A Basic Taxonomy for Regional Economy Mass Violence Total Cost Estimates

Thomas M. Fullerton, Jr.
University of Texas at El Paso

Steven L. Fullerton
University of Texas at El Paso

Michael Pokojovy
Old Dominion University

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A basic framework for estimating costs associated with mass violence incidents is proposed. It is applied to the 3 August 2019 Walmart mass shooting in El Paso, Texas, to identify and estimate the short-term, medium-term, and long-term costs generated by that crime. Cost estimates are compiled from various sources including public records and published reports. In 2025 dollars, total costs are estimated at $107.3 million. The results help document how mass violence economic impacts extend beyond the immediate aftermath of an incident to affect communities and institutions for many years. Implied national costs are calculated at $4.5 billion per year.

Keywords: mass violence costs, regional economies, general welfare

INTRODUCTION

Mass shootings are commonly defined as crimes where four or more victims are shot (Smart et al., 2026). On 3 August 2019, one of the worst mass shootings in the history of the United States occurred in El Paso, Texas. A 21-year-old male, entered a Walmart store and shot 46 people, resulting in 23 deaths and expensive recoveries for most of the 23 wounded survivors. As in many other crimes of this nature, mental illness played a role (Peterson et al., 2024). The perpetrator travelled more than 600 miles from the Dallas metropolitan area to El Paso for the express purpose of killing "Mexicans" (Romero et al., 2019). Retail trade plays a prominent role in the El Paso economy and, as anticipated by the gunman, attracts many cross-border consumers from Mexico (Fullerton, 2001; Fullerton and Arellano-Olague, 2022).

Mass violence imposes heavy psychological tolls on target communities, often leaving people with (PTSD) post-traumatic stress disorders from the event (Wilson, 2015). Widespread fear spreads throughout the community, followed by a lack of faith in local security measures (Thoresen et al., 2012). While numerous studies examine psychological damages of mass shootings, relatively few studies attempt to quantify the economic and financial costs of these attacks. In general, gunshot injury costs are sizable and increase tax burdens throughout the United States (Cook et al., 1999).

The objective of this study is to provide a basic framework for quantifying the costs of mass violence. To illustrate the severity of those economic burdens on regions where they occur, a preliminary estimate of the costs associated with the 2019 Walmart tragedy in El Paso, Texas is developed. The analysis will include tangible costs, such as healthcare and court fees related to the shooting. It will also attempt to quantify intangible costs that result from the loss of life. Loss of life estimation is essential to an economic analysis of mass violence, as there are burdens imposed on the community in the forms of consumer, labor, and taxpayer losses (Weisbrod, 1961). Calculation of the costs of a high-profile mass shooting, such as the Walmart event, may help illustrate the importance of better addressing this public safety issue in the United States.

The study's subsequent sections are as follows. A literature review is provided next. Data and methodology are described in the third section. Cost estimates and categories are discussed in the subsequent three sections. The conclusion summarizes the estimates and provides recommendations for further research.

LITERATURE REVIEW

The literature regarding metropolitan and regional economic burdens imposed by mass shootings is sparse. Many of these efforts follow the human capital approach (Weisbrod, 1961) to measure the economic impacts of disease. Several prior studies analyze relationships between shootings and psychological issues or shootings and macroeconomic variables (Littleton et al., 2009; Thoresen et al., 2012; Wilson, 2015). There also exists strands within the literature that examine gun violence in general. Examples include murder/suicide, home invasion, defensive gun usage, and mass shootings (Cook et al., 1999; Corso et al., 2007).

The human capital approach has been criticized as failing to adhere to some basic economic principles. Schelling (1968) advocates for an approach based on willingness to pay for a marginal increase in safety, or reduction in mortal accidents. The willingness-to-pay method uses consumer explicit or implicit behaviors within certain markets, particularly labor markets, to extrapolate economic values of life (Acton, 1973). It is often used in public policy, and has led to the development of the value of statistical life (VSL) and the contingent valuation method (CVM).

In estimating the economic burden of violence related injuries in the United States, most studies analyze medical costs and productivity losses (Leigh et al., 2003; Jena et al., 2014). To calculate the latter, net present values of future earnings are used, adjusting for fringe benefits, growth in earnings over time, and losses in household productivity. One study estimates that the total costs of fatal and nonfatal injuries due to violence in 2000 exceeded $70 billion for the United States as a whole. Of those damages, $64.4 billion result from productivity losses (Corso et al., 2007).

Utilizing a logit regression model, Greenland and Savage (2023) document a negative relationship between consumption and casualties related to school shootings. Consumption reductions seem to result from damaged consumer confidence. Longer term negative impacts may also result due to the inverse relationship between investment and uncertainty.

Green and Cooper (2012) quantifies costs imposed by the Virginia Tech mass shooting on the university, Roanoke County, the State of Virginia, the federal government, and the victims. Variables taken into account include costs related to legal proceedings, victim healthcare expenditures, family counseling services, police mobilization, increased safety and security, and administrative costs. The total expense estimated for that tragedy is $48 million. Of that amount, Virginia Tech University shouldered 72 percent of the burden, the State of Virginia covered 18.75 percent, the federal government paid 7.5 percent of those

costs, and the victims covered 1.75 percent. The largest costs were related to longer term increases in safety and security expenditures, legal costs, facilities repairs, and equipment replacement (Green & Cooper, 2012).

This study provides a basic taxonomy for categorizing the economic costs of mass violence crimes. The approach is illustrated by estimating the costs of the 2019 Walmart tragedy on the El Paso metropolitan economy. The costs are divided into short-term, medium-term, and long-term categories that are collected across five broadly defined classifications: healthcare, criminal justice, nonfatal lost worker productivity, community services, and economic cost of life. This is similar to the methodology used by Green and Cooper (2012) and Leigh et al. (2007). The economic cost of life employs estimates calculated using the approach recommended by Acton (1973).

DATA AND METHODOLOGY

The approximation of the economic burden imposed upon the city is estimated through the summation of non-fatal costs and fatal costs related to the shooting. Non-fatal costs analyzed include primary responder, healthcare, criminal justice system, lost worker productivity, and community service costs (Green and Cooper, 2012). These costs are quantified using insights acquired through direct requests to agencies and institutions, as well as previously published studies. Fatal costs are quantified using estimates prominent in cost-benefit analysis within the public sector: value of statistical life (VSL). The VSL is used by OSHA to inform policy decisions relating to employee work condition standards, while the Department of Transportation (DoT) uses VSL to evaluate resource allocation, analyzing financial burdens relative to the marginal reduction in motor vehicle fatalities or injury (ASPE, 2021). For purposes of this study, the VSL is based on the 2021 estimate employed by the United States Department of Health and Human Services. The 2021 VSL is adjusted to account for inflation between July 2021 and July 2025.

Open record requests, telephone calls, email messages, formal letters, or some combination of those methods were used to contact institutions that maintained records of required data. In all, more than seventy persons at twenty five different organizations were contacted for information regarding expenditures and outlays associated with this case. Many of those persons were contacted more than four times and provided very helpful explanations of the numerous costs that resulted from this mass violence crime.

Together, the federal trial and state prosecution effort required nearly six years to be completely adjudicated. Because the state case lasted until May 2025, all cost estimates reported in the tabulated materials are reported in 2025 constant dollars. For purposes of this study, the national consumer price index is re-based such that $CPI_{2025} = 1$. Equation (1) shows how the cost estimates are re-calculated in 2025 dollars.

$$ELPMVCOST25_{\,i} = ELPMVCOST_{\,i,t} \,/\, CPI2025_t \tag{1}$$

where $ELPMVCOST25_i$ is an El Paso mass violence category i cost expressed in 2025 dollars, $CPI2025_t$ is the re-based consumer price index with a 2025 base year, i is a mass violence cost index for the various categories of losses that result from mass violence crimes, and t is the month in which the nominal cost was recorded for item i.

The costs are divided into three categories. Those categories are short-term costs, medium-term costs, and long-term costs. Short-term costs include funeral services, trauma care expenses, crime scene investigation costs, official visits by dignitaries and elected officials, and on-site victim assistance services. Most of the short-term costs were acquired through direct (official correspondence, email, and telephone) requests to organizations that provided services to the victims and the community after the attack occurred. Medium-term costs include rehabilitation care expenses, counseling expenses, occupational therapy, county jail expenses, and federal/state judicial system expenses. Most of these costs were quantified using previously published research, adjusted for inflation using the re-based CPI with $CPI_{2025} = 1$. Long-term costs include net present value loss-of-life estimates and federal incarceration costs. Greater detail regarding the cost estimates are provided below.

SHORT-TERM COSTS

As shown in Table 1, total short-term costs accrued during August 2019 are estimated at nearly $4.8 million in 2025 dollars. At more than $2.7 million, the biggest short-run cost expenditure category is clinic-related trauma care provided to victims of the attack by University Medical Center, a non-profit county Level I trauma center hospital in El Paso. The next biggest expenditure classification is approximately $1.3 million in administrative and on-site costs generated by the police department and other municipal agencies operating at the scene of the crime. First responder expenses associated with the police department are slightly above $450 thousand. Also included among the short-term costs associated with tragedy is $88 thousand in pro-bono cremations, burials, and cemetery services donated to the families of those who perished due to the attack.

TABLE 1
SHORT-TERM COSTS OF THE 2019 EL PASO WALMART CRIME

Category	Estimates in 2025 $	Notes
Funeral Services, 12 Victims	$88,141	Pro bono cremations, burial, and cemetery services.
Funeral Services, Other 11 Victims	$80,797	Estimated based on initial published information.
Counseling & Psychiatry Therapy Services	$36,645	Includes some police overtimes estimates.
Clinic Trauma Care Expenses	$2,720,918	Hospital trauma services.
Police First Responders	$451,410	On-site first responder expenses.
Administrative & Other On-Site Services	$1,284,954	Police and other municipal unit 24-hour expenses.
EPPD Special Ops. Support	$12,741	Police assistance operations.
County Fun. Security Patrol	$3,614	Funeral traffic safety patrols.
Crime Scene Invest. Security	$31,758	CSI security services.
CSI Investigation Services	$15,659	CSI crime site evidence investigation and analyses.
Investigation Services	$16,078	Off-site evidence collection and analyses.
EOC Response Services	$151	Emergency Operations Center expenditures.
Governor Abbot Visit	$870	Security and support services for gubernatorial visit.
President Trump Visit	$28,094	Presidential visit security and support service expenses.
Relocation Center	$2,730	Perpetrator transfer expenses.
Victim Assistance	$19,836	On-site victim assistance service expenditures.
Total Short-Term Costs	$4,794,397	

MEDIUM-TERM COSTS

Medium-term costs are tabulated in Table 2. Those expenditures occurred during the 4.75-year period between September 2019 and May 2025, reaching nearly $9.6 million in 2025 constant dollars. Judicial system expenses for federal and state district court cases make up the bulk of the medium-run costs. Federal trial expenses are estimated at just over $2.7 million (Mata, 2023). Texas district court defense costs are

calculated at almost $4.4 million, while prosecution costs reach nearly $2.1 million (Moore, 2025). During the adjudication period, the perpetrator was incarcerated for slightly more than 2.3 years in the El Paso County Jail at a cost of $61 thousand (Pinney, 2016). Confinement during the federal trial lasted just over 3.4 years, generating federal incarceration outlays of $137 thousand (Mata, 2023). Survivor rehabilitation, counseling, and therapy outlays are estimated at approximately $203 thousand based on Max and Rice (1993).

TABLE 2
MEDIUM-TERM COSTS OF THE 2019 EL PASO WALMART CRIME

Category	Estimates in 2025 $	Notes
Rehabilitation Care Expenses	$82,972	3 months of care, $2,865 per person, 22 survivors.
Counseling Expenses	$35,984	Survivor therapy services.
Occupational Therapy	$83,796	Survivor Therapy services.
State Judicial System Defense Expenditures	$4,361,440	Defense team expenditures.
State Judicial System Prosecution Expenses	$2,071,684	Prosecutorial Expenditures.
Federal Judicial System Expenses	$2,725,900	Federal Court Trial.
Federal Incarceration Expenses	$137,217	Federal Jail Ependitures from 2/11/2020 to 7/11/2023.
County Jail Expenses	$61,321	From 8/3/2019 to 2/10/2020 and 7/12/2023 to 5/7/2025.
Total Medium-Term Costs	$9,560,315	

LONG-TERM COSTS

Measured in 2025 real dollars, long-run costs are summarized in Table 3. Inclusive of the loss of life value estimates, the time period covered is August 2019 – March 2090. That period corresponds to the remaining estimated lifespan of the youngest victim who lost a life during the attack at Walmart. The estimated loss is $91.8 million for the pro-rated values of statistical lives for the 23 persons whose lives were cut short (ASPE, 2021). With respect to the life imprisonment sentence for the perpetrator, that incarceration period is expected to last from May 2025 through July 2062 when the perpetrator will turn 64.

The second cost estimate in Table 3 is for the expected Texas state prison cost for a life sentence without parole imposed upon the perpetrator. Males sentenced to life without parole at age 25 generally survive 39 years until reaching age 64 in prison (Blagg et al., 2015). At an average annual cost of $29,901, total incarceration costs are calculated to reach approximately $1.1 million for the 37.2 year period between May 2025 and July 2062 (Schmitt and Konfrst, 2015; Graves, 2019; Hyle, 2021). Total long-term costs are thus estimated at almost $93 million.

The long-term incarceration cost estimate in Table 3 may be slightly conservative. The common practice is to calculate long-run without allowing for either inflation or higher health care expenses as inmates age (Blagg et al., 2015). That method is employed for the calculation of the Texas incarceration costs reported in Table 3. While not included in Table 3, a net present value analysis was also developed using a 4.6 percent annual growth factor to allow for higher operating expenses due to inflation and greater health care expenditures due to inmate aging. The discount rate employed was 3.5 percent based on the 24-month United States Treasury Note yield for February 2026 (Fullerton and Fullerton, 2026). That net

present value calculation indicates that, in 2025 constant dollars, the long-run cost of incarcerating the perpetrator until 2064 is approximately $283 thousand higher than what is shown in Table 3.

TABLE 3
LONG-TERM COSTS OF THE 2019 EL PASO WALMART CRIME

Category	Estimates in 2025 $	Notes
Loss of Life Value Estimates	$91,829,578	Pro-rated across victim ages.
Texas Incarceration Costs	$1,125,343	Texas state prison study.
Texas Execution Expenses	$0	Death penalty waived.
Execution Judicial Expenses	$0	Death penalty waived.
Total Long-Term Costs	$92,954,921	

TOTAL COSTS

As shown in Table 4, the total costs resulting from the 3 August 2019 Walmart mass violence tragedy in El Paso are assessed at almost $107.4 million in 2025 constant dollars. Of that amount, $4.8 million are comprised of short-term expenditures that occurred within four weeks of the crime. Those include police, sheriff, and emergency medical first responder costs; hospital emergency room and additional critical care outlays; administrative and on-site expenses; and site visitation expenditures associated with the Governor of Texas and the President of the United States.

TABLE 4
TOTAL COSTS SUMMARY OF THE 2019 EL PASO WALMART CRIME

Category	Estimates in 2025 $	Notes
Total Short-Term Costs	$4,794,397	Detailed estimates in Table 1.
Total Medium-Term Costs	$9,560,315	Detailed estimates in Table 2.
Total Long-Term Costs	$92,954,921	Detailed estimates in Table 3.
Total Walmart Cost Estimate	$107,309,632	

In the medium-run, another $9.6 million dollars were spent between September 2019 and May 2025. The biggest portions of those costs result from the federal and district court adjudication expenditures. Federal judicial and incarceration expenses are estimated at $2.9 million (Mata, 2023). Because it lasted longer than the federal trial, state judicial and county incarceration spending exceeded $6.4 million (Moore, 2025). One reason that the state adjudication process lasted longer than the federal trial was that four District Attorneys (DA) presided over the prosecution of this case, with one DA resigning before her term was over.

The perpetrator has been sentenced to life in prison. In 2025 dollars, long-run state prison incarceration expenses are conservatively estimated at approximately $1.1 million. Because the death penalty was not imposed in the federal trial or in the state trial, judicial costs associated with mandatory appeals and the execution of the perpetrator were avoided (Cook, 2009). At $91.8 million, the bulk of the El Paso Walmart mass violence long-term costs are due to the loss of life values discussed in the prior section.

NATIONAL IMPLICATIONS

Two natural questions are what do the El Paso Walmart crime cost estimates imply for the United States as a whole (a) on a per crime basis? and (b) on an aggregate basis? A simplifying assumption employed in addressing those questions is that other cases of this nature will not seek to impose the death penalty. That assumption is fairly reasonable since death penalties are rarely sought in either murder or mass murder cases (DPI, 2026). If the death penalty is imposed, legal costs per case would increase by approximately $1

million above what is listed in Table 2 and that would also affect the national estimates in Table 6 (Cook, 2009; Yost, 2024).

An important cost adjustment implemented is that other jurisdictions will not cycle through four DAs, as El Paso did, in other mass violence criminal cases. While time elapsed from arrest to final judgement varies substantially for individual cases, a reasonable estimate is that an average timeline for mass violence adjudications will be approximately 24 months (Motivans, 2025; Skillings, 2025). That implies that total state judicial system expenditures reported in Table 2 would generally total $1.9 million per case, much lower than what actually occurred for the 69-month El Paso Walmart case.

In 2025, the most recent year for which complete national data are available, there were 408 mass shootings in the United States. Those crimes resulted in 358 deaths and 1,843 injuries (Brownlee, 2026). The number of mass shootings in 2025 was about the same as in 2019. The 2025 data are combined with the El Paso Walmart crime costs to calculate national cost estimates for mass violence incidents. It should be noted that White House visits to survivors usually do not occur for most mass violence crime events, but governor visits are more common. One gubernatorial visit is assumed for each crime. In that regard, it should also be noted that while the Walmart mass shooting was a federal crime, most mass violence events are not federal crimes. Given that, federal judicial and federal incarceration expenses are each computed at $0.

A further simplifying assumption adopted for the costs per mass shooting crime is that 1 death per mass violence event will result, slightly higher than the 0.877 ratio for 2025. Based on the 2025 data, the implied number of survivors is 4.517. Given the rounding up of the deaths estimate, the number of survivors per mass violence crime is rounded down to 4 for the costs per mass violence crime calculations. The total national cost estimates use the actual 2025 data in those calculations. Equation (2) shows how the national estimates are calculated using the El Paso Walmart crime estimates.

$$USAMVCOST_{i,2025} = USAFACTOR_{i,2025} \times ELPMVCOST_{i,2025} \quad (2)$$

where $USAMVCOST_{i,2025}$ is the national cost estimate for cost category i in 2025 and $USAFACTOR_{i,2025}$ is the adjustment factor that accounts for the incidence differences between the 2019 Walmart crime in El Paso and the 2025 national mass violence crimes. That adjustment factor also accounts for the 12.1 percent cost of living difference between El Paso and the rest of the United States (EID, 2026).

National mass violence cost estimates for 2025 are summarized in Table 5. These figures represent extrapolations of the El Paso Walmart case study, adjusted for differences in crime magnitudes, to illustrate the magnitude of mass violence costs to the nation as a whole. Short-term costs exceed $1.4 billion nationwide, with victim trauma care, police first responder expenditures, and on-site administrative expenses accounting for the largest shares. Medium-term costs are estimated at nearly $1.1 billion, driven primarily by state judicial system defense and prosecution expenditures. County jail costs contribute a comparatively smaller portion of the medium-term burden.

Long-run costs are estimated to surpass $2.0 billion annually, including more than $1.4 billion in loss-of-life values and approximately $601 million resulting from incarceration expenditures. Combined, the short-, medium-, and long-term estimates indicate that the economic burden of mass violence in the United States exceeded $4.5 billion in 2025. Based on 408 mass shootings nationwide, the estimated cost per incident approaches $9.5 million.

TABLE 5
IMPLIED NATIONAL MASS VIOLENCE COST SUMMARY

Category	Per MV Crime 2025 $ Costs	Total Annual MV Costs
Total USA Short-Term Cost Estimates	$1,385,915	$1,419,803,693
Total USA Medium-Term Cost Estimates	$2,618,424	$1,068,317,059
Total USA Long-Term Charges	$5,466,341	$2,030,637,545
Total USA MV Cost Estimates	$9,470,686	$4,518,758,297

CONCLUSION

As one of the most lethal mass violence incidents in United States history, the August 2019 Walmart tragedy in El Paso, Texas received enormous media attention. While the human costs of that tragedy and others are widely known, relatively less attention has been directed toward unraveling the associated economic costs. The various studies published on those burdens focus on multiple administrative cost categories that are informative. This study goes one step further by recommending a basic economic taxonomy that classifies mass violence costs into short-, medium-, and long-term categories.

For the Walmart crime in El Paso, that logical approach indicates that short-run expenditures during the first month following the crime reach nearly $4.8 million. Medium-term expenses during the next 69 months add up to approximately $9.6 million. The long-term costs associated with this crime include victim loss of life valuations plus the estimated 37.2 years of Texas state prison incarceration expenditures. Those items are calculated at almost $93 million. Expressed in 2025 dollars, the total cost across all three categories is roughly $107.3 million.

The El Paso Walmart estimates have important national implications. Based on 2025 mass violence crime data, the estimated cost per mass shooting incident reaches nearly $9.5 million. For 408 total crimes of this nature across the country, the aggregate national cost in 2025 dollars exceeds $4.5 billion.

The economic burdens imposed by mass violence crimes are frequently overlooked. This study proposes a basic economic approach to categorizing and quantifying those costs in dollar terms. The costs of the El Paso Walmart crime are substantial with similarly notable estimates implied for the United States as a whole. Regional and federal government agency budgets are affected by these events, as are regional economies and the national economy. Cataloging and quantifying the economic magnitudes of such incidents may help increase awareness of the overall burdens imposed by these tragedies.

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