowding-Out Effect Of Governmental Transfers On Private Charitable Contributions: Cross-Section Evidence. *National Tax Journal*, *37*, 563–568. https://doi.org/10.2307/41791986

Alicke, M. (2008). Blaming Badly. *Journal of Cognition and Culture*, *8*(1), 179–186. https://doi.org/10.1163/156770908X289279

Appelbaum, L. D. (2002). Who deserves help? Students' opinions about the deservingness of different groups living in Germany to receive aid. *Social Justice Research*, *15*(3), 201–225. https://doi.org/10.1023/A:1021025528408

Becker, E. (1971). *The Birth and Death of Meaning: An Interdisciplinary Perspective on the Problem of Man*. Free Press.

Bekkers, R. (2001). *Giving Time and/or Money : Trade-off or spill-over?* 1–19. Retrieved from https://www.rug.nl/research/portal/files/3053611/BekkersR-Giving-2002.pdf

Berrebi, C., & Yonah, H. (2016). Terrorism and philanthropy: the effect of terror attacks on the scope of giving by individuals and households. *Public Choice*, *169*(3–4), 171–194. https://doi.org/10.1007/s11127-016-0375-y

Bielefeld, W., Rooney, P. M., & Steinberg, K. S. (2005). How Do Need, Capacity, Geography, and Politics Influence Giving? *Gifts of Time and Money: The Role of Charity in America's Communities*, 127–158.

Bieneck, S., & Krahé, B. (2011). Blaming the victim and exonerating the perpetrator in cases of rape and robbery: Is there a double standard? *Journal of Interpersonal Violence*, *26*(9), 1785–1797. https://doi.org/10.1177/0886260510372945

Blair, C. A., Thompson, L. F., & Wuensch, K. L. (2005). Electronic helping behavior: The virtual presence of others makes a difference. *Basic and Applied Social Psychology*. https://doi.org/10.1207/s15324834basp2702_8

Blair, J. P., & Schweit, K. W. (2014). *A Study of Active Shooter Incidents, 2000 - 2013*.

Bonanno, G. A., Galea, S., Bucciarelli, A., & Vlahov, D. (2007). What predicts psychological resilience after disaster? The role of demographics, resources, and life stress. *Journal of Consulting and Clinical Psychology*, *75*(5), 671–682. https://doi.org/10.1037/0022-006X.75.5.671

Britto, S., van Slyke, D. M., & Francis, T. I. (2011). The role of fear of crime in donating and volunteering: A gendered analysis. *Criminal Justice Review*. https://doi.org/10.1177/0734016811427356

Brooks, A. C. (2006). *Who really cares : the surprising truth about compassionate conservatism*. Basic Books.

Campbell, A. L., & Sances, M. W. (2013). Constituencies and Public Opinion. In D. Béland, K. J. Morgan, & C. Howard (Eds.), *Oxford Handbook of U.S. Social Policy* (Vol. 1). https://doi.org/10.1093/oxfordhb/9780199838509.013.015

Collins, R. (2004). Rituals of Solidarity and Security in the Wake of Terrorist Attack. *Sociological Theory*, *22*(1). https://doi.org/10.1111/j.1467-9558.2004.00204.x

Darley, J. M., & Latne, B. (1968). Bystander Intervention in Emergencies: Diffusion of Responsibility. *Journal of Personality and Social Psychology*, *8*(4), 377–383. https://doi.org/10.1037/h0025589

Depetris-Chauvin, E. (2015). Fear of Obama: An empirical study of the demand for guns and the U.S. 2008 presidential election. *Journal of Public Economics*, *130*, 66–79. https://doi.org/10.1016/j.jpubeco.2015.04.008

Duwe, G. (2005). A Circle of Distortion : The Social Construction of Mass Murder in the United States. *Western Criminology Review*, *6*(1), 59–78.

Eyre, A. (2007). Remembering: Community commemoration after disaster. *Handbook of Disaster Research*, 441–455. https://doi.org/10.1007/978-0-387-32353-4_26

Freeman, R. B. (1997). Working for Nothing: The Supply of Volunteer Labor. *Journal of Labor Economics*, *15*(1), S140–S166. https://doi.org/10.1086/209859

Furnham, A. (1995). The just world, charitable giving and attitudes to disability. *Personality and Individual Differences*, *19*(4), 577–583. https://doi.org/10.1016/0191-8869(95)00090-S

Garcia, S. M., Weaver, K., Moskowitz, G. B., & Darley, J. M. (2002). Crowded minds: The implicit bystander effect. *Journal of Personality and Social Psychology*. https://doi.org/10.1037/0022-3514.83.4.843

Granger, C. W. J. (1969). Investigating Causal Relations by Econometric Models and Cross-spectral Methods. *Econometrica*. https://doi.org/10.2307/1912791

Greenberg, J., Pyszczynski, T., & Solomon, S. (1986). The causes and consiquences of a need for self-esteem: A terror management theory. In *Public Self and Private Self* (pp. 189–212).

Hawdon, J., Ph, D., Ryan, J., & Ph, D. (2012). *SOCIAL SOLIDARITY AND WELLBEING AFTER CRITICAL INCIDENTS : THREE CASES OF MASS SHOOTINGS*. 2–25.

Hawdon, J., Ryan, J., & Agnich, L. (2010). Crime as a source of solidarity: A research note testing Durkheim's assertion. *Deviant Behavior*, *31*(8), 679–703. https://doi.org/10.1080/01639620903415901

Heide, E. A. D. (2004). Common Misconceptions about disasters: Panic, the "Disaster Syndrome," and Looting. In *The*

First 72 Hours: A Community Approach to Disaster Preparedness.
Heider, F. (1958). *The psychology of interpersonal relations.* https://doi.org/10.1037/10628-000
Hobfoll, S. E. (1989). Conservation of resources. A new attempt at conceptualizing stress. *The American Psychologist*, *44*(3), 513–524. https://doi.org/10.1037/0003-066X.44.3.513
Hobfoll, S. E. (2001). The Influence of Culture, Community, and the Nested-Self in the Stress Process: Advancing Conservation of Resources Theory. *Applied Psychology: An International Review*, *50*(3), 337–421. https://doi.org/10.1111/1464-0597.00062
Hobfoll, S. E. (2011). Conservation of resource caravans and engaged settings. *Journal of Occupational and Organizational Psychology*, *84*(1), 116–122. https://doi.org/10.1111/j.2044-8325.2010.02016.x
Holman, E. A., Garfin, D. R., & Silver, R. C. (2014). Media's role in broadcasting acute stress following the Boston Marathon bombings. *Proceedings of the National Academy of Sciences*, *111*(1), 93–98. https://doi.org/10.1073/pnas.1316265110
Hough, R. L., Vega, W., Valle, R., Kolody, B., Griswald del Castillo, R., & Tarke, H. (1990). Mental health consequences of the San Ysidro McDonald's massacre: A community study. *Journal of Traumatic Stress*, *3*(1), 71–92. https://doi.org/10.1007/BF00975136
Hughes, M., Brymer, M., Chiu, W. T., Fairbank, J. A., Jones, R. T., Pynoos, R. S., … Kessler, R. C. (2011). Posttraumatic stress among students after the shootings at Virginia Tech. *Psychological Trauma: Theory, Research, Practice, and Policy*, *3*(4), 403–411. https://doi.org/10.1037/a0024565
Jenni, K., & Loewenstein, G. (1997). Explaining the "Identifiable Victim Effect." *Journal of Risk and Uncertainty*, *14*, 235–257.
Jonas, E., Schimel, J., Greenberg, J., & Pyszczynski, T. (2002). The Scrooge Effect: Evidence that Mortality Salience Increases Prosocial Attitudes and Behavior. *Personality and Social Psychology Bulletin*, *28*(10), 1342–1353. https://doi.org/10.1177/014616702236834
Kogut, T. (2011). Someone to blame: When identifying a victim decreases helping. *Journal of Experimental Social Psychology*. https://doi.org/10.1016/j.jesp.2011.02.011
Lakoff, G. (2010). *Moral politics: How liberals and conservatives think*. University of Chicago Press.
Langman, P. (2009). Rampage school shooters: A typology. *Aggression and Violent Behavior*, *14*(1), 79–86. https://doi.org/10.1016/J.AVB.2008.10.003
Lankford, A. (2016a). Are America's public mass shooters unique? A comparative analysis of offenders in the United States and other countries. *International Journal of Comparative and Applied Criminal Justice*, *40*(2), 171–183. https://doi.org/10.1080/01924036.2015.1105144
Lankford, A. (2016b). Public Mass Shooters and Firearms: A Cross-National Study of 171 Countries. *Violence and Victims*, *31*(2), 187–199. https://doi.org/10.1891/0886-6708.VV-D-15-00093
Lee, L., Piliavin, J. A., & Call, V. R. A. (1999). Giving Time, Money, and Blood: Similarities and Differences. *Social Psychology*, *62*(3), 276–290. Retrieved from http://www.jstor.org/stable/2695864
Lerner, M. J., & Simmons, C. H. (1966). Observer's reaction to the "innocent victim": Compassion or rejection? *Journal of Personality and Social Psychology*, *4*(2), 203–210. https://doi.org/10.1037/h0023562
Levine, M., & Crowther, S. (2008). The Responsive Bystander: How Social Group Membership and Group Size Can Encourage as Well as Inhibit Bystander Intervention. *Journal of Personality and Social Psychology*. https://doi.org/10.1037/a0012634
Margolis, M. F., & Sances, M. W. (2017). Partisan Differences in Nonpartisan Activity: The Case of Charitable Giving. *Political Behavior*, *39*(4), 839–864. https://doi.org/10.1007/s11109-016-9382-4
Newman, K. S. (2004). *Rampage : the social roots of school shootings*. Retrieved from https://books.google.co.il/books/about/Rampage.html?id=vGJCnEj3CIwC&redir_esc=y
Nurmi, J., Räsänen, P., & Oksanen, A. (2012). The norm of solidarity: Experiencing negative aspects of community life after a school shooting tragedy. *Journal of Social Work*, *12*(3), 300–319. https://doi.org/10.1177/1468017310386426
Oksanen, A., Räsänen, P., Nurmi, J., & Lindström, K. (2010). "This can't happen here!" Community Reactions to School Shootings in Finland. *Research on Finnish Society*, *3*, 19–27. Retrieved from http://www.finnresearch.fi/3_oksanen_et_al_2010.pdf
Reed, A., Kay, A., Finnel, S., Aquino, K., & Levy, E. (2016). I Don't Want the Money, I Just Want Your Time: How Moral Identity Overcomes the Aversion to Giving Time to Prosocial Causes. *Journal of Personality and Social Psychology*, *110*(3), 435–457. https://doi.org/10.1037/pspp0000058
Rodríguez, H., Trainor, J., & Quarantelli, E. L. (2006). Rising to the Challenges of a Catastrophe: The Emergent and Prosocial Behavior following Hurricane Katrina. *The Annals of the American Academy of Political and Social Science*.

https://doi.org/10.1177/0002716205284677
Scanlon, J., Helsloot, I., & Groenendaal, J. (2014). Putting It All Together: Integrating Ordinary People Into Emergency Response. *International Journal of Mass Emergencies and Disasters*, *32*(1). https://doi.org/10.1002/mpo.10064
Schelling, T. C. (1968). The Life You Save May Be Your Own. In Samuel Chase (Ed.), *Problems in Public Expenditure Analysis. Studies of Government Finance*. Retrieved from https://repository.library.georgetown.edu/handle/10822/762904
Schlenger, W. E., Caddell, J. M., Ebert, L., Jordan, B. K., Rourke, K. M., Wilson, D., … Kulka, R. A. (2002). Psychological Reactions to Terrorist Attacks: Findings from the National Study of Americans' Reactions to September 11. *JAMA : The Journal of the American Medical Association*, *288*(5), 581–588. https://doi.org/10.1001/jama.288.5.581
Schuster, M. A., Stein, B. D., Jaycox, L. H., Collins, R. L., Marshall, G. N., Elliott, M. N., & Berry, S. H. (2001). A national survey of stress reactions after the September 11, 2001, terrorist attacks. *New England Journal of Medicine*, *345*(20), 1507–1512. https://doi.org/10.1108/eb056998
Shaver, K. G. (1985). *The Attribution of Blame : Causality, Responsibility, and Blameworthiness*. Springer New York.
Shultz, J. M., Thoresen, S., Flynn, B. W., Muschert, G. W., Shaw, J. A., Keefe, K. O., & Cohen, A. M. (2014). *Multiple Vantage Points on the Mental Health Effects of Mass Shootings*. https://doi.org/10.1007/s11920-014-0469-5
Silver, R. C., Holman, E. A., McIntosh, D. N., Poulin, M., & Gil-Rivas, V. (2002). Nationwide longitudinal study of psychological responses to September 11. *JAMA : The Journal of the American Medical Association*, *288*(10), 1235–1244. https://doi.org/10.1001/jama.288.10.1235
Stanford Geospatial Center, S. L. (2017). *Stanford Mass Shootings in American*. Retrieved from https://library.stanford.edu/projects/mass-shootings-america
Suomalainen, L., Haravuori, H., Berg, N., Kiviruusu, O., & Marttunen, M. (2011). A controlled follow-up study of adolescents exposed to a school shooting – Psychological consequences after four months. *European Psychiatry*, *26*(8), 490–497. https://doi.org/10.1016/j.eurpsy.2010.07.007
Turkel, G. (2002). Sudden solidarity and the rush to normalization: Toward an alternative approach. *Sociological Focus*, *35*(1), 73–79. https://doi.org/10.1080/00380237.2002.10571221
Wallace, L. N. (2015). Responding to violence with guns: Mass shootings and gun acquisition. *Social Science Journal*, *52*(2), 156–167. https://doi.org/10.1016/j.soscij.2015.03.002
Wiesenthal, D. L., Austrom, D., & Silverman, I. (1983). Diffusion of Responsibility in Charitable Donations*. *Basic and Applied Social Psychology*, *4*(1), 17–27. https://doi.org/10.1207/s15324834basp0401_2
Wilson, J. Q., & Petersilia, J. (2011). *Crime and public policy*. Oxford University Press.