PUBLIC MASS SHOOTINGS/TEXAS AND CALIFORNIA: ROUTINE ACTIVITY THEORY COMPARISONS 1966-2023

by

Mason Robert Feinartz

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

Liberty University

2024

PUBLIC MASS SHOOTINGS/TEXAS AND CALIFORNIA: ROUTINE ACTIVITY THEORY COMPARISONS 1966-2023

by Mason Robert Feinartz

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

Liberty University, Lynchburg, VA

2024

APPROVED BY:

Name and degree, Committee Chair

Name and degree, Committee Member

Name and degree, Committee Member

ABSTRACT

Public mass shootings are a distinct and unique phenomenon that receives vast media and public attention due to the location, weapons used, and amount of people killed or injured. These mass shootings occur in places where people frequent daily in their routine activities and are unexpected, seemingly random, or symbolic events. This study used a casual-comparative quantitative research design using routine activity theory as the foundation to investigate public mass shootings in Texas and California from 1966 to 2023. This study used public open-source data collection and analysis to identify and substantiate all mass shootings that satisfy the research inclusion/exclusion criteria. A gap in research was addressed using the routine activity theory framework to predict mass shooting victimization in two of the largest populated states in the U.S. within the specified period. Multiple regression was used as the data analysis technique to measure routine activity theory variables of motivation, target selection, and guardianship (independent variables) to predict victimization fatalities/injuries (dependent variable). Findings revealed a statistically significant difference in routine activity theory components related to victimization in Texas compared to California. Additional findings indicated a statistically significant difference in victimization severity in Texas and incident number disparities in California.

Keywords: public mass shootings, routine activity theory, Texas, California, victimization, semi-automatic handgun, causal-comparative, multiple regression

Copyright Page

Dedication

To Kimberley and Jonathan, Thank you for your continued love and support. In loving memory of my mother.

Acknowledgments

I want to thank God for providing me with the strength, fortitude, knowledge, and resolve to complete this manuscript. I thank my committee members, Dr. Timothy Seguin and Dr. Thomas Harrington, for their patience, support, and guidance. I thank my committee for their meticulous and consistent availability, review, and academic suggestions. In addition, I would like to thank Dr. Mallory Watkins, who was always available to provide support, coaching, and guidance throughout the program. Finally, I thank my loving wife, Kimberley, and son, Jonathan, who supported and encouraged me to pursue this challenging academic endeavor.

Table of Contents

List of Tables

List of Tables

List of Figures

List of Abbreviations

Coronavirus Pandemic (COVID-19)

Dependent Variable (DV)

(Exposed, Vital, Iconic, Legitimate, Destructible, Occupied, Near, and Easy) “EVIL DONE”

Federal Bureau of Investigation (FBI)

FBI Supplemental Homicide Reports (SHR)

Independent Variable (IV)

Institutional Review Board (IRB)

Multiple Linear Regression (MLR)

National Incident-Based Reporting System (NIBRS)

National Institute of Justice (HIJ)

Routine Activity Theory (RAT)

Situational Crime Prevention (SCP)

Special Weapons and Tactics (SWAT)

Stanford Mass Shootings of America (MSA)

Security Vulnerability Analysis (SVA)

Statistical Package for the Social Sciences (SPSS)

The Department of Homeland Security (DHS)

The Gun Violence Archive (GVA)

The United States Department of Justice (DOJ)

Uniform Crime Report (UCR)

Variance Inflation Values (VIF)

CHAPTER ONE: INTRODUCTION

Overview

In 2022, the Gun Violence Archive documented 646 United States mass shootings (Gun Violence Archive, 2023). The database tracks mass shootings in the United States and uses no required criteria concerning casualty counts and shooting typologies (Gun Violence Archive, 2023). In 2022, the Gun Violence Archive documented 20,267 deaths induced by a firearm, regardless of the cause (Gun Violence Archive, 2023). The Gun Violence Archive is collected and compiled by researchers based on official data, enabling real-time verification. Thus, it fills the gaps in delayed or missing information in official crime data. Mass shootings are rare and distinct from felony crime-induced and family-related gun violence, depending on the definition used to depict a public mass shooting (Peterson et al., 2021; Silva, 2022; Fox & Fridel, 2022). Researchers frequently disagree with the definition of a public mass shooting (Schildkraut et al., 2019; Peterson et al., 2021; Silva, 2022; Fox & Fridel, 2022). The primary reason is based on the perpetrator's motivation, intent, selected targets, and the impacted victims.

Public mass shooting research uses open-source, public data for descriptive and inferential analysis. Public data and open-source information, including archival datasets, are predominantly used by researchers to investigate United States mass shootings in combination with traditional crime statistics such as the National Incident-Based Reporting System, Uniform Crime Report, and FBI Supplemental Homicide Reports (SHR). The NIBRS and UCR collect crime statistics from a broad perspective. In addition, the collection requirements from local and state law enforcement agencies are voluntary, thus only partially comprehensive of all relevant information required to conduct an exhaustive distinct research analysis (Bridges et al., 2023*).* *Public mass shootings* are a distinct phenomenon requiring specialized information that is not

normally available via UCR and NIBRS crime stats. Researchers, news organizations, and various non-profit entities have formulated mass shooting datasets based on distinct standards of fatalities, injuries, and types of mass shootings (public, familicide, crime-related, drug/gang-related). Public open-source information and datasets are formulated from official crime information to promote consistent methodology and triangulation to enhance validity and reliability.

The Violence Project, considered the most comprehensive open-source dataset, was funded by the National Institute of Justice (NIJ), published and accessible in 2021 (Peterson & Densley, 2019; Lei & MacKenzie, 2023). In addition, other datasets, including the Gun Violence Archive (GVA), Mother Jones, and Stanford Mass Shootings of America (MSA), have compiled in combination verified U.S. mass shooting incidents ranging from 1966 through 2023 (Bridges et al., 2023; Booty et al., 2019). Researchers have recently used these datasets specifically to investigate mass shootings, perpetrator characteristics, and various event characteristics (Smith et al., 2023; Donnelly et al., 2023b; Lei & MacKenzie, 2023; Kowalski et al., 2021; Silva & Greene-Colozzi, 2021; Lankford & Cowan, 2020; Geller et al., 2021; Silva & Lankford, 2022; Frey & Kirk, 2021; Rocque & Duwe, 2018).

This research uses the criteria of four or more fatalities (Peterson & Densley, 2019; Lei & MacKenzie, 2023; Kim et al., 2021; Fowler et al., 2021) or injuries within the same incident to define a public mass shooting event. One or more perpetrators (Lei & MacKenzie, 2023; Kim et al., 2021; Fowler et al., 2021). target the location and victims randomly or for their symbolic value (Fox & Levin, 2022; Freilich et al., 2020). The event transpires within 24 hours, although most mass shootings typically last only a few minutes. The motivation for the shooting must not

relate to felony crime-related narcotic/gang violence or family-related mass homicide (Lei & MacKenzie, 2023; Kim et al., 2021; Peterson et al., 2021; Fowler et al., 2021).

This chapter introduces the background and history of the public mass shooting phenomenon investigated in this research. The theoretical framework used in the study is also briefly discussed and serves as the foundation on which this research is directed. This chapter also comprises the research purpose, problem statement, and the study's significance. The research questions are conveyed, and important definitions and key terms are highlighted as relevant to the study.

Background

On April 20, 1999, Dylan Klebold and Eric Davis killed one educator and twelve students at Columbine High School in Littleton, Colorado (Blair et al., 2021). According to the FBI, both suspects committed suicide after the mass shooting. This incident was considered one of the worst school massacres in U.S. history (Blair et al., 2021). The incident immediately transformed law enforcement response tactics concerning active shooter and mass shooting events (Blair et al., 2021). Before Columbine, law enforcement officers were trained to request Special Weapons and Tactics (SWAT) when responding to shooting events concerning potential victims attacked within a public enclosed structure (Blair et al., 2021).

These incidents concentrated on officer safety measures and considered the victim a potential hostage, including possible barricaded suspect circumstances and protocols (Blair et al., 2021). However, the Littleton, Colorado massacre forever changed law enforcement tactics concerning Active Shooter events. Law enforcement immediately responds to gunfire during an active shooter event (Blair et al., 2021). The Columbine tragedy is considered a standard public mass shooting incident, referenced by the media and depicted by the public as the start of a

continuous phenomenon and threat to public health (Silva, 2020; Schildkraut et al., 2019; Blair et al., 2021).

Since the 1999 Columbine school shooting, public mass shooting increases have promoted enhanced law enforcement training, media promotion, public awareness, and proposed legislation to mitigate prospective occurrences (Duwe, 2020). Large casualty public mass shootings are the most frequently depicted multi-victim homicide type in national media portrayals (Fowler et al., 2021; Silva, 2019). Public mass shootings are generally depicted as utilizing at least one firearm to kill at least four or more victims (not including the perpetrator) in a single public location within 24 hours (Kim et al., 2021; Fox & Levin, 2022; Peterson et al., 2021; Fowler et al., 2021). Mass shootings are infrequent compared to other firearm violence types (Peterson & Densley, 2019). However, since mass homicide perpetrators often have no association with their victims, every populated public space can be perceived as vulnerable (Peterson et al., 2021). Mass shootings are separated into typologies: felony-crime related mass shootings, familicide mass shootings, and public mass shootings (Silva, 2022; Kim et al., 2021; Fridel, 2021).

Familicides concern a family member shooting multiple family members within a private structure (Kim et al., 2021; Fridel, 2021). Felony-related mass shootings involve multiple victims killed via firearm or rifle during a robbery, home invasion, drug-related crime, or any other felony (Kim et al., 2021; Fridel, 2021). The location of occurrence normally depicts the type of mass public shooting. Mass public shootings at K-12 schools and the workplace are the most common (Kim et al., 2021). However, these events also occur at places of worship, retail locations, restaurants/bars, entertainment venues, and colleges/universities. The routine activities of people living their daily lives within these populated public sites promote the opportunity for

the perpetrator, the assassin, to select suitable targets to commit mass homicide (Schildkraut et al., 2019; Silva & Greene-Colozzi, 2021; Silva, 2020).

Historical

The 1966 Austin, Texas, mass homicide at the University of Texas emphasized the beginning of mass shooting occurrences and recognition in the United States. Charles Whitman murdered 16 and injured 31 with multiple weapons, including pistols and rifles (Duwe, 2020; Rocque & Duwe, 2018). The Austin, Texas, public mass shooting was the first significant mass shooting in Texas. In 1966, after the University of Texas mass shooting, a second wave of mass murder commenced (Duwe, 2020). This second wave of mass murder inspired the designated research period (1966-2023). The number of mass shootings that transpired in educational institutions in the 20th and 21st centuries revealed that in less than 18 years, the 21st century had endured more fatalities than the 20th century, representing shootings from 1940 to 2000 (Katsiyannis et al., 2018). The 21st-century shootings resulted in 66 casualties compared to 55 for the 20th century (Katsiyannis et al., 2018). Public mass shootings comprise only 12% of all mass homicides and less than .05 percent of annual murders (Duwe, 2020). In contrast, felony-crime and family-related mass shootings are more typical, representing approximately 70% of mass murders (Duwe, 2020). Duwe (2020) revealed that within the United States, the late 1980s and early 1990s endured the highest mass shooting incidences based on population rates.

Peterson and Densley (2019) used the criteria of at least four casualties to differentiate public mass shootings. They determined that 192 mass homicides via a firearm/rifle occurred in the United States from 1966 through 2023. Mass shootings concerning felony-crime-related incidents and familicide were not included in the research (Peterson & Densley, 2019; Duwe, 2020). Schildkraut and Simons (2023) used less restrictive criteria and revealed that 340 mass

shootings occurred in the United States since 1973, resulting in 1,141 casualties and 1,385 additional injuries. Different standards for investigating mass shootings have facilitated different incident numbers, fatalities, and injuries. Public mass shootings continue to increase every decade, averaging ten incidents yearly in the late 1960s to sixteen per year in the late 2000s (Schildkraut & Simons, 2023). The current government criteria for a mass homicide include four or more casualties. However, in 2013, the government standard was changed to three or more fatalities.

Social Context

Mass shootings have materialized as one of the most prominent social problems in the United States (Schildkraut et al., 2019). Although definitions vary concerning what constitutes a "mass shooting," after every event, public concern is elevated through the media and online reporting sources (Turnovich et al., 2022; Duwe, 2020). Mass shootings are statistically rare events within a more significant mass violence social problem in the United States (Schildkraut et al., 2021; Peterson & Densley, 2019). Mass shootings represent less than one percent of all homicides yearly. However, 79% of adults experience stress from the prospect of being randomly murdered (Turnovich et al., 2022). In addition, 33% state that fear of these shootings prevents frequenting certain places and events (Turnovich et al., 2022).

The media, legislatures, and the public are greatly influenced due to the increased exposure these events have within a community (Silva, 2019; Schildkraut et al., 2019). Previous research results have revealed that mass killing fatalities and injury counts are the most significant predictors of news media coverage (Duwe, 2020). The primary contentions within a social context are the promotion of gun control by the media and state legislatures whenever a mass casualty shooting event occurs (Schildkraut et al., 2019; Silva, 2019). The advancement in

social media and twenty-four hours cable news has increased the potential for viewership concerning mass shootings (Duwe, 2020; Anisin, 2019). Mass firearm-related homicides and media research have determined that highly publicized incidents promote cultural trauma, facilitating the impacts of the incident (Silva, 2019).

Cultural trauma is events that promulgate societal response (Silva, 2019). The public is dramatically impacted by what is broadcast via the news, social media, and other online sources (Duwe, 2020; Capellan et al., 2019; Anisin, 2019). After a mass shooting, the primary contention in government and the media is promoting gun control, regulation, or loosening restrictions depending on political ideology. Newsome et al. (2022) revealed that mass shootings also promote increased firearm purchases as a societal response. Mass shootings were determined to be statistically correlated with firearm sales from 2015 to 2021 (Newsome et al., 2022).

Theoretical Context

This research uses Cohen and Felson's (1979) Routine Activity Theory (RAT) to investigate and compare public mass shootings in Texas and California between 1966-2023, separated within two periods (1966-1994) compared to (1995-2023). Cohen and Felson (1979) posited that crime transpires predominantly outside the home in populated public spaces through people's daily routine activities (Silva & Greene-Colozzi, 2021; Hollis et al., 2019; Schildkraut et al., 2019). Routine activity theory asserts that for a crime to occur, three necessary components must converge in time and space (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019). These components concern a motivated offender, a suitable target, absent a capable guardian (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019). Capable guardians can function as critical actors and directly or indirectly prevent or avert the interaction between a motivated perpetrator and a suitable target (Hollis et al., 2019).

The selected target is often perceived as vulnerable; “soft targets” are easily accessible and penetrable to commit crimes and promote victimization (Capellan et al., 2019; Bennett, 2018; Schmid, 2021). Soft targets lack efficient physical security and mechanisms to prevent unauthorized access (Bennett, 2018; Capellan et al., 2019; Schmid, 2021). The potential target value is generally symbolic in public mass shootings (Fox & Levin, 2022; Freilich et al., 2020; Schildkraut et al., 2019). These events are often considered targeted violence. The selection of victims is a function of perpetrator vulnerability evaluations (Bennett, 2018; Schildkraut et al., 2019; Stallings & Hall, 2019). Target hardening is a facet of target suitability that depicts methods to prevent crime by promulgating security layers and mechanisms that facilitate no perpetrator access (Turner & Klein, 2023). Hard targets dissuade potential offenders from target selection (Schmid, 2021; Bennett, 2018; Turner & Klein, 2023). Guardianship and the suitable target are fundamental concepts concerning the routine activity framework and are further discussed in Chapter 2.

Problem Statement

Mass shooting incidents constantly threaten persons performing their routine daily activities in public locations. Public mass shootings have no consistent legal definition or research criteria (Fox, 2022; Lopez, 2020; Turnovich et al., 2022; Schildkraut et al., 2019; Silva, 2020). Public data and open-source records concerning existing mass shooting databases rely on definitions predominantly based on victim casualty and injury body counts specific to mass shooting typologies (Fox, 2022; Lopez, 2020; Turnovich et al., 2022; Schildkraut et al., 2019; Silva, 2020). The differences are minor but can dramatically impact the number of incidents and statistical analysis. Peterson and Densley (2019) determined that there have been 192 U.S. public mass shootings since 1966, where at least four victims were murdered via firearm(s), excluding

familicide and felony crime-related incidents. Texas and California shared the largest number of public mass shootings compared to any other two states in the United States since 1966 (Peterson & Densley, 2019). These occurrences primarily occurred in the workplace and in K-12 schools (Peterson & Densley, 2019). These distinct location typologies are vulnerable due to open access, enclosed structures, the target population, and a potential lack of guardianship (soft targets) (Schmid, 2021; Turner & Klein, 2023; Bennett, 2018).

Research has predominantly consisted of obtaining and assessing open-source, public data in analyzing mass shootings in the United States (Schildkraut et al., 2019; Blair, 2021). Various problems are evident based on a lack of consistency concerning mass shooting definitions (Blair et al., 2021; Cavalea et al., 2023; Schildkraut et al., 2019; Fowler et al., 2021; Turnovich et al., 2022). Because of the lack of definition consistency, statistical analysis varies, relying on the specified criteria used within the study. This research uses the original FBI mass homicide depiction of four or more casualties to investigate the phenomenon (Fox & Levin, 2022). This research does not include felony crime-related or family-induced mass shootings (Fox & Levin, 2022). Most recent research concerning public mass shootings has used the four-fatality minimum standard (Silva & Greene-Colozzi, 2021; Peterson & Densley, 2019; Fox & Levin, 2022; Rush & Keenan, 2020; Duwe, 2020). However, public mass shooting intent is established if, for example, in the 2014 Fort Hood Texas shooting, there were three fatalities and 14 injuries (Standford Mass Shootings of America, 2017; Silva & Greene-Colozzi, 2021). Thus, this research has added four or more injury standards to the public mass shooting research definition.

Schildkraut et al. (2019) advised that research is needed using routine activity theory as a theoretical framework to assess components of motivation, target suitability, and guardianship

related to mass shootings to promote prevention and evidence-based security practices. Research is needed to analyze targeted locations, the timing of events, and additional details that further explore the routine activity theoretic components (Schildkraut et al., 2019). Silva and Greene-Colozzi (2021) conducted seminal research using the routine activity theory as a theoretical framework to analyze U.S public mass shootings from a macro perspective to evaluate victimization. However, the research failed to concentrate on direct or indirect global guardianship characteristics, micro-environment comparisons, and distinct physical location characteristics selected by the perpetrator (Silva & Greene-Colozzi, 2021).

Schildkraut and Simons (2023) conducted a U.S. mass shooting regional analysis. They asserted that different areas of the country should explore data and answers at a state and community level. Schildkraut et al. (2022) used routine activity theory to assess temporal public mass shooting incident patterns concerning the day of the week and time of day. However, the investigation did not consider additional factors beyond time and place dimensions. Schildkraut et al. (2022) noted the need for future research in evaluating the capable guardianship presence (which could impact perpetrator and event outcomes, response time, time to incident conclusion, and casualty rates (Schildkraut et al., 2022). This study utilizes routine activity theory to explore mass shootings in Texas and California between 1966-2023 (separated by periods 1966-1994 and 1995-2023). The problem is that no prior research has determined the use of routine activity theory to investigate and compare public mass shootings in Texas and California from 1966-2023. Thus, a significant knowledge gap is satisfied in conducting a quantitative causal-comparative quasi-experimental analysis of public mass shootings in Texas and California.

Purpose Statement

This study aimed to investigate and explore public mass shootings in Texas and California from 1966 through 2023 using the routine activity theoretical framework to advance a knowledge gap. The first 28 years (1966-1994) are compared to the subsequent 28 years (1995-2023) to contrast Texas and California. Public mass shootings are a phenomenon that requires additional analysis concentrated on state, county, and city comparisons (Smith et al., 2023; Schildkraut & Simons, 2023). A micro-level perspective investigates relevant details that have not been evident when investigating public mass shootings from a macro-perspective (Silva & Greene-Colozzi, 2021; Silva et al., 2023; Schildkraut et al., 2019).

This research aimed to assess evidence-based practices through open-source, public data to advance knowledge and understanding of Texas and California public mass shooting incidents from the theoretical perspective of routine activity theory. Evidence-based practices concern investigation that may promote further knowledge concerning mass shooting awareness, training, and prevention measures, specifically in K-12 schools and the workplace. Independent variables include perpetrator characteristics, motivation, target selection, guardianship components, type of location, day of week, time of day, and number of firearms/types. The dependent variable is victimization rates (fatalities and injuries).

Texas and California are distinct concerning governmental political leadership and ideology. While California promotes gun control through increased restrictions, Texas has loosened firearm regulations and restrictions (Donnelly et al., 2023b). These contrasting political maneuvers pose relevant questions on how politically facilitated gun restrictions impact mass shootings. In addition, a comparative analysis of Texas and California through a routine activity

framework promotes questions as to how (RAT) components compare to mass shooting incidents in both states.

Texas and California are the top two populated states in the United States (U.S. Census Bureau, 2022). As of 2023, Texas has an estimated population of 31.2 million (Texas.Gov, 2023). California has an estimated population of 39.2 million (U.S. Census Bureau, 2022). California and Texas share 21% of the combined U.S. population (U.S. Census Bureau, 2022). Both states have a portion of the state bordered by Mexico. Both states have portions surrounded by the Pacific Ocean or the Gulf of Mexico.

However, government leadership in Texas and California contrast distinctly concerning political ideology (Donnelly et al., 2023b). The Democratic Party controls California, and the Republican Party governs Texas (Donnelly et al., 2023b). Firearm laws and gun control ideology and belief systems are distinct within both states. California is ranked 1st in gun law strength, and Texas is ranked 30th in the United States (Siegel et al., 2020; Donnelly et al., 2023b). The Texas Penal Code (2022) depicts state firearm laws in Texas. Specifically, Texas Penal Code Title 10, Chapter 46, Section 46.01-46.15 depicts criminal laws and regulations concerning firearm purchase, possession, and transport. The California Penal Code and the Welfare and Institute Codes specify all state firearm laws and regulations in California (Cubeiro & Michel, 2023). The most relevant laws in both states include semi-automatic handgun/long rifle background checks, purchasing eligibility, possession, and transportation (Cubeiro & Michel, 2023). In addition, federal firearm laws impact perpetrator background checks, weapon access, and magazine capacity regulations.

Significance of the Study

This research is the first to compare public mass shootings in California and Texas in the United States using routine activity theory as a theoretical framework concerning incidents that occurred from 1966-2023, separated by periods (1966-1994) and (1995-2023). Criminal justice scholars stress the importance of evidence-based policy decisions embedded in strong theoretical foundations to promote a significant crime problem impact (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019). This study uses this strong theoretical foundation to advance evidence-based knowledge of public mass shootings in Texas and California. The significance of this research is that it facilitates a detailed understanding of the similarities and differences in public mass shooting events between Texas and California from 1966-2023, separated into two periods for further comparisons: (1966-1994) and (1995-2023). In addition, the research aims to assess routine activity components (independent variables) to predict public mass shooting victimization (fatalities and injuries). This research satisfies a knowledge gap through the use of routine activity theory and micro-environment comparisons to investigate public mass shootings in Texas and California.

The coronavirus pandemic is a research reference point since significant changes in the daily routine activities of persons and environmental factors occurred during the pandemic (Smith et al., 2023; Koppel et al., 2022; Schildkraut & Turanovic, 2022). The pandemic changed the daily routine patterns of everyday life for a limited period, specifically in 2020. However, people transitioned to densely populated residential conditions for extended periods and did not frequent public facilities (K-12 schools, universities/colleges, entertainment venues, workplaces, and restaurants/bars). The location of shootings changed in 2020 due to school and work temporary closures which reduced incidents in those environments. The data obtained and

compared between California and Texas can advance mass shooting knowledge from a state, county, and micro-environment perspective (Smith et al., 2023; Schildkraut & Simons, 2023).

This research highlighted mass shooting differences and similarities between Texas and California from 1966 through 2023. This research performs a quantitative causal-comparative/ quasi-experimental analysis to identify and investigate all mass shootings within the specified periods of (1966-1994) and (1995-2023) in Texas and California. The analysis uses open-source, public data, and county-specific open records requests to obtain law enforcement and district attorney case details. Data comprises perpetrators' characteristics and background, motivations, target selection, guardianship, incident location and typology, event timing, the firearm (s) used, victimization data, and perpetrator outcomes.

Research Question(s)

RQ1: *Is there a statistically significant difference in* ***perpetrator motivation****,* ***target selection****, and* ***guardianship*** *among public mass shooting victimization rates in Texas and California between 1966-1994 and 1995-2023?*

RQ2: *Is there a notable difference in the number of public mass shootings in Texas and California between 1966-1994 and 1995-2023?*

RQ3: *Is there a notable difference in the number of public mass shootings before and during the coronavirus pandemic in Texas and California between 2016 and 2023?*

Definitions

1. *Active Shooter Incident* -The Federal Bureau of Investigation (2023) defines an active shooter event as one or more perpetrators using a firearm/rifle to actively murder or attempt to kill individuals in a populated area. The term "actively" implies an incident's ongoing nature.

2. *Mass Murder* -The Federal Bureau of Investigation's seminal definition for mass murder: four or more victims killed in a single event, typically within 24 hours ((Fox & Fridel, 2022, p.17).
3. *Public Mass Shooting*- A public mass shooting is a targeted violence incident perpetrated by one or more suspects at one or more populated public locations. Four or more fatalities or injuries are associated with the attack. The victims and the location(s) are selected for their symbolic value or randomly. The event occurs within 24 hours, though most shootings typically last only a few minutes. The shooting motivation must not relate to narcotic/gang violence, felony crime, or family-related mass homicide (Fox & Levin, 2022; Rush & Keenan, 2020; Duwe, 2020; Peterson & Densley, 2019).
4. *Targeted Violence*- Planned, premeditated, and executed at specific individuals, locations, or groups. Perpetrators select suitable targets to accomplish specific motives. Perpetrator motives include revenge or grievances, hate, and political or ideological statements. Targeted violence is distinct from random or incidental violence and is most frequently depicted by planning behaviors that indicate violence as a potential consequence. Targeted violence most often occurs within schools and the Workplace (Stallings & Hall, 2019, p.223).
5. Situational Crime Prevention – "(SCP) is an approach to crime prevention that intends to lessen crime opportunities by advancing the associated risks and difficulties and reducing the rewards" (Clarke, 1995, p. 91). Situational crime prevention (SCP) is a multiple-stage process to comprehend when, where, and how crime incidents transpire. SCP has aimed to modify environments and targets to reduce and mitigate offending suitability.

6. *Soft Target* - A location that enables easy access for a perpetrator to engage in various crimes. Soft targets lack capable guardians to protect against unauthorized access. Schools and businesses are often considered soft targets due to open access to the public and minimal layers of security (Bennett, 2018; Schmid, 2021; Turner & Klein, 2023).
7. *Hard Target* - A location is considered a hard target when the place presents limited or no access for a perpetrator to engage in various crimes. Hard targets have mechanisms to promote capable guardianship against unauthorized access. Airports and military facilities are hard targets due to their layered security, controlled access, and physical security measures and resources. Target hardening is a form of situational crime prevention that reduces crime opportunities (Lindstrom Johnson et al., 2018; Bennett, 2018; Schmid, 2021; Turner & Klein, 2023). The concept is based on Routine Activities Theory, which concentrates crime deterrence actions on the situation rather than the perpetrator committing the crime.
8. *Workplace Violence*- There are four (4) general categories of workplace violence classifications. Type 1 workplace violence is violent acts committed by perpetrators who have no other connection with the targeted location. Type 2 workplace violence concerns perpetrators who target employees or patrons within the selected site. Type 3 workplace violence concerns employee versus employee-targeted acts of violence. Type 4 workplace violence is committed by a perpetrator who does not work at the site but has a personal relationship with an employee (Doucette et al.,2019).
9. *Threat Assessment* -The Department of Homeland Security (DHS) defines a *Threat Assessment* as “a systematic effort to identify and evaluate existing or potential terrorist threats to a jurisdiction and its target assets. The threat assessment evaluates the

probability of an attack against a critical asset. A threat assessment is a statement of threats associated with the vulnerability of critical assets" (Bennett, 2018, p.218).

10. *Threat Assessment -WAVR-21* "The WAVR-21 is a structured professional judgment tool developed to identify warning indications and risk factors for targeted violence in adults (18 years or older) in the workplace and university settings" (Cowan & Lankford, 2023, p.2). The WAVR-21 is an extended questionnaire with relevant personal and situational questions designed to assign low, moderate, or high-risk threat levels to individuals who pose a threat within the workplace, college, or university.
11. *Domestic Terrorism* - The United States Department of Justice (DOJ) defines terrorism as: 'The unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives" (Hunter et al., 2021, p.268).
12. *Security Vulnerability Analysis*- "The Security Vulnerability Analysis (SVA) identifies and analyzes the vulnerabilities and threats confronting a critical asset" (Bennett, p.238, 2018). For example, a school, hospital, the workplace, and other relevant targets are all soft targets vulnerable to attack. The (SVA) is an analytical process used to identify and categorize critical infrastructure, key resources, and key assets and evaluate the risks posed by a perpetrator intent on causing them harm (Bennett, 2018).

CHAPTER TWO: LITERATURE REVIEW

Overview

This literature review comprises a comprehensive research analysis concerning public mass shootings in the United States. The routine activity theoretical concepts are discussed and evaluated distinctly concerning each conceptual component. Researchers implementing the routine activity theoretical framework in examining mass public shootings have been limited, yet this manuscript discusses some pertinent mass shooting routine activity theory studies. The 2020 coronavirus pandemic is examined concerning mass shootings, and comparisons are made prior to and during the pandemic. Research concerning gun laws, weapon types, and correlations to firearm violence are introduced and examined. Mass shooting research analysis is contingent on the criteria used to define a public mass shooting and predominantly uses open-source public records to investigate incidents of attempted, averted, and completed mass shootings. Public mass shootings prior research concerning workplace and school events are most significant and emphasized concerning percentages, frequency, and victimization compared to other locations.

The term “mass murder” can include several homicidal circumstances varying from school or workplace shootings, family killings (familicide), felony-crime related, and other occurrences (Capellan & Gomez, 2018, p.53). The perpetrator from each category (public murder, crime-related killing, familicide) can portray distinct motivations and rationales for why actions were perceived warranted and necessary (Capellan & Gomez, 2018). Public mass shootings, commonly referred to as active shootings or rampage shootings, are distinct and unique homicide types (Blair et al., 2021; Capellan & Gomez, 2018). Silva and Capellan (2019) assert that rampage school shootings and disgruntled workplace employees provide the basis for public mass shooting analysis. Public mass shooters select specific vulnerable targets (places and

victims) to attack and murder victim-specific or random bystanders in populated public places (Peterson & Densley, 2019). Approximately 65% of public mass shooting incidents are perpetrated in the workplace and schools (Peterson & Densley, 2019; Schildkraut et al., 2019). However, mass homicides in public places encompassing the workplace, schools, universities/colleges, restaurants/bars, places of worship, and entertainment venues comprise 28% of all mass murders (Rush & Keenan, 2020; Peterson & Densley, 2019).

Mass homicide is commonly perceived as a sporadic occurrence that can transpire anywhere and anytime (Rush & Keenan, 2020). However, researchers argue that this assumption is not valid. Mass murder generally concerns the perpetrator's detailed planning and preparation and is rarely improvisational and random (Rush & Keenan, 2020). The public mass murderer aims to kill as many individuals as feasible by selecting public areas that are densely populated (Fridel, 2021). For example, areas such as K-12 schools, college/university campuses, entertainment venues, retail establishments, or bars/nightclubs in urban or suburban areas are where people routinely frequent and congregate (Duwe, 2020; Fridel, 2021).

Public mass shootings pose a significant threat within the United States (Duwe, 2020). In recent years, there has been an increase in public mass shooting victimization (Lankford & Silver, 2020). There is an inherent and constant threat in people's daily routine lives. The threat impacts the public's perception of being placed in an active shooter situation solely because of frequenting work, school, a retail store, an entertainment venue, or the park at any given time and day. The threat is promoted through media sensationalism, political discourse, and public concern (Silva, 2019, 2022; Lankford & Silver, 2020; Capellan et al., 2019; Schildkraut et al., 2019). The continuing threat must be further studied to provide and advance scholarly data that may provide advancements in mass shooting comprehension, prevention, and security.

Researchers have globally assessed public mass shootings in the United States through descriptive quantitative analysis and comparative analysis via a designated time frame measured in years (Silva, 2022; Kim et al., 2021; Duwe, 2020; Peterson & Densley, 2019; Lankford & Silver, 2020; Capellan & Gomez, 2018). In addition, other researchers have globally assessed incidents and victimization concerning all mass shooting types to evaluate the problem (Peterson & Densley, 2019; Silva, 2022; Duwe, 2020; Fridel, 2021). Analysis is conveyed through the depiction of incident numbers, mass shooting typology, weapon types, fatality, and injury counts (Kim et al., 2021; Peterson & Densley, 2019; Capellan & Gomez, 2018). However, limited research has examined and compared public mass shootings using a routine activity theoretical framework (Schildkraut et al., 2019; Silva & Greene-Colozzi, 2021).

Theoretical Framework

Routine Activity Theory

Wilson and Cullen (2018) highlight that in 1979, Lawrence Cohen and Marcus Felson developed the theoretical concepts concerning Routine Activity Theory (RAT). The theory was originally developed to investigate crime trends and patterns in the United States from 1947 through 1974 (Wilcox & Cullen, 2018). Schildkraut and Turanovic (2022) noted that Hawley's (1950) research concerning community life patterns in human ecology influenced routine activity theoretical development. A crime occurs, and victimization transpires when there is a space and time convergence of a motivated offender, a suitable target, and an absent or insufficient capable guardian to avert the crime (Schildkraut & Turanovic, 2022; Blair et al., 2021; Ruderman & Cohn, 2021; Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019; Hollis & Hankhouse, 2019; Wilcox & Cullen, 2018).

The inherent assumption in most public mass shooting research is that the locations, perpetrator characteristics, and motivations are the same in each state within the United States. Mass shooting event variables are globally assessed without isolating, controlling, or comparing micro-environments. There is a lack of recognition that the state, county, or municipality may impact perpetrator motivation, target selection, and lack of capable guardianship. Most studies assess public mass shootings in the United States globally (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2022; Lankford & Silver, 2020). The approach has been predominantly a macro perspective of mass shooting incidents. Researchers have yet to normally examine, compare, and isolate public mass shootings relevant to the states, counties, and municipalities where they occur. Kim et al. (2021) investigated 73 peer-reviewed studies concerning public mass shootings between 1999-2018 and determined that only 30% of the literature reviewed implemented a theoretical framework in their research. No literature was found that compares public mass shootings in Texas and California using the routine activity theoretical framework. This study draws from recent public mass shooting research that used routine activity theory to examine public mass shootings in the United States (Schildkraut et al., 2022; Silva & Greene-Colozzi, 2021; Green-Colozzi, 2022; Schildkraut et al., 2019).

Routine activity theory explains crime patterns through ecological theory application (Freilich et al., 2020). An opportunity-based crime theory concentrates on physical and social environmental characteristics that facilitate crime opportunities (Freilich et al., 2020; Wilcox & Cullen, 2018). Recent research has concentrated on lifestyle routine activities and features that promote offenders and targets to converge in a situation concerning a vulnerable target (Blair et al., 2021). The theory proposes that individuals maintain habitual behavior patterns (routine

activities) that impact criminal opportunity and victimization risk (Schildkraut et al., 2019; Silva & Greene-Colozzi, 2021; Blair et al., 2021; Ruderman & Cohn, 2021).

Routine activity theory was developed to analyze unanticipated opportunity crimes; however, applicability exists concerning calculated mass shooting occurrences (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019; Mandala & Freilich, 2018). Routine activity theory presents an inherent assumption that people are rational and may be tempted by any opportunity that promulgates personal benefit (Silva & Greene-Colozzi, 2021; Blair et al., 2021; Schildkraut et al., 2019). Crime can be mitigated by facilitating capable guardianship at vulnerable targets. A target is considered a person, place, or object (Silva & Greene-Colozzi, 2021; Blair et al., 2021; Schildkraut et al., 2019). Guardianship, formal or informal, is the component that protects the target from victimization and is considered a person, object, or mechanism (Hollis et al., 2019; Silva & Greene-Colozzi, 2021; Blair et al., 2021; Schildkraut et al., 2019). The perpetrator considers the target suitable when the person, place, or object lacks capable guardianship (Hollis et al., 2019; Chan & Gibbs, 2022; Silva & Greene-Colozzi, 2021; Blair et al., 2021; Schildkraut et al., 2019; Wilcox & Cullen, 2018).

Routine activity theory asserts that removing one crime triangle element will promote sufficient disruption to avert the criminal act (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019). The conceptual analysis of prevention through suitable target removal and capable guardian implementation promulgates situational crime prevention (Silva & Greene-Colozzi, 2021; Freilich et al., 2020; Schildkraut et al., 2019). Situational Crime Prevention is a relevant policy development approach for enhancing physical guardianship against criminal acts (Freilich et al., 2020; Silva & Greene-Colozzi, 2021). Physical guardianship is promoted through target hardening (Blair et al., 2021). Capable guardianship can mitigate crime through its'

implementation at a prospective target (Capellan & Silva, 2019; Schildkraut et al., 2019; Blair et al., 2021). The initial guardianship concept concentrated on everyday citizens or bystanders supervising potential targets/victims (Blair et al., 2021). Supervision, or watching over others, is a normal consequence of routine daily activities (Blair et al., 2021; Shoenberger, 2021). However, after creating the routine activity theory, the guardianship concept was further advanced to promote guardianship sub-types, an outer crime triangle (Hollis & Hankhouse, 2019; Felson & Eckert, 2019).

The outer crime triangle comprises guardianship elements that coincide with the offender, the target, and guardianship (Felson & Eckert, 2019). Those elements include handlers, place managers, and target guardians (Felson & Eckert, 2019; Hollis et al., 2019). In 1995, John Eck posited that routine activity theory is a micro-level theory. The theory depicts a unit of analysis, the criminal event, and the minimum required elements for occurrence (Felson & Eckert, 2019). RAT is a micro-level theory analyzing individual people and places (Felson & Eckert, 2019). However, the offender's motivation, target suitability, and capable guardian components have macro and micro-level justifications (Blair et al., 2021). Within the routine activity perspective, the offender element is insufficient for a crime to occur but is one of three necessary components (Blair et al., 2021). The crime incident is the unit of analysis, which requires data concerning the offender and the function of targets and guardians (Felson & Eckert, 2019).

Wilcox and Cullen (2018) noted that Marcus Felson (1995) and John Eck (1994) progressed the guardianship component of routine activity theory by asserting that crime is highly probable when an offender and a target converge at the same location simultaneously. However, no one can "control the offender, protect the target, or restrain conduct at the place" (Wilcox & Cullen, 2018; p.133). Felson and Eck advanced the guardianship concept by

introducing “handlers, place managers, and target guardians” (Hollis et al., 2019, p. 71; Chan & Gibbs, 2022; Felson & Eckert, 2019; Hollis & Hankhouse, 2019). Handlers monitor and control potential offenders to influence decision-making (Hollis et al., 2019; Chan & Gibbs, 2022; Felson & Eckert, 2019). Place managers supervise and control locations to promote security to mitigate perpetrator access and potential crime (Hollis et al., 2019; Chan & Gibbs, 2022; Felson & Eckert, 2019). Target guardians promote protection concerning vulnerable crime targets (Hollis et al., 2019). The capable guardian can be a suitable target protector and a “controller” of the motivated offender (Schildkraut et al., 2019, p. 353).

Mass shooting research using the routine activity framework reveals that target selection is impacted by perpetrator characteristics, motivation, and the decision to attack a soft or hard target (Silva & Greene-Colozzi, 2021; Shoenberger, 2021; Schildkraut et al., 2019; Capellan & Silva, 2019; Bennet, 2018). Routine activity theory implies the perpetrator’s rational choice concerning motivation and target selection (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019). When investigating mass shooting incidents, victimization, and perpetrator outcomes, there is theoretical value in guardianship and target characteristics considerations combined with perpetrator and motivation characteristics (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019; Silva, 2020).

The routine activity theoretical framework has been used to investigate and explain various crime types, most significantly the public mass shooting phenomenon in the United States (Schildkraut et al., 2022; Silva & Greene-Colozzi, 2021; Green-Colozzi, 2022; Schildkraut et al., 2019). The routine activity theory can be applied to planned and unintended crime impacts. The theory posits that crime increases as people converge in everyday situations outside the home (Shoenberger, 2021; Hollis & Hankhouse, 2019). Public mass shootings

transpire when people frequent work and school, seek entertainment venues and restaurants/bars, shop for personal life necessities, and are accessible and vulnerable in open or confined spaces (Schildkraut et al., 2022; Silva & Greene-Colozzi, 2021; Capellan & Silva, 2019; Schildkraut et al., 2019). Understanding perpetrator characteristics, symptoms, background and motivations, access and proximity to targets, and the presence or proximity of capable guardianship is vital in assessing public mass shootings (Schildkraut et al., 2022; Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019).

Motivation

Routine activity theory does not identify criminal motivation sources or reasons perpetrators vary in the propensity to offend (Silva & Greene-Colozzi, 2021). However, the theory is associated with the rational choice perspective concerning an offender's rational decision to perpetrate a crime (Silva & Greene-Colozzi, 2021). A perpetrator's decision to attack a suitable target implies a rational decision-making process through a routine activity perspective (Silva & Greene-Colozzi, 2021; Silva, 2020). Instead of emphasizing perpetrator characteristics, the concentration would entail the circumstances in which violent criminal acts are executed. Mass shooting perpetrators' motivations and characteristics are diverse and difficult to isolate (Schildkraut et al., 2019). However, despite evidence against the capacity to profile offenders, attempts are made to profile mass shooters to predict who is most likely to commit an attack (Schildkraut et al., 2019). In addition, the predominant question is identifying which target the potential perpetrator may attack, how, when, and where (Hollis et al., 2019).

Routine activity theory posits that motivation can influence any person to commit a crime and that the motivation is implied (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019). A motivated offender will perpetrate a crime via target selection if the benefits exceed the costs

inherent in the rational choice perspective (Silva & Greene-Colozzi, 2021). Mass shooting research that has implemented the rational choice/routine activity theoretical framework determined that motivation impacts target selection and the decision to attack a "soft" target or a "hard" target" (Silva & Greene-Colozzi, 2021, p.568; Schildkraut et al., 2019). Soft targets are considered vulnerable and lack sufficient protection and security. Hard targets are generally sufficient to protect against attacks (Schildkraut et al., 2019; Bennett, 2018).

The motivation or disposition to commit a crime was considered less significant than the physical elements that promulgated perpetrator crime involvement. However, target suitability is depicted through understanding the perpetrator's characteristics, capabilities, and objectives in connection to the inherent characteristics of the potential crime targets (Snipes et al., 2019; Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019). Most mass shooters seek validation for their motives (Peterson & Densley, 2019). Peterson and Densley (2019) determined that mass shooter motivation may be the desire for death notoriety, an intense fixation concerning mass shooting violence, or the desire to be considered a copycat killer (Peterson & Densley, 2019). All mass shooters have the means to carry out an attack (Peterson & Densley, 2019). However, opportunity is essential in accomplishing their objective (Peterson & Densley, 2019). Vulnerable targets promote the opportunity to promulgate mass casualties (Peterson & Densley, 2019; Snipes et al., 2019; Silva & Greene-Colozzi, 2021; Capellan et al., 2019; Schildkraut et al., 2019).

Target

The probability that a target will be deemed suitable is impacted by four attributes, characterized from the perpetrator's viewpoint via the acronym (value, inertia, visibility, and access) VIVA, which depicts the target's risk level (Schildkraut et al., 2019). VIVA is a function

of target suitability (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019). Value refers to the target's importance to a motivated offender, symbolically or of value (Schildkraut et al., 2019). A motivated offender may consider a target of more significant value suitable for attack (Schildkraut et al., 2019). Inertia refers to the target's capacity to avert victimization (Schildkraut et al., 2019). The term refers to size and weight features that can restrict removal concerning physical property (Schildkraut et al., 2019).

The motivated offender regards targets with decreased inertia as more suitable (Schildkraut et al., 2019). A target's exposure is impacted via visibility to a motivated perpetrator. Accessibility depicts the perpetrator's capacity to reach the target (Schildkraut et al., 2019). Both target visibility and accessibility promote suitability to a motivated offender (Schildkraut et al., 2019). Target suitability is depicted through understanding the perpetrator's capacities and purposes in connection to the inherent characteristics of the potential crime targets (Snipes et al., 2019). Schildkraut et al. (2019) and Silva and Greene-Colozzi (2021) assert that a perpetrator's target choice is often symbolic in mass shootings. Mass shootings are often regarded as "targeted violence," and perpetrator-victim selection is a target vulnerability function (Schildkraut et al., 2022, p.5; Schildkraut et al., 2019; Bennett, 2018).

Schildkraut et al. (2019). Silva (2020) and Freilich et al. (2020) propose that not all targets pose identical victimization risks and specify target suitability as a potential intervention designation to avert incidents. Target hardening can accomplish the intervention (Freilich et al., 2020; Capellan & Silva, 2019; Bennett, 2018). Target hardening concerns an attempt to reduce target suitability by modifying the target (Kitteringham & Fennelly, 2020; Capellan & Silva, 2019; Bennet, 2018). Target hardening is a measure to mitigate potential perpetrator target suitability perceptions and whether sufficient guardianship is absent or present (Hesterman,

2019; Bennett, 2018; Mandala & Freilich, 2018). The successful attack probability against a vulnerable, unprotected soft target significantly increases compared to protected and secured hard targets (Hesterman, 2019; Bennett, 2018; Mandala & Freilich, 2018). Target suitability increases based on uninterrupted access to the victim. Target hardening is an indirect form of guardianship by mitigating target suitability. Although target hardening concentrates on mitigating target vulnerability, the process also implements a type of guardianship (Silva & Greene-Colozzi, 2021; Kitteringham & Fennelly, 2020; Schildkraut et al., 2019).

Hollis et al. (2019) assert that target hardening is not a form of guardianship. Rather, target hardening functions to reduce target suitability. "Guardianship is exercised by individuals who deter the would-be offender by watching over the potential target of criminal activity" (Hollis et al., 2019, p. 71). Target hardening concerns attempt to decrease target suitability by modifying and enhancing target security (Hollis et al., 2019). The routine activity theory literature has highlighted models where guardianship has been measured as target hardening. Place-based investigations can establish target location physical characteristics that avert or mitigate shootings (Silva & Greene-Colozzi, 2021; Capellan & Silva, 2019).

Mass shooting research using the rational choice theoretical framework, an implied concept in routine activity theory, has determined that target selection is influenced by perpetrator motivation and the conscious determination to attack a soft or hard target (Silva & Greene-Colozzi, 2021; Capellan & Silva, 2019). Capellan et al. (2019) assert a correlation between target hardening, perpetrator attack, resistance, and outcomes. Offender motivation can be measured through perpetrator planning and preparation, weapons selected and used, and distance traveled to attack a vulnerable target (Peterson & Densley, 2019; Schildkraut et al., 2019; Bennett, 2018).

Soft targets are considered vulnerable and unprotected (Freilich et al., 2021; Bennett, 2018). Soft targets are considered open-access, easily accessible locations, maintaining minimal guardianship (Freilich et al., 2021; Bennett, 2018). For example, K-12 schools, retail locations, and restaurants/bars are all considered soft targets. Hard targets present multiple security layers to safeguard a target (person, place, or thing) (Freilich et al., 2021; Bennett, 2018). Using guardianship variables within a routine activity framework can designate target location characteristics that avert or mitigate mass shootings (Freilich et al., 2021). Routine activity theory asserts that a capable guardian presence can mitigate the perpetrator's target selection. The guardianship concept is the fundamental component that can impact mass shooting victimization severity (Silva & Greene-Colozzi, 2021; Capellan & Silva, 2019; Hollis et al., 2019; Schildkraut et al., 2019).

Guardianship

Hollis et al. (2019) said, "A capable guardian is any person who serves by simple presence to prevent crime and by absence to make crime more likely" (p. 70). The mechanism that promotes guardianship is when there is an "elevated risk of detection and potential punishment or sanction" for undesirable behavior (Hollis & Hankhouse, 2019, p. 275). The elevated risk occurs due to the sense that a bystander could be monitoring or surveilling the perpetrator. In mass shooting incidents, a distinction of a capable guardian within this context averts or disrupts the shooting in progress (Silva & Greene-Colozzi, 2022). A direct or indirect guardian capable of averting crime represents a presence when the crime is mitigated or averted (Hollis et al., 2019).

The capable guardian's absence promotes a more significant crime probability (Schildkraut et al., 2022; Hollis et al., 2019). The guardian can directly or indirectly interrupt the

motivated offender and suitable target interaction (Schildkraut et al., 2022). Common routine activities include movements at home, work, school, or other public places (Hollis et al., 2019). However, daily routines characterize an individual's consistent activities (Hollis et al., 2019). For example, adults and children consistently frequent the workplace and school.

These predictable patterns promote crime opportunities consistent with the routine activity theory (Hollis et al., 2019). Routine activity patterns determine the capable guardian's probability of an individual functioning in that capacity (Shoenberger, 2021; Hollis et al., 2019). Guardianship is executed by individuals monitoring the potential target to avert the potential offender from facilitating criminal activity (Shoenberger, 2021; Hollis et al., 2019). Guardianship must have an individual component to protect the target (Shoenberger, 2021; Hollis et al., 2019). Guardianship is not limited to law enforcement or security presence (Shoenberger, 2021; Hollis et al., 2019). Ordinary people can be guardians in routine everyday activities (Shoenberger, 2021; Hollis et al., 2019).

A capable guardian is any individual who "serves by simple presence" to prevent crime and by absence to make crime more probable (Hollis et al., 2019, p.70). The mechanism that facilitates guardianship is when there is an elevated detection and potential punishment risk or sanction for perpetrator criminal activity (Hollis & Hankhouse, 2019). Guardianship promotes the offender's perception that surveillance is present, constant, and consistent (Hollis & Hankhouse, 2019). Crime disruption is achieved by the capable guardian's proximity to the target, direct visibility, and capacity to conduct close surveillance (Freilich et al., 2020; Hollis & Hankhouse, 2019; Schildkraut et al., 2019). Surveillance is a form of monitoring that can be executed through technology or on-site physical security (Freilich et al., 2020). Surveillance is also performed by ordinary citizens or bystanders who are positioned at the same location as the

potential targets (Freilich et al., 2020). The target's physical environment can also facilitate or hinder guardianship, impacting the probability that an offender will be successfully detected, averted, and arrested via routine surveillance (Freilich et al., 2020; Schildkraut et al., 2019).

Hollis et al. (2019) highlight that guardians have been subdivided by target, place, or perpetrator supervision, depicted as controllers. Guardians protect target victimization, place managers supervise specific places, and handlers control potential offenders (Shoenberger, 2021; Hollis et al., 2019; Hollis & Hankhouse, 2019). The depiction represents a double triangle (Shoenberger, 2021). The inner triangle represents the crime event convergence concerning a motivated offender, a suitable target, and a lack of capable guardianship (Shoenberger, 2021). The exterior triangle characterizes the "controllers" that must be ineffective or absent for a crime to transpire (Chan & Gibbs, 2022, p.323; Shoenberger, 2021; Hollis & Hankhouse, 2019). Guardians can recognize threats more efficiently in privatized space but need help supervising public space (Felson & Eckert, 2019).

Shoenberger (2021) notes that Felson realized the theoretical distinction of handlers controlling offenders from target guardians. However, in 1994, John Eck contributed to routine activity theory by asserting that some individuals are designated to mitigate or avert crime in public places rather than specific target protections or controlling potential offenders (Eck, 2018). Thus, managers are linked with places and considered owners or in direct control of public or private institutions (K-12 schools, colleges/universities, entertainment venues, and the workplace (Hollis et al., 2019; Eck, 2018). Place managers can enhance guardianship through technology via access control, surveillance systems, and internal/external security controls. In addition, managers can employ security officers or law enforcement and additional layered security measures within a target to mitigate the potential of mass shooting events. However,

when examining the perpetrator's decision-making, handlers directly or indirectly control potential offenders (Felson & Eckert, 2018; Eck, 2018; Hollis et al., 2019; Shoenberger, 2021).

Handlers are directly or indirectly connected with the potential perpetrator (Eck, 2018; Hollis & Hankhouse, 2019; Shoenberger, 2021). Handlers maintain varying social closeness, readiness, opportunity, and understanding across multifarious circumstances and potential offenders (Eck, 2018; Hollis & Hankhouse, 2019). A perpetrator may commit a crime in one situation but not another because of the handler(s)' various persuasions or impact (Eck, 2018; Hollis & Hankhouse, 2019; Shoenberger, 2021). Concepts imply that guardianship may coincide with police/security target proximity and perpetrator distance to a target (Hollis & Hankhouse, 2019; Shoenberger, 2021). However, understanding the motivation characteristics promotes potential mitigation efforts via handlers. Crime opportunity is mitigated when guardians protect targets, handlers manage or influence potential offenders, and place managers supervise places (Hollis & Hankhouse, 2019; Eck, 2018; Hollis et al., 2019; Shoenberger, 2021). Figure 1 illustrates the Crime Triangle of Routine Activity Theory.

Figure 1

The 'Crime Triangle' of Routine Activity Theory

Note. From " *Bridging Information Security and Environmental Criminology Research to Better Mitigate Cybercrime"* by (Murdoch et al., 2019), [Online Image], The 'crime triangle' of routine activity theory. | Download Scientific Diagram (researchgate.net).

Related Literature

Public Mass Shootings/ Definition

Lopez et al. (2020) assert that researchers' and practitioners' contribution to mass shooting research has been hindered due to the absence of a uniform mass shooting definition (Schildkraut et al., 2022; Fox & Levin, 2022; Silva & Greene-Colozzi, 2021; Green-Colozzi, 2022; Duwe, 2020). In addition, database deficiencies that compile, assess, and communicate critical facts on completed and averted mass shooting incidents have promoted statistical inconsistencies (Lopez et al., 2020). Lopez et al. (2020) state that the National Institute of Justice

conducted a literature review and analysis of 44 mass shooting studies from 1997 through 2016. The research generated information concerning perpetrator characteristics, target selection, incident prevalence, weapons utilized, and other variables, as noted by (Lopez et al., 2020). However, critical term depictions lack consensus, such as mass murders, mass shootings, and mass homicides (Lopez et al., 2020). Lopez et al. assert that the mass shooting data reviewed was insufficient concerning definition, contextual uniformity, and consistency (Lopez et al., 2020). The federal criminal code fails to account for a distinct mass shooting offense specification (Lopez et al., 2020).

Lopez et al. (2020) said: "On January 14, 2013, the 112th Congress amended the Investigative Assistance for Violent Crimes Act of 2012 Public Law 112–265. The act currently defines the term "mass killings" as three or more murders in a single incident and the term "place of public use" as it is defined under Section 2332f(e) (6) of Title 18, United States Code" (p. 21). The act fails to establish the weapon type utilized or account for injured victim numbers (Lopez et al., 2020; Blair et al., 2020; Hunter et al., 2020). The definitions used in the research comprised mass killings in accessible public spaces such as schools, religious establishments, the workplace, entertainment venues, and retail businesses. No consistently specified open source or primary public/private data source is used in mass shooting research (Bridges et al., 2023; Booty et al., 2019; Lopez et al., 2020; Schildkraut et al., 2022; Sandel & Martaindale, 2022; Fox & Levin, 2022). However, a predominant scholarly depiction of public mass shootings refers to four or more fatalities at a public location, excluding the perpetrator within 24 hours (Rush & Keenan, 2020; Duwe, 2020; Peterson & Densley, 2019; Bridges et al., 2023; Booty et al., 2019).

The primary issue in how researchers define a mass shooting depends on the chosen project. The mass shooting phrase is a new term depicting mass homicide, an old term (Fox &

Levin, 2022; Duwe, 2020). Duwe (2020) defines a *public mass shooting* as an incident involving a firearm/rifle that occurs in exclusion of other criminal activity. Other criminal activity concerns family-related homicide, gang-related, and other felony-related criminal occurrences (Duwe, 2020; Fridel, 2021; Silva, 2022). However, public mass shootings contrast because the perpetrator intentionally selects a public stage, specifically a (school, workplace, house of worship, restaurant/bar, or public open space) to execute a deadly attack (Duwe, 2020; Kim et al., 2021). There are several definitions concerning mass murder, advancing the confusion concerning occurrences and relevant components (Fox & Fridel, 2022; Rush & Keenan, 2020; Lopez et al., 2020). The Federal Bureau of Investigation (FBI) mass murder definition, prior to 2013, was an incident in which four or more people were murdered in a single event (Fox & Levin, 2022; Rush & Keenan, 2020; Peterson & Densley, 2019; Sandel & Martaindale, 2022; Fox et al., 2019; Fox & Fridel, 2022).

Historically, researchers have concentrated solely on mass murder, combining different mass homicide types and perpetrator and victim characteristics (Kim et al., 2021; Fox & Levin, 2022). The U.S. Secret Service depicts an active shooter as a targeted violence event committed by one or more perpetrators at one or more public places (Fox & Levin, 2022). Furthermore, three or more casualties are associated with the attack (Fox & Levin, 2022). The targeted locations and victims are selected for their symbolic or perceived value (Fox & Levin, 2022; Freilich et al., 2020). The event transpires within 24 hours, although most mass shootings typically last only a few minutes. The shooting motivation must not correlate to crime-related gang violence or family-related mass homicide (Fox & Levin, 2022; Hunter et al., 2020; Fox et al., 2019).

The primary distinction between an active shooter occurrence and a mass murder or mass shooting is the minimally required fatalities (Fox & Levin, 2022; Hunter et al., 2021; Fox et al., 2019). The Federal Bureau of Investigation depicts an active shooter event as one or more perpetrators utilizing a firearm/rifle to actively murder or attempt to kill people in a populated area. (Blair et al., 2021). The term actively implies an incident's ongoing nature (Blair et al., 2021). All mass shootings are also active shooter incidents at commencement. However, discernment deduces that not all active shooter incidents are mass shootings. Mass shooting classification depends on the occurrence (fatalities and injuries). Researchers have recently recommended that four shooting fatalities are minimally required to consider an incident a public mass shooting (Kim et al., 2021; Fowler et al., 2021; Peterson & Densley, 2019, 2021; Duwe, 2020; Lankford & Silver, 2020; Roque & Duwe, 2018). Green-Colozzi (2022) argues against a required fatality number criteria to designate an incident as a public mass shooting.

Mass Shooting Research

Research concerning mass murder has been neglected until recently (Fox & Levin, 2022; Rush & Keenan, 2020; Duwe, 2020). Since public attacks and killings promote the majority of public concern and fear, public mass killings are investigated separately from other types of mass homicide (Fox & Levin, 2022; Rush & Keenan, 2020). Statistics reveal that from 1993 through 2011, approximately 70% of all homicides resulted from firearm violence (Rush & Keenan, 2020). Fox and Levin (2022) researched 448 mass murders from 2006 through 2020 and determined that mass homicide depicts several specific event typologies differentiated by motivation, victim-offender relationship, and location.

Mass homicide patterns and characteristics, perpetrator portrayals, and targets/victims are distinct among types: familicides, felony-crime-related killings, and killings in public settings

(Fox & Levin, 2022; Silva, 2022; Fridel, 2021). Familicides accounted for almost 48% of all mass homicides, and 77% were committed using a firearm (Fox & Levin, 2022). Rush and Keenan (2020) noted that in 2016, there were 19,362 homicides. Homicides concerning firearms contributed to 14,415 fatalities (Rush & Keenan, 2020). Mass homicide research excludes many pertinent cases due to the three/four fatality standard (Rush & Keenan, 2020). Research indicates that public mass shootings have increased in frequency, with many of the most lethal shootings occurring in recent years (Tomsich et al., 2023; Lankford & Silver, 2020).

Krause and Richardson (2015) seminal descriptive government-funded research investigated mass shootings from 1999 through 2013 and used the FBI Supplemental Homicide Reports (SHR). The research criteria used four or more fatalities to depict a mass shooting (Krause & Richardson, 2015). Findings revealed 317 mass shootings (including familicide and felony crime-related shootings) committed by perpetrators totaling 1,554 fatalities and injuring 441 additional victims (Krause & Richardson, 2015). Fridel (2021) examined all mass shooting incident types (family, felony, and public) from 2006 to 2016 and assessed incident, perpetrator, and victim characteristics. Research results indicated that familicide, felony-related, and public killings are distinct mass murder categories, each with unique characteristics (Fox & Levin, 2022; Silva, 2022; Fridel, 2021).

Silva (2022) advanced Krause and Richardson's (2015) study by assessing mass shootings from 2006 through 2020, totaling 305 incidents. Findings revealed that the only consistent attributes among all mass shootings (public, family, and felony-related) were male offenders, averaging 35 years of age, and using a handgun (Silva, 2022). In addition, research determined that public mass shootings involved perpetrators killed during the incident (Silva, 2022). Public mass shootings revealed higher victimization rates, the use of multiple rifles/ guns,

stranger victims, and public locations compared to familicide and felony-related shootings (Silva, 2022). Public mass shootings via the use of a firearm accounted for 23% of all mass homicides (Silva, 2022).

Capellan and Gomez (2018) investigated United States mass shooting perpetrator characteristics, motivations, and methods from 2000 through 2015. They compared the results to 1984 through 1999, totaling 294 incidents. Capellan and Gomez (2018) used the criteria of at least four fatalities in defining a mass shooting. The most relevant findings revealed a significant increase in mass shootings from 2000 through 2015 compared to the previous period (Capellan & Gomez, 2018). Mass shooting incidents more than doubled from 2000-2015 compared to 1984-1999 (Capellan & Gomez, 2018).

Capellan et al. (2019) subsequently assessed 318 public mass shootings from 1966 through 2017 by analyzing and comparing perpetrator motivation types. Capellan et al. (2019) identified four types of mass shooting perpetrators: school, disgruntled employees, ideologically motivated, and rampage offenders. Findings revealed that rampage shootings comprised 36% and are the most common. Disgruntled employees concerning workplace shootings totaled approximately 29%. School shootings comprised 19%, and ideologically motivated shooters totaled approximately 15% of 318 public mass shootings (Capellan et al., 2019).

Duwe (2020) investigated 845 U.S. mass shooting incident trends and victimization severity between 1976 and 2018, including 158 public mass shootings. Duwe (2020) used the criteria of four or more fatalities, not including the perpetrator committed in a public location, and included felony-crime related mass shootings. Duwe (2020) determined that mass shooting incidents were more prominent in the early 1990s and late 1980s after controlling for population changes. However, within the past ten years, public mass shootings have significantly increased

(Duwe, 2020). Duwe (2020) determined that public mass shootings represented 20% of all mass shootings, consistent with Silva's (2022) findings. Duwe et al. (2022) further examined 158 public mass shootings and sought to predict mass shooting severity and future probability. Findings revealed an increased public mass shooting risk severity in the future (Duwe et al., 2022).

Turnovich et al. (2022) examined mass shootings from 1980 through 2018, totaling 720 incidents using the criteria of four or more fatalities, not including the perpetrator. However, the study incorporated family and felony-crime-related shooting incidents and determined no relevant change in incident frequency (Turnovich et al., 2022). When investigating the 720 mass shootings determined in the data, numerous incidents identified were not recorded in any existing, publicly available databases (Turnovich et al., 2022). Capellan and Gomez's (2018), Silva's (2022), Duwe's (2020), and Turnovich et al. (2022) research indicate that defining inclusion or exclusion criteria for mass shooting analysis impacts the research results concerning the incident frequency patterns assessments and descriptive statistical analysis. In addition, public mass shooting research, not including felony crime and family-related incidents, is a rare and distinct phenomenon that requires further investigation and analysis (Fox & Levin, 2022; Silva, 2022; Duwe, 2020; Schildkraut et al., 2019; Peterson & Densley, 2019; Turnovich et al., 2022; Kim et al., 2021; Green-Colozzi, 2022).

Schools/ Mass Shootings

The Safe School Initiative defines school-setting "targeted violence" as school shootings and other attacks where the school was intentionally selected as the target and was not randomly selected as a site of opportunity (Stallings & Hall, 2019, p.223). Prominent public mass shooting events such as Columbine, Colorado, in 1999, Sandy Hook, Connecticut Elementary School in

2012, and Marjorie Stoneman Douglas High School of Parkland, Florida, in 2017 have directed an intensified concentration on school security, safety, and violence mitigation and prevention (Messman et al., 2022). Due to these mass shootings, increased emphasis has been promulgated on protecting United States educational institutions, specifically students and teachers, within the past twenty years (Messman et al., 2022).

Mass shooting events within academic environments are often considered the most tragic and emotional due to the victimization of vulnerable and innocent children (Rush & Keenan, 2020). However, research indicates a lack of knowledge on school shooting causes and how to mitigate and avert incidents (Rush & Keenan, 2020; Stallings & Hall, 2019). An important consideration concerning protecting schools is that there is no standardized depiction of what constitutes a school shooting (Rush & Keenan, 2020; Lee et al., 2020; Peterson & Densley, 2019). Since 1966, depending on the public mass shooting definition used, public mass shootings totaling 13 to 27% have transpired in K–12 or university/college environments (Lee et al., 2020; Peterson & Densley, 2021).

Gammell et al. (2022) investigated public mass shootings at educational facilities from 1970 through 2020. Components concerning the perpetrator, facility, and event characteristics related to predicting shooting victimization severity were analyzed (Gammell et al., 2022). Gammell et al. (2022) determined that handguns were predominantly used in 282 education facility shootings in the United States. Livingston et al. (2019) also affirmed that handguns were predominantly used in 81% of 179 school shootings from 1999 through 2018, immediately before and after school hours. Livingston et al. (2019) determined that the perpetrator's access to two or more firearms can impact school shooting victimization severity. Flannery et al. (2021)

determined that between 1996 through 2018, there were 17 multiple-victim school shootings in the United States, totaling 90 students and 17 faculty fatalities, including 157 injuries.

Gammell et al. (2022) assert that research concerning educational facility shootings has inconsistently concentrated on investigating the perpetrator characteristics in rampage-style public mass shooting events (Capellan et al., 2019). Research has revealed that rampage-type school shootings are typically perpetrated by Caucasian male juveniles, ranging from middle to lower-middle-class homes (Gammell et al., 2022; Peterson et al., 2021). Research has revealed that school shooters who perpetrate rampage-style mass attacks are commonly depicted as harboring a history of depression, romantic or peer rejection, and insufficient peer relationships (Peterson et al., 2021; Gammell et al., 2022; Capellan et al., 2019).

Stallings and Hall (2019) researched 98 attempted mass school killings from 1900 through 2016, in which the suspect was arrested before the attack. Bullying, depression, and anger were the suspect motive in 50% of the investigated incidents (Stallings & Hall, 2019). Sixty-one percent of averted school killings (89) involved firearms (Stallings & Hall, 2019). In 40 incidents, the firearm was stolen from a family member 62% of the time (Stallings & Hall, 2019). A consistent determination in school shooting literature is that the perpetrators are commonly Caucasian males who target rural and suburban locations (Stallings & Hall, 2019).

Peterson et al. (2021) investigated 133 shooting incidents from 1980 through 2019, where more than one victim was intentionally shot in an educational setting during normal school hours. In addition, a person who arrived at school planning to shoot indiscriminately was documented by the public K-12 School Shooting Database (Peterson et al., 2021). Peterson et al. (2021) concentrated on perpetrator motivation, a guardianship characteristic (armed guard), weapons/types numbers, and other variables. Findings revealed that 94 perpetrators (70%) were

current students, and 21 (15%) were former students (Peterson et al., 2021). The perpetrators comprised 83 (76%) Caucasians, and 148 (98%) were male (Peterson et al., 2021).

Peterson et al. (2021) determined that of 121 incidents with complete incident information, 57 (47%) were targeted violence shootings. There were 134 documented shootings, 12 with more than one perpetrator (Peterson et al., 2021). Armed security (guardianship) was on the scene in 23.6% of shootings and 29 of 123 incidents (Peterson et al., 2021). Peterson et al. assert that the data analyzed revealed no association between on-site armed officer presence and violence deterrence. Peterson et al. proclaimed that having an armed officer on the scene was the most significant factor associated with increased fatalities behind the perpetrators' use of assault rifles. Peterson et al. inability to determine or measure deterred/averted shootings while an armed law enforcement or security officer was present may promote an argument concerning increased fatalities while a guardian was present.

Workplace/Mass Shootings

Public mass shootings, "targeted violence," and a subset of workplace homicide transpire most frequently in workplace settings (Cowan & Lankford, 2023, p.2). Targeted violence is predatory, commonly with prolonged planning and preparation periods (Cowan & Lankford, 2023). Perpetrators who commit public mass shootings depict pre-attack warning signs and behaviors (Cowan & Lankford, 2023; Lankford et al., 2019; Silva, 2021; Peterson et al., 2021). In workplace environments, 76% of public mass shooters reveal signs of crisis. Seventy percent indicate employment issues and increased aggression before the attack (Cowan & Lankford, 2023; Peterson & Densley, 2019).

Doucette et al. (2019) revealed that in 2016, 500 victims were murdered in the workplace, the highest number since 2010. Workplace homicides committed using firearms from

2011 through 2016 were approximately 80% (Doucette et al., 2019). Doucette et al. obtained data from the Bureau of Labor concerning all workplace homicides from 2011 through 2015. From 2011 through 2015, there were 1553 firearm workplace homicides; 50% were non-robbery-related incidents (Doucette et al., 2019). Firearm-related workplace homicides from 2011 through 2016 were approximately 80% of all homicides (Doucette et al., 2019). In 2017, firearms were used to murder 13,205 adults in the workplace (Sabbath et al., 2020). Sabbath et al. (2020) assert that approximately 400 workplace homicides by firearm occur annually, accounting for about nine percent of the approximately 4800 workplace fatalities in the United States annually.

Sixty-five percent of public mass shootings transpire at educational facilities or within the workplace (Schildkraut et al., 2019). Both site typologies depict victims' and perpetrators' daily routine activities (Schildkraut et al., 2019). Both location types are considered easy access where perpetrators and vulnerable targets (victims) converge. Mass shooters predominantly select target locations with legitimate access as employees or students (Silva & Greene-Colozzi, 2022; Silver et al., 2018). Schildkraut et al. (2019) assert that access control, a target-hardening measure, may be one of the most beneficial tactics to mitigate victimization severity during mass shootings. Capellan et al. (2019) assert that target-hardening approaches must be tailored to the perpetrator's motivation to promote success.

Coronavirus Pandemic

Marsh et al. (2022) stated that severe acute respiratory syndrome induced the Coronavirus (COVID-19) pandemic. When the pandemic began, schools, workplaces, and retail establishments were forcefully closed for an extended period, depending on the state. Peña and Jena (2021) asserted that mass shootings increased post-pandemic. Miller et al. (2022) revealed

that during the coronavirus pandemic, gun sales dramatically increased. In addition, gun violence increased during the pandemic (Cohen et al., 2021). Koppel et al. (2023) investigated crime in New York City during the coronavirus pandemic to estimate crime change impacts via crime type and location (public space versus home residences). Koppel et al. determined that routine activity theory concepts were consistent.

Routine activity theory posits that daily routine changes can impact community crime distributions and victimization (Koppel et al., 2023). Covid-19 restrictions were statistically significant concerning residential burglary, felony assault, rape, robbery, and grand larceny incident decreases (Koppel et al., 2023). Crime increases were determined concerning non-residential burglary and residential grand larceny auto theft (Koppel et al., 2023). The research concluded no significant statistical difference between shooting incidents and homicide (Koppel et al., 2023).

Donnelly et al. (2023b) assessed mass shooting data obtained from the Gun Violence Archive from January 2013 through December 2021. The Gun Violence Archive compiles all mass shootings with four or more injuries, including crime-related and familicide incidents. Data from 2013 through 2019 was compared to the coronavirus period from 2019 through 2021. Donnelly et al. (2023b) used the Giffords Law Center Annual Gun Law Scorecard to assess gun law strength among all fifty states. Donnelly et al. (2023b) revealed that stronger gun laws positively impact mass shooting incidents.

Schildkraut and Turanovic (2022) used the Gun Violence Archive (GVA) mass shooting data and assessed incidents from 2019 through 2021. Schildkraut and Turanovic determined that mass shooting incidents increased in frequency after the pandemic was declared in March 2020. Schildkraut and Turanovic posited the necessity to investigate mass shootings during rapid social

change, specifically the pandemic. Research concerning mass shooting trends and their allocation in public and private spaces promotes routine activity theoretical testing of situational crime prevention (Schildkraut & Turanovic, 2022). The pandemic diminished motivated offenders' prospects (mass shooters) to converge in time and space with suitable targets (locations/persons) in environments absent capable guardianship (Schildkraut & Turanovic, 2022). The pandemic regulations promulgated by the United States government and state political leadership mandated educational facilities and workplaces to close for inconsistent periods depending on the state (Schildkraut & Turanovic, 2022).

Smith et al. (2023) researched mass shootings using the Gun Violence Archive in 2019 and 2020 and the pandemic's impact on six major U.S. cities that depicted historically high gun violence rates. Chicago, St. Louis, Detroit, Baltimore, New Orleans, and Philadelphia were municipalities included in the research (Smith et al., 2023). Findings revealed that in 2019, shooting victims' numbers increased from 69,777 to 83,206 in 2020 (Smith et al., 2023). Gun violence fatalities increased during the pandemic (39,580 in 2019) compared to (43,674 in 2020) (Smith et al., 2023). The number of people injured (30,197 in 2019) and (39,532 in 2020) also increased (Smith et al., 2023). Smith et al. determined that the pandemic did not impact public mass shooting incidents in the six cities. However, Smith et al. noted that smaller cities and counties should be included in future research.

Schleimer et al. (2021) pandemic research performed a nationwide assessment from January 2018 through July 2020, revealing that firearm violence and purchasing significantly increased during the coronavirus pandemic's initial months. However, firearm purchase increases were not correlated with increased firearm violence at the state level (Schleimer et al.,

2021). No recent research has assessed the distinctions between states, counties, and municipalities concerning public mass shootings, specifically, Texas compared to California.

Firearms and Victimization

Silva and Greene-Colozzi (2021) mentioned the potential of using a routine activity framework to assess global guardianship through gun laws based on weapon type/use and victimization rates. Donnelly et al. (2023b) used the Giffords Law Center Annual Scorecard for ranking gun law strength among all fifty states. Donnelly et al. (2023b) highlighted that California is ranked first nationally in gun law strength compared to Texas, ranked 33 out of 50 states. Donnelly et al. (2023b) depicted that Republican-led states have the lowest rankings (33 to 50) compared to Democrat-led states. Donnelly et al. (2023b) asserted that the gun law strength protects against mass shooting fatalities. Siegel et al. created a State Firearm Law Database emphasizing that Texas has 18 state firearm laws, and California maintains 107 state firearm laws.

Gius's (2015) seminal study investigated the impact of state laws on mass shootings. Results indicated that from 1982 through 2011, assault weapon prohibitions at the state level were associated with significantly mitigated mass shooting fatality severity (Gius, 2015). Blau et al. (2016) analyzed 184 mass shootings and nine separate firearm laws between 1982 and October 2015. Blau et al. (2016) determined that in shootings, assault weapons/semi-automatic rifles do not correlate with increased victimization. Blau et al. (2016) revealed that firearms and shotguns are significantly related to increased fatalities and injuries. Klarevas (2016) determined that large-capacity magazines contributed to approximately 66% of high-fatality mass shootings (six or more fatalities) between 2006 and 2015.

De Jager et al. (2018) investigated the presence or absence of semi-automatic rifle impacts on victimization severity numbers (fatalities/injuries) from 2000 through 2017. Findings revealed that semi-automatic rifle use was significantly correlated with increased victimization (de Jager et al., 2018). De Jager et al. (2018) analysis was limited in that other causes that may have impacted victimization were not considered. Reasons not explored comprised the perpetrator(s) motivation and background characteristics, location type, shooting time and day of the week, perpetrator outcomes, and the firearm type and numbers (Blair et al., 2021). Koper et al. (2018) revealed that approximately 20% of mass shootings from 2009 through 2016 involved firearms with large-capacity magazines.

Reeping et al. (2019) declared minimal evidence that more permissive state firearm laws were related to an increased mass shooting incident rate, contrary to the Donnelly et al. (2023b) findings. However, the study failed to examine distinct firearm law impacts (Siegel et al., 2020). Klarevas et al. (2019) examined the significance between mass shooting incidents, high fatalities (no less than six fatalities, not including the perpetrator), and large-capacity magazine prohibitions at the state level. Results determined that magazine capacity ban policies significantly decreased mass shooting occurrences and fatalities (Klarevas et al. (2019). However, the study considered the impact of only one firearm law type and was based on a small sample due to the high fatality criteria (Siegel et al., 2020).

Yelderman et al. (2019) investigated 102 mass shootings between 1982 and 2018. Yelderman et al. revealed that semi-automatic rifle use increased fatalities. Webster et al. (2020) investigated specific state law impacts on mass shooting incident fatalities from 1984 through 2017. Webster et al. (2020) determined that licenses required to purchase firearms and large-capacity magazine bans were related to decreased mass shooting incidents and fatalities. Siegel

et al. (2020) assert that firearm laws that restrict potential shooters' firearm acquisition by mandating permits may decrease mass shooting incidents. Laws limiting the number of bullets fired before reloading (magazine capacity) may mitigate mass public shooting victimization severity (Siegel et al., 2020).

Newsome et al. (2022) compiled and investigated mass shooting data between 2015 through 2021 from the Gun Violence Archive (GVA), four or more fatalities or injuries. The archive identified 2,423 mass shootings, resulting in 2,546 fatalities and 10,123 injuries. Newsome et al. determined that gun sales increase correlated to increases in mass shooting incidents and victimization. Newsome et al. revealed that California and Connecticut depicted increased mass shootings, yet records depicted a decrease in gun sales. Despite increased gun sales, ten states exhibited no change or decreased mass shootings (Newsome et al., 2022). Based on routine activity global guardianship gun law characteristics, California's firearm law strength ranking (Donnelly et al., 2023b; Siegel et al., 2020), and the number of firearm laws may portray more substantial guardianship concerning mass shooting incident mitigation and victimization severity compared to Texas. Reducing and regulating criminals' access to firearms can reduce firearm violence (Peterson & Densley, 2019, 2021; Siegel et al., 2020).

Mass Shootings /Routine Activity Research

Limited research utilizes the routine activity theory framework to investigate public mass shootings in the United States (Schildkraut et al., 2022; Silva & Greene-Colozzi, 2021; Greene-Colozzi, 2022; Ruderman & Cohn, 2021; Schildkraut et al., 2019). Silva and Greene-Colozzi (2021) assert that limited mass shooting research analyzes the characteristics that impact fatalities and injury rates using the routine activity framework (Yelderman et al., 2019). Research concerning mass shootings has only incorporated the routine activity motivation component or

multiple components. However, the prior research investigating mass shootings does not include all three routine activity theoretical components to investigate victimization (Silva & Greene-Colozzi, 2021).

Silva and Greene-Colozzi (2021) note that the routine activities framework concentrates on attack opportunities and intervention methods, managing problems associated with perpetrator profiling and prognosis. The theory does not highlight mass shooting prevention capacity. However, the framework promotes strategies for averting target selection victimization severity mitigation if an attack transpires (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019). In addition, the theory promotes the prospect of target analysis and guardianship concerning sufficient hardening prevention measures to protect high-risk and vulnerable populations (schools, hospitals, and retail open-access locations (Schildkraut et al., 2019).

Silva and Greene-Colozzi (2021) performed the first quantitative mass shooting investigation utilizing the routine activities framework to predict victimization. They intended to determine motivation, target, and guardian characteristics impacting mass shooting casualties and severity in the United States between 1966 and 2018. The study expanded a previous mass murder definition formulated by the Federal Bureau of Investigation and established the inclusion criteria of four or more killed or injured (Silva & Greene-Colozzi, 2021). Silva and Green-Colozzi identified 348 mass shootings, totaling 1,425 fatalities and 2,174 injuries in the United States from 1966 through 2018.

Silva and Green-Colozzi (2021) used a macro perspective to evaluate victimization. However, the research did not address potential global guardianship characteristics, the micro-environment, and distinct physical location characteristics selected by the perpetrator (Silva & Greene-Colozzi, 2021). The research deviated from standard macro-level conceptualizations

examining crime rates and instead concentrated on victimization rates. In addition, the study did not address target vulnerability and selection based on perpetrator motivation (Silva & Greene-Colozzi, 2021). Prospective research recommendations entailed the need to analyze further how the environment facilitates or averts mass shootings. In addition, an evaluation of target characteristics, law enforcement proximity, and formal and informal guardianship components that impact fatalities and injuries was recommended to attain further mass shooting knowledge (Silva & Greene-Colozzi, 2021).

Schildkraut et al. (2022) used a routine activity framework to investigate 401 mass shooting incident temporal patterns in the United States between 1966 through 2020. Findings revealed that public mass shooting events are potentially not random. Rather, the perpetrators, targeted locations, and potential victims are reflected in their daily activities. Schildkraut et al. (2022) used a previous mass shooting definition developed by Schildkraut and Elsass (2016). The research criteria excluded the shooting motivation correlated to targeted militant or terroristic activity and gang violence. No victim body count criteria were used for the study other than to indicate multiple fatalities or injuries.

Silva and Greene-Colozzi (2021) and Freilich et al. (2021) have utilized similar mass shooting depictions or variations. Schildkraut et al. (2022) did not evaluate additional aspects beyond mass shooting events' temporal patterns (time and space dimensions). For example, security presence may determine outcomes (response time to incident, victimization rates) and whether events are averted, disrupted, or completed (Silva, 2021; Schildkraut et al., 2022). Findings revealed that mass shootings are not uniformly distributed across time and place. Silva and Greene-Colozzi (2021) and Schildkraut et al. (2022) both used open-source, public data to identify and assess public mass shootings via a routine activity framework. Green-Colozzi

(2022) advanced public mass shooting research by analyzing targeted violence incidents in the United States from 1966 through 2019. Situational Crime Prevention, Routine Activity Theory, and Rational Choice theory were integrated theoretical frameworks used in the research.

Summary of Related Literature

Some researchers have asserted that despite mass shootings being periodical violent crimes, regardless of the perpetrator and victim characteristics, they can be comprehended as a function of routine activity theory based on when (day and time) and where they occur (Schildkraut et al., 2022; Ruderman & Cohn, 2021). This study draws from research and literature documented by Schildkraut et al. (2019), Silva & Greene-Colozzi (2021), Schildkraut et al. (2022), and Green-Colozzi (2022). This study aims to draw from previous mass shooting research using the routine activity framework to compare public mass shooting incidents in Texas and California from (1966-1994) and (1995-2023). Mass shooting research has assessed variables concerning the perpetrators and victimization; however, it fails to account for the potential differences within local communities, municipalities, counties, and states. Texas and California account for 22% of the United States population and pose contrasting political and firearm policy landscapes. A comparison of states advances further knowledge within this realm, specifically using the routine activity theory to examine similarities and differences in perpetrator motivation, targets, and guardianship.

Situational Crime Prevention (SCP)

Mandala and Freilich (2018) state that Situational Crime Prevention (SCP) is developed from environmental criminology and emphasizes crime-type analysis to devise measures to avert and disrupt crime opportunities. Mandala and Freilich (2018) contend that environmental criminology concerns crime environment examination to expose characteristics promulgating

crime. Marchment et al. (2018) state that environmental criminology is concerned with comprehending geographical and environmental crime functions and other interconnected proximal criminal activity determinates. The primary emphasis is on person-situation interaction roles (Marchment et al., 2018). Silva and Greene-Colozzi (2021) contend that prior mass shooting research concerning intervention and prevention has concentrated on mitigating attacks through threat assessments and victimization reduction strategies (Silva & Greene-Colozzi, 2021).

Victimization may be impacted based on protective measures implemented, law enforcement response time to an active shooter event, guardianship scene presence, medical staff availability, and effectiveness, not on the perpetrator's intent or motive (Freilich et al., 2021). Capellan and Jiao's (2019) mass shootings analysis on completed firearm assaults determined that 45% of the time, law enforcement arrived at the scene and engaged the shooter while the incident was in progress. Shooters encountered lethal resistance in 31% of incidents and non-lethal in 22% (Silva & Greene-Colozzi, 2021). Researchers predominantly understand public mass shooting perpetrator characteristics and backgrounds (Silva, 2022; Freilich et al., 2020). However, no lone profile depicts a mass shooting perpetrator (Freilich et al., 2020; Schildkraut et al., 2019). Some researchers investigated the characteristics of mass shooting perpetrators, but there has been limited activity in understanding the distinct locations/settings where mass shootings transpire (Freilich et al., 2020; Schildkraut et al., 2019).

Freilich et al. (2020) note that Situational Crime Prevention strategies comprise twenty-five crime reduction techniques. The techniques incorporate both hard and soft intervention measures. Monaghan et al. (2023) state that SCP concerns five primary mechanisms that may impact the potential offender's decision-making process. Mechanisms include promoting and

advancing the target hardening effort, increasing the risk (reinforcing surveillance), reward mitigation (concealing or target removals), provocation reductions (evading disputes), and removing causes (Monaghan et al., 2023). Mass shooting research has revealed that attacks are not normally a rage provoked consequence.

Fox and Levin (2022) assert that mass shootings tend to be planned events portraying extensive preparation within weeks or months of the event. Consequently, SCP strategies could be successful in these contexts (Freilich et al., 2020). If attacked, targets that involve more anticipated fatalities and injuries are vastly more vulnerable than other targets (Freilich et al., 2020). Silva (2019) determined that mass shooting attack success was not distributed evenly among facility types. Workplace violence shootings accounted for over 30% (Silva, 2019). Restaurants/bars and malls accounted for more than 25%. Educational facilities accounted for more than 20% (Silva, 2019). Ten percent of attacks transpired outside open spaces, six percent in government facilities, and less than five percent in houses of worship (Silva, 2019). A fundamental crime prevention principle maintains that crime is densely concentrated among people, locations, and objects (Silva, 2019). The principle proposes that resource concentrations can generate preventive advantages. Schools, the workplace, and businesses are commonly frequented via routine activities and are susceptible to mass shooting targets (Schildkraut et al., 2019).

Clarke and Newman, in 2006, constructed the “EVIL DONE” terrorism risk assessment template (Freilich et al., 2020, p.276). The developers asserted that targets that are more exposed, vital, iconic, legitimate, destructible, occupied, near, and easy are most vulnerable to aggression or attack (Monaghan et al., 2023; Freilich et al., 2020). Exposed targets are apparent and visible, whereas vital targets are deemed critical infrastructures (Monaghan et al., 2023; Freilich et al.,

2020). Iconic targets maintain symbolic value, and legitimate targets are more justifiable to attack (Freilich et al., 2020). Destructible targets are easier to annihilate; however, populated targets promote the prospect of increased victimization (Freilich et al., 2020). Nearer targets mandate less distance to travel and pose an increased substantial risk (Freilich et al., 2020). Easy targets are less protected, more accessible, and lack guardianship components (Freilich et al., 2020).

Targets promoting more anticipated victimization severity are more vulnerable than other targets if attacked (Freilich et al., 2020). Dimension analysis determines the most significant targets encountering risk prioritized for situational intervention. Freilich et al. (2020) assert that "EVIL DONE," exposed, easy, occupied, nearer components, and a created grievance (motivation) variable can specify which sites and times are at increased risk for public mass violence, specifically mass shootings. However, legitimate, vital, iconic, and destructible dimensions do not necessarily apply to high-risk target identification (Freilich et al., 2020). These concepts will be further discussed and assessed in detail later in the manuscript.

Summary

Public mass shootings, typically referred to as active shootings or rampage shootings, are distinct and unique homicide types (Fox, 2022; Duwe, 2020; Capellan et al., 2019; Peterson & Densley, 2019; Capellan & Gomez, 2018). Research concerning public mass shootings depends on the operational definition of a mass shooting event. Results vary depending on the definition and the study timeline. The primary issue in how researchers define a mass shooting depends on the chosen project. Public mass shooters select specific vulnerable targets (places and victims) to attack and murder victim-specific or random bystanders in public places (Peterson & Densley, 2019; Schildkraut et al., 2019).

Fox and Levin (2022) researched 448 mass murders from 2006 through 2020 and determined that mass homicide depicts several specific event typologies differentiated by motivation, location, and victim-offender relationship. Mass homicide patterns and characteristics, perpetrator portrayals, and targets/victims are distinct among types: familicides, felony-crime-related killings, and public setting killings (Fox & Levin, 2022; Silva, 2022; Fridel, 2021; Capellan et al., 2019). From 2011 through 2015, there were 1553 firearm workplace homicides; 50% were non-robbery-related incidents (Doucette et al., 2019). Statistics reveal that from 1993 through 2011, approximately 70% of all homicides resulted from firearm violence (Rush & Keenan, 2020). Sixty-five percent of mass shootings occur at schools or within the workplace (Schildkraut et al., 2019). Both site typologies depict victims' and perpetrators' daily routine activities (Schildkraut et al., 2019).

The routine activity theoretical framework proposes that for a crime to occur, a motivated offender, a suitable target, and a lack of a capable guardian must converge in time and space (Schildkraut et al., 2022; Schildkraut et al., 2019; Silva & Greene-Colozzi, 2021). Mitigating one component of the RAT triangle prevents the incident from transpiring (Schildkraut et al., 2022; Schildkraut et al., 2019; Silva & Greene-Colozzi, 2021). Vulnerable soft targets such as schools, restaurants/bars, and the workplace are frequented daily through the routine activities of its employees, students, and teachers (Schildkraut et al., 2022; Schildkraut et al., 2019; Silva & Greene-Colozzi, 2021). The workplaces, schools, retail locations, restaurants/bars/, and entertainment venues are typically open-access, easily accessible structures or open spaces. Perpetrators planning to attack select these targets because they are perceived as densely populated and vulnerable (Bennett, 2018; Silva & Greene-Colozzi, 2021; Capellan et al., 2019; Freilich et al., 2020).

Researchers have a more comprehensive understanding of perpetrator motivations concerning public mass shootings, distinct from all other mass homicides (Duwe, 2020; Kim et al., 2021; Fox & Levin, 2022; Peterson & Densley, 2019; Capellan et al., 2019; Schildkraut et al., 2019; Silva & Greene-Colozzi, 2021; Fridel, 2021). In addition, researchers have assessed motivation and its role in planning/preparation, target selection, and mass shooting execution (Silva & Greene-Colozzi, 2021; Peterson & Densley, 2019; Capellan et al., 2019). Researchers have examined mass shooting incidents' social, psychological, and economic aspects and outcome severity (Peterson & Densley, 2019; Baumann & Teasdale, 2018; Arluke et al., 2018). Researchers have also assessed mass shootings correlated to gun laws, weapon types, and effectiveness in decreasing incidents, fatalities, and injuries (Siegel et al., 2020; Reeping et al., 2019; de Jager et al., 2018; Koper et al., 2018).

There is limited mass shooting research using the routine activity framework when assessing all three components (motivation, guardianship, and target suitability variables) (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019) to compare victimization through micro-environment state comparisons, specifically in Texas and California. No research has been found where mass shootings are compared in Texas and California using the routine activity framework from (1966-1994) and (1995-2023). Within these parameters, perpetrator motivation, target selection and guardianship concepts have not been assessed nor compared in Texas and California.

CHAPTER THREE: METHODS

Overview

Mass shootings are a unique, complex phenomenon requiring extensive analysis by reviewing public, open-source information. *Public mass shooting* research has dramatically increased in recent years, predominantly using public open-source information and official crime statistics. The National Institute of Justice (NIJ) funded a research grant that led to The Violence Project dataset published in 2021. The dataset is considered the most comprehensive compilation of mass shooting data available to the public from 1966-2023. In addition, since the advent of the Internet, news sources that report, document, and track incidents are readily available and accessible. Mass murders that are most widely publicized are those where the perpetrator used a gun or assault weapon to shoot numerous victims in a public location (Duwe, 2020). In 1966, after the University of Texas mass shooting, a second wave of mass murder was initiated (Duwe, 2020). This second wave of mass murder inspired the designated research period, 1966-2023.

This chapter depicted the research design utilized throughout the study. The selected research design was explained as the most efficient in answering the research questions and purpose. The research questions were formulated to investigate public mass shootings in Texas and California from 1966 through 2023, separated into two periods for comparison; (1966-1994) and (1995-2023). The study aimed to assess public mass shootings using routine activity components to predict mass shooting victimization. The instrumentation employed was comprehensively discussed, including the selected data analysis techniques and procedures employed in the research.

Design

This research used a quantitative causal-comparative/quasi-experimental design to investigate *public mass shootings* in Texas and California between (1966-1994) and (1995-2023). Causal-comparative research, or ex-post-facto research, is a non-experimental design used to investigate causal relationships between independent and dependent variables when random assignment is not feasible or ethical (Lawrence, 2023; Creswell & Creswell, 2018). The design differs from experimental research because the independent variables are selected, not fully controlled or manipulated (Creswell & Creswell, 2018). Causal-comparative research examines cause-and-effect relationships and differences by comparing existing groups or conditions (Lawrence, 2023). Causal-comparative research relies on two or more naturally occurring groups or conditions that have retrospectively experienced different levels of an independent variable (the presumed cause) (Lawrence, 2023; Creswell & Creswell, 2018).

This study explored causal relationships between variables to evaluate the statistical significance between routine activity theoretical components (independent variables) and public mass shooting victimization (dependent variable). In evaluating statistical significance, this research aimed to predict public mass shooting victimization by measuring the relationship between independent variables (routine activity theory) and one dependent variable, public mass shooting (victimization). This research used the routine activity theoretic framework (Schildkraut et al., 2022; Silva & Greene-Colozzi, 2021; Ruderman & Cohn, 2021; Green-Colozzi, 2022; Schildkraut et al., 2019) to predict public mass shooting victimization (fatalities and injuries). Motivation, target, and guardianship routine activity components were operationalized and evaluated as independent variables. Victimization (fatalities/injuries) was used as the dependent variable in the study. Texas and California served as causal-comparative conditions in addition to

the three periods designated for comparison and potential differences (1966-1994), (1995-2023), and (2016-2023).

Multiple Linear Regression (MLR) was used to examine how multiple independent variables are related to one dependent variable. Victimization rates were measured and assessed via independent variables and compared between Texas and California within two periods. This study aimed to evaluate whether there was a statistically significant difference in motivation (causes/reasons), target selection (place of occurrence), and guardianship (guardianship was present or absent) when a mass shooting transpired from (1966 to 1994) compared to (1995-2023). This study explored whether routine activity components in Texas and California resulted in a higher or lower number of public mass shootings and victimization rates between (1966-1994) and (1995-2023). Causal comparative analysis can provide evidence of a potential causal relationship but cannot establish definitive causality as in experimental research (Umstead & Mayton, 2018). However, if a significant difference is determined between groups, an inference can be formulated that the independent variable(s) impacted the distinction (Umstead & Mayton, 2018).

Research Questions

RQ1: *Is there a statistically significant difference in perpetrator motivation, target selection, and guardianship among victimization rates in public mass shootings in Texas and California between 1966-1994 and 1995-2023?*

RQ2*:* *Is there a notable difference in the number of public mass shootings in Texas and California between 1966 and 1994 compared to 1995-2023?*

RQ3: *Is there a notable difference in the number of public mass shootings before and during the coronavirus pandemic in Texas and California between 2016 and 2023?*

Hypothesis(s)

Null Hypothesis RQ1

H01: No statistically significant difference was determined in perpetrator motivation, target selection, and guardianship among victimization rates in public mass shootings in Texas and California between 1966-1994 and 1995-2023.

Alternate Hypothesis RQ1

Ha1: A statistically significant difference was evident in perpetrator motivation, target selection, and guardianship among victimization rates in public mass shootings in Texas and California between 1966-1994 and 1995-2023.

Null Hypothesis RQ2

H02: No notable difference in the number of public mass shootings in Texas and California between 1966-1994 and 1995-2023.

Alternate Hypothesis RQ2

Ha2: A notable difference is evident in the number of public mass shootings in Texas and California between 1966-1994 and 1995-2023.

Null Hypothesis RQ3

H03: No notable difference is evident in the number of public mass shootings before and during the coronavirus pandemic in Texas and California between 2016 and 2023.

Alternate Hypothesis RQ3

Ha3: A notable difference is evident in perpetrator motivation, target selection, and guardianship among victimization rates in public mass shootings in Texas and California between 2016-2023.

Participants and Setting

This research investigated all public mass shootings in Texas and California from 1966- to 2023 via open-source, public data, archival information, and official crime statistics based on definition inclusion/exclusion criteria. This research used the routine activity theoretic framework to investigate *public mass shootings* in Texas and California from 1966-1994 and 1995-2023. Consistent with the original Federal Bureau of Investigation (FBI) definition of mass murder, this research defined a *public mass shooting* as an incident of targeted violence where one or more perpetrators kill four or more people in a public or populated space (K-12 school, university/college, business, house of worship, retail store, entertainment venue, restaurant/bar, government facility, and open public space) within a 24-hour single incident. The number killed does not include the perpetrator. The perpetrator (s) used a firearm, specifically a semi-automatic or non-semi-automatic revolver/handgun, long rifle, shotgun, or other projectile weapon capable of firing bullets. The perpetrator chose at least some victims randomly or for their symbolic value. Felony-related and family-related (familicide) mass shootings were excluded from the public mass shooting operationalization. Felony-related mass shootings involve other criminal activity (drug or gang-related shootings). Familicide mass shootings are targeted events where the victims are the perpetrator's immediate or extended family.

This research added the inclusion of "4 or more injured" to the public mass shooting depiction. The reason for the additional opalization concerns the inclusion of cases where many were injured, yet few were killed. For example, the 2014 Fort Hood, Texas, mass shooting resulted in 12 injuries and three fatalities (Stanford Mass Shootings of America, 2017; Silva & Greene-Colozzi, 2021). In 2001, a school shooting occurred at a high school in Santee,

California, that resulted in 2 fatalities and 13 injured (Stanford Mass Shootings of America, 2017). However, due to the predominant four-fatality research minimum standard, these incidents would not be included or considered public mass shootings (Stanford Mass Shootings of America, 2017). Most recent research on United States public mass shootings has used the four-fatality minimum; however, there is a vast amount of scholarly disagreement on what constitutes a public mass shooting.

The four-fatality standard is predominantly used by researchers when depicting a public mass shooting (Kim et al., 2021; Fox & Levin, 2022; Peterson et al., 2021; Fowler et al., 2021). Most researchers investigating public mass shootings reference the FBI's depiction of mass homicide: four or more killed in a single incident within 24 hours by one or more perpetrators using a handgun or long rifle (Duwe, 2020; Kim et al., 2021; Fox & Levin, 2022; Peterson et al., 2021; Fowler et al., 2021). This research incorporated the inclusion of "four or more injured." The four or more injury standard was added to the research to ensure the inclusion of all public mass shootings, where at least four were injured and potentially less than four killed. These incidents were significant because the perpetrator's mass homicidal intent should be considered relevant when there are many injuries but fewer than four fatalities (Greene-Colozzi & Silva, 2022; Silva-Green-Colozzi, 2021). Green-Colozzi (2022) asserts that defining public mass shootings by the minimum number killed should not be a consistent practice because many public mass shootings relevant from a research perspective are not considered nor explored (Greene-Colozzi & Silva, 2022). Many researchers have identified the public mass shooting depiction problem and agree that a consistent definition of public mass shootings is warranted (Lopez et al., 2020; Greene-Colozzi & Silva, 2022; Sandel & Martaindale, 2022; Green-Colozzi, 2022; Fox & Levin, 2022; Schildkraut et al., 2019).

For this study, the number of public mass shooting incidents sampled comprised the entire population of occurrences in Texas and California between the specified dates (1966-2023). The definition inclusion/exclusion criteria were used to sample 100% of the designated research population (N=94). Cohen provided benchmarks for interpreting effect sizes classified as small (d= 0.2), medium (d= 0.5), and large (d ≥ 0.8) (Alwahaibi et al., 2020). The research sample size is appropriate for achieving internal validity and reliability, promoting robust conclusions (Creswell & Creswell, 2018).

Variables

The variables used in this research were formulated from routine activity theory (independent variables) and public mass shooting victimization (dependent variable) in Texas and California from 1966-2023. The research independent variables comprised motivation, target, and the presence or absence of guardianship. The dependent variable was operationalized as victimization (fatalities/injuries).

Motivation

Motivation concepts used in this research concern the perpetrator's reason and contributing factors for committing the mass shooting. The motivation variables used in this research consisted of Grievance considerations consisting of racism, political or religious ideology, hate, revenge, homophobia, employment/termination, domestic/relationship issues, direct threats, leakage/warning, others, and unknown. Trauma and Childhood Background factors included childhood trauma, physical, sexual, or emotionally abused/neglect, perpetrator criminal history, and prior violence history. Signs of Crisis variables consisted of signs of being in a crisis, recent or ongoing stressors, depression, rapid mood swings, isolation, and paranoia. Health and Mental Health variables included suicide history, psychiatric medication, clinically

diagnosed mental illness, known family mental history, health issues, substance abuse, and head injury/possible traumatic brain injury.

Target

The selected target is depicted as the location/victim selected by the perpetrator. Variables included (city, county, state, urban, suburban or rural). In addition, locations were depicted as K-12, university/college, retail, entertainment venue, religious facility, government/civic facility, factory, park, residence, restaurant/bar, open space, multiple locations, and other locations, inside, outside, confined, or open, and the relationship the perpetrator had to the location. The relationship to the location included whether the known location concerned a former employee, former student, or related to one or more victims through marriage, relative, personal relationship, and former relationship.

Guardianship

Guardianship depicts security, law enforcement, or capable bystander presence before the shooting and preventive measures implemented concerning the target. Preventative measures concerned those variables that made access more or less difficult for the perpetrator. Preventative measures were classified as (hard or soft targets, closed or open access, the presence of electronic access control measures, panic alarms, surveillance cameras, barriers, gates, fences, and locked doors). Additional guardianship variables included armed person on the scene and armed person type. Armed person types were considered as bystanders, teachers, customers, patrons, employees, law enforcement, security, or others. Additional variables also incorporated weapon type, number of weapons used, and whether weapon (s) were legally or illegally purchased, possessed, and transported on targeted sites prohibited by law. Guardianship variables also included whether the perpetrator (completed the shooting, was interrupted, escaped,

arrested, subdued by bystanders, or killed) by a (bystander, teacher, customer, patron, employee, law enforcement, or security.

Victimization

Victimization was used as the dependent variable in the research and measured in (number of victims, number of fatalities, total number of victims, total number of fatalities, victim age/gender/race, and whether the victim knew the perpetrator). If known to the perpetrator, the relationship was specified (marriage, divorce, boyfriend/girlfriend, acquaintance, co-worker, student, teacher, supervisor, or unknown). The time of day, day of week, and season (Winter, Spring, Summer, Fall) were also included concerning temporal patterns.

Instrumentation

Consistent with most public mass shooting research, this study used open-source, public information, and archival data concerning all public mass shootings in Texas and California from 1966 to 2023. Open-source data is information open to the public, posing no restrictions for purview and research. The data was maintained and accessed in searchable electronic documents located via the Internet. This study reviewed newspaper and periodical articles, governmental reports, and comprehensive mass shooting datasets that compiled and tracked shooting incidents. Google, Yahoo, and Lexis-Nexis search engines were used to triangulate information concerning all public mass shooting incidents in Texas and California from 1966-2023. All relevant collected data was reviewed and sorted based on the research inclusion/exclusion standards. Information collected was sorted based on the sequence of time. An Excel spreadsheet was formulated to document and chronically list public mass shootings in California and Texas from 1966 through 2023 that matched the inclusion/exclusion research standard. Within the spreadsheet, variables were added and numerically coded.

For inclusion/exclusion purposes, relevant information included the shooting incident date, time, and location, including the perpetrator's name, number of weapons/types used, targeted location, and number of fatalities and injuries. In addition, online sources were searched to verify the perpetrator's motivation, target characteristics, and components related to guardianship, security or law enforcement presence, interrupted/ incomplete shootings, bystander intervention, and perpetrator outcomes. Specific search terms were used to identify all relevant incidents; specifically, "public mass shooting," "mass shooting," "mass homicide" "and "mass murder" were employed in three search engines. "Texas" and "California" were also used to search for public mass shootings specific to each state. Double quotations and Boolean operators were employed to advance pertinent results.

Archival Data

In addition to search engine probes, mass shooting online datasets were accessed via open-source records and cross-referenced concerning details and relevancy to the research design and inclusion/exclusion standards. The datasets were reviewed and compared based on data collection years relevant to the research. Public information requests were disseminated to law enforcement agencies or district attorney offices, depending on whether the perpetrator was arrested, charged, killed/died at the scene. The requests were sent if more details were needed to determine the relevant information required for research analysis. Information obtained from public information requests was reviewed and assessed for detailed information concerning each responding county district attorney's office and law enforcement agency that managed incident jurisdiction.

This study evaluated and assessed several open-source, publicly available mass shooting datasets compiled by various researchers and the media. The databases comprised Mother Jones,

Gun Violence Archive (GVA), the Stanford Mass Shootings of America (MSA), and The Violence Project. In 2012, Mother Jones initiated mass shooting incident collection and used the inclusionary standard of four or more fatalities (Follman et al., 2022). The database changed the criteria to three or more shooting fatalities in 2013 (Follman et al., 2022; Bridges et al., 2023; Booty et al., 2019). The database exclusion criteria did not compile data concerning drug or felony-related mass shootings. The Mother Jones database also excludes crimes where the perpetrator is unknown to law enforcement or the media (Follman et al., 2022; Bridges et al., 2023; Booty et al., 2019). Mother Jones has included mass shooting incidents from 1982-current.

The Gun Violence Archive (GVA) is a research entity established in 2013 that documents U.S. gun violence, including public mass shootings (The Gun Violence Archive, 2022; Geller et al., 2021; Cavalea et al., 2023; Bridges et al., 2023; Booty et al., 2019). The GVA includes incidents with at least four victims: injured/ killed or combined (Bridges et al., 2023; Booty et al., 2019). The GVA maintains the most inclusive mass shooting characterization and compiles incidents concerning familicide, felony-related, drug, and gang violence in private and public locations (The Gun Violence Archive, 2022). GVA gathers and compiles data from news sources, including local, U.S., national, and international news platforms (Bridges et al., 2023; Booty et al., 2019). The GVA has tracked gun violence from 2014-current.

The Stanford Mass Shootings of America (MSA) database definition used to compile public mass shootings was three or more shooting victims (killed or injured), not including the perpetrator (Stanford Mass Shootings of America, 2017). The database excluded drug, gang, and crime-affiliated mass shootings. The data collected and compiled by interns, students, and researchers was limited to solely online sources (Stanford Mass Shootings of America, 2017). The Stanford dataset included United States mass shootings from 1966 through 2016 (Stanford

Mass Shootings of America, 2017). The data collection was suspended due to up-to-date maintenance requirements. The Stanford dataset tracked mass shooting incidents from 1966 to April 2016.

The Violence Project database was completed and disseminated in March 2021 and compiles all public mass shootings in the United States from 1966 to 2023 (Peterson & Densley, 2019). The National Institute of Justice (NIJ) funded the project, considered the most comprehensive public, open-source dataset by most researchers (Peterson & Densley, 2019). The Violence Project criteria depict all mass shootings where four or more victims are killed, not including the perpetrator(s) (Peterson & Densley, 2019). The incident occurs within 24 hours and is a single continuous incident. The perpetrator(s) uses a handgun, long rifle, or semi-automatic weapon to facilitate the shooting (Peterson & Densley, 2019). Familicides and felony-related shootings are excluded from the database (Peterson & Densley, 2019). Incidents investigated in public and open spaces (K-12 schools, universities, parks, retail locations, government institutions, and businesses considered the workplace) were included in the dataset (Peterson & Densley, 2019).

This study reviewed and cross-referenced data from all four datasets to increase internal validity accuracy and ensured that the compilation of public mass shootings met the research inclusion/exclusion criteria. This research primarily used The Violence Project dataset (1966-2023) due to expanded collection years, significant variables, perpetrator background and characteristics, and inclusion/exclusion criteria. The Violence Project was the only publicly available dataset with complete and up-to-date expansive years available for analysis. Variables included perpetrator characteristics and history, motivation, target details, weapon use, and victimization. None of the other databases completely satisfied the research parameters in years

and definition standards. This study verified detailed data collected through open-source internet searches, news, and journal articles, including government sources. However, incidents not included in the Violence Project dataset were cross-referenced, triangulated, and checked for accuracy in the GVA (Geller et al., 2021; Stanford Mass Shootings of America, 2017) and Mother Jones datasets (Follman et al., 2022; Crews & Crews, 2019). The additional datasets were used to locate, assess, and incorporate mass shooting incidents where less than four were killed and four or more were injured.

The predominant database distinctions concerned the minimum number of fatalities/injuries, type of public mass shooting inclusion (public, familicide, felony-crime related), and perpetrator motives. Before 2021, most public mass shooting research disseminated descriptive data concerning the number of incidents, perpetrator types, fatalities/injuries, weapon types, and shooting event typologies (Lopez et al., 2020; Duwe, 2020). However, since 2021, The Violence Project has promulgated public mass shooting research and has promoted more extensive statistical analysis. The Violence Project has been established as credible and accurate by various researchers using the dataset since its inception (Lei & MacKenzie, 2023; Silva-Green-Colozzi, 2021). Researchers who conduct mass shooting investigations predominantly use archival, open-source, public data obtained from news and media sources, verified via publicly available datasets to perform investigation and analysis (Peterson & Densley, 2019; Freilich et al., 2022; Lei & MacKenzie, 2023; Silva & Green-Colozzi, 2021; Green-Colozzi, 2022; Duwe, 2020; Fridel, 2021; Lopez et al., 2020; Kim et al., 2021; Capellan & Gomez, 2018; Schildkraut et al., 2022; Lankford & Silver, 2020; Crews & Crews, 2019; Smith et al., 2023; Donnelly et al., 2023b; Kowalski et al., 2021; Lankford & Cowan, 2020; Geller et al., 2021; Silva & Lankford, 2022; Frey & Kirk, 2021; Rocque & Duwe, 2018).

Maslakci and Sürücü (2020) indicated that validity concerns whether the measuring instrument measures the behavior or quality it intends to measure and how well it performs its function. Validity is determined by the meaningful and appropriate data interpretation obtained from the measuring instrument as a result of the analyses (Sürücü & Maslakçi, 2020). Reliability indicates the stability of the measured values obtained in repeated measurements employing the same measuring instrument under the same circumstances (Sürücü & Maslakçi, 2020). Validity was ensured by obtaining and validating specific real-life public mass shooting information constructed from news sources, government-sponsored data sets, known research journals and publications, law enforcement, and county prosecutor information. As previously cited, numerous researchers have used many of the same open-source datasets and public new sources based on defined inclusion/exclusion criteria to conduct mass shooting research. Content validity was substantiated as it covered the full range of the research criteria.

Procedures

The first research step was selecting a criminal justice-related phenomenon to investigate, specifically the inherent risk of mass shootings in the United States. In addition, research questions were formulated using the routine activity theoretic framework and selected the period of public mass shooting occurrences in Texas and California from 1966 to 2023. The second step was completing a comprehensive literature review of public mass shooting research, including open-source public information. Information included collecting and analyzing mass shooting datasets and relevant news source articles. In addition, a comprehensive, open-source, public search was conducted to locate and compile records specific to Texas and California between 1966-2023 that satisfied the inclusion/exclusion public mass shooting definition. Thomson Reuters CLEAR public investigation database was used to determine the perpetrator’s criminal

history and address at the time of the shooting. In addition, public information requests were sent to law enforcement jurisdictions and county attorney offices when applicable.

The third step in the study was to organize the software and equipment required for research. Software included a functional computer, internet service, an updated SPSS software download, and a Microsoft Excel spreadsheet. In addition, a request for research approval was submitted and obtained from the research committee and Liberty University to execute the research. The fourth step entailed an application submission to the IRB to initiate research. Approval was finalized after submitting the IRB research application to the Institutional Review Board (IRB). Following IRB approval, the study was executed.

The study was initiated by searching, reviewing, compiling, and sorting open-source public mass shooting news articles, datasets, and government records that provided the necessary information concerning the research definition inclusion criteria. The multiple sources mentioned above were used to facilitate triangulation for internal validity. The research entailed collecting, analyzing, sorting, and compiling all public mass shooting incidents in Texas and California between 1966-2023. Incidents that met research inclusion were added to a formulated Microsoft Excel spreadsheet. Datasets (The Violence Project, GVA, Mother Jones, and Stanford (MSA) and news sources (The New York Post, The New York Times, Dallas Morning News, Austin American Statesman, Houston Chronicle, Los Angeles Times, San Francisco Chronicle) accessed via (Google, Yahoo, and Thomson Reuters) search engines were reviewed for all relevant information. Specific data concerning perpetrator characteristics, motivation, target, and guardianship factors consistent with routine activity theory was evaluated for each incident. Victimization details included the number of fatalities and injuries, victim demographics, and whether the victim knew the perpetrator.

The Mother Jones, Gun Violence Archive, and Stanford (MSA) datasets were examined for additional incidents that met the four or more injured inclusion standard. The Excel spreadsheet was cleaned, finalized, and numerically coded for statistical analysis using Statistical Package for the Social Sciences (SPSS) version 29 software. Data was cleaned to assess entry errors and missing values and to enhance accuracy and reliability. Once the spreadsheet was completed and checked for accuracy, the spreadsheet was imputed to the (SPSS) software for data analysis. The data analysis measures enacted in SPSS were implemented to answer the research questions. This research used public, open-source information, including (public information request) data obtained from law enforcement and district attorney offices. Thus, no confidentiality issues were considered within the project.

Data Analysis

This study used multiple linear regression to assess the relationships between routine activity components and public mass shooting victimization. Multiple linear regression is a powerful statistical technique to analyze complex relationships between two or more independent variables (explanatory variables) to predict the outcome of a dependent variable (response variable) (Hair et al., 2019). Multiple regression is a comprehensive approach to examine causal effect estimations (Aronow & Samii, 2016). Multiple regression advances linear regression principles by simultaneously considering multiple predictors (Hair et al., 2019; Tabachnick & Fidell, 2019). Multiple regression predictive modeling is a fundamental data analysis application and the predominant reason for the technique used in this research (Hair et al., 2019; Tabachnick & Fidell, 2019).

The data analysis technique was implemented to predict victimization (dependent variable) based on the routine activity components of perpetrator motivation, target selection,

and capable guardianship (independent variables). In addition, multiple regression enabled control for confounding variables. Multiple regression was employed for hypothesis testing and to assess the model's validity through statistics comprised of coefficients, p-values, and R-squared values (Cronk, 2020; Hair et al., 2019). Regression analysis enabled the evaluation of how well the model explained the variability in the dependent variable (victimization). Statistical Package for the Social Sciences (SPSS) version 29 was used to run the necessary tests to produce the outcome.

Four principal assumptions justify linear regression models for inference or prediction (Meier et al., 2014). Those four assumptions are Linearity, Homoscedasticity, Normality, and Multicollinearity (Meier et al., 2014). 1). Linearity and additivity of the relationship between dependent and independent variables: The dependent variable's expected value is a straight-line function of each independent variable, holding the others fixed (Meier et al., 2014). The slope of that line does not depend on the value of other variables (Meier et al., 2014). The effects of different independent variables on the dependent variable's expected value are additive (Meier et al., 2014). Because the independent variables were dummy-coded, the linearity assumption was satisfied. However, the Normal P-P plot was also used to depict a linear relationship between the independent and dependent variables.

2). Homoscedasticity assumes that the variance of errors is constant across all levels of the independent variables (Meier et al., 2014). The spread of variables should be consistent (Meier et al., 2014). Homoscedasticity was assessed using SPSS linear scatter plotting. To mitigate the skewness of the dependent variable, a natural log transformation was implemented using SPSS. When the dependent variable is transformed via a natural log (ln), a one-unit change in the independent variable is associated with a positive or negative percentage change in the

dependent variable (Ford, 2018). The unstandardized Beta coefficient was exponentiated after the dependent variable was log-transformed (ln). The exponentiated coefficient promoted the multiplicative factor for every one-unit increase in the independent variable (Ford, 2018). The exponentiated coefficient enabled the dependent variable to be assessed via its original value. The independent variable represented the percentage change in Y for a one-unit change in X. The one unit change in x when variables are dummy coded (0 and 1) means that when the independent variable moves from (0 to 1), a percentage increase or decrease is represented in the dependent variable (Ford, 2018).

3). Normality of the error distribution refers to the assumption that the residuals follow a normal distribution (Meier et al., 2014). Residuals refer to the difference in the dependent variable's observed values and regression predicted values. When plotted, residuals should depict a bell-shaped curve. Normality departures can impact statistical test validity and confidence intervals (Meier et al., 2014). The Normality of the error assumption was tested using the SPSS Normal P-P Scatterplot (Cronk, 2020).

4). Little or no Multicollinearity occurs when independent variables are not highly correlated (Meier et al., 2014). The predictors should present low correlations with each other. If determined to be highly correlated, distinguishing individual predictor effects is problematic. Correlations of 0.8 or above suggest a strong relationship, and only one of the two variables is needed in the regression analysis. Multicollinearity was assessed via correlation coefficients and variance inflation factor (VIF) values (Meier et al., 2014). Variance Inflation Values (VIF) for each independent variable should depict close to 1. Values much greater than 1 indicate a problem. Multicollinearity was demonstrated using a Pearson correlation test via SPSS (Cronk, 2020). Correlation analysis explored the relationships between routine activity theory

independent variables and the dependent variable (victimization) to subsequently identify potential Multicollinearity among independent variables (Cronk, 2020).

Public mass shooting researchers (Silva & Green Colozzi, 2021; Yelderman et al., 2019; Donnelly et al., 2023a; Webster et al., 2020; Klarevas et al., 2019) have used regression models to investigate mass shootings and associations concerning routine activity theory, weapon types/use, and relationship to victimization risk. Using regression analysis, Yelderman et al. (2019) explored the relationships between gun access, mental health, and mass shooting severity. Donnelly et al. (2023a) used linear regression analysis to evaluate mass shooting trends associated with gun law strength. Webster et al. (2020) implemented regression analysis to estimate the relationships between key gun laws and fatal mass shooting differences. Klarevas et al. (2019) used regression analysis to evaluate the effect of large-capacity magazine bans on U.S. mass shooting lethality and frequency. Anisin (2019) highlighted that most mass shooting research has centered on linear regression analysis to associate mass shootings with gun laws, weapon types and capacity, gun acquisition, and victimization.

Summary

A quantitative causal-comparative research design investigated public mass shootings in Texas and California from 1966-2023. The research used routine activity theory as the foundation for inquiry. The routine activity components of perpetrator motivation, target selection, and the presence or absence of guardianship were used as independent variables to predict mass shooting victimization (dependent variable). Public and open-source information concerning shootings that met the research criteria were reviewed, compiled, and evaluated for key information relevant to the project. Once sorted and compiled, this researcher formulated a

numerically coded Excel spreadsheet dataset. The dataset comprised all public mass shootings in Texas and California from 1966 to 2023, satisfying the definition criteria.

Multiple linear regression was used as the data analysis technique via SPSS version 29 software. The study assessed whether there was a statistically significant difference in public mass shootings in Texas and California from (1966 -1994) and (1995-2023). In addition, due to the onset of the coronavirus pandemic in 2020, an additional comparison was conducted from (2016-2023). Since 2020, the coronavirus pandemic has changed the routine activities of daily lives. This study assessed whether perpetrator motivation, target selection, and lack of guardianship characteristics resulted in higher or lower public mass shootings and victimization rates in Texas and California within the specified periods.

CHAPTER FOUR: FINDINGS

Overview

Chapter 4 depicts a comprehensive analysis of descriptive and inferential statistics concerning mass shooting comparisons of Texas and California from 1966-2023. Descriptive statistics illustrated comparisons between Texas and California about temporal patterns, weapon details, and routine activity theoretic predictor variable frequencies. Multiple linear regression was conducted to assess the relationship between predictor variables and victimization rates. The multiple regression models concerned an analysis of mass shooting incidents (N=94) in which routine activity predictors were tested to identify relationships to victimization rates. Due to the distinct differences in the number of mass shooting incidents between California (N=60) and Texas (N=34), a random computer-generated sample size of California incidents was generated for comparison to Texas. Separate regression models were performed isolating Texas and California that more distinctly compared the same theoretic predictors and sample size; N=34. Results were assessed and compared to determine which routine activity theoretic variables (motivation, target selection, and guardianship) predicted victimization rates. The following research questions facilitated the study:

RQ1*: Is there a statistically significant difference in perpetrator motivation, target selection, and guardianship among victimization rates in public mass shootings in Texas and California between 1966-1994 and 1995-2023?*

- Ho1: No statistically significant difference was determined in perpetrator motivation, target selection, and guardianship among victimization rates in public mass shootings in Texas and California between 1966-1994 and 1995-2023.

- Ha1: A statistically significant difference was evident in perpetrator motivation, target selection, and guardianship among victimization rates in public mass shootings in Texas and California between 1966-1994 and 1995-2023.

  RQ2*: Is there a notable difference in the number of public mass shootings in Texas and California between 1966 and 1994 compared to 1995-2023?*

- Ho2: No notable difference in the number of public mass shootings in Texas and California between 1966-1994 and 1995-2023.
- Ha2: A notable difference is evident in the number of public mass shootings in Texas and California between 1966-1994 and 1995-2023.

  RQ3: *Is there a notable difference in the number of public mass shootings before and during the coronavirus pandemic in Texas and California between 2016 and 2023?*

- Ho3: No notable difference is evident in the number of public mass shootings before and during the coronavirus pandemic in Texas and California between 2016 and 2023.
- Ha3: A notable difference is evident in perpetrator motivation, target selection, and guardianship among victimization rates in public mass shootings in Texas and California between 2016-2023.

Descriptive Statistics

Years/Periods

This research investigated public mass shootings in Texas and California between the dates of 1966-2023, divided into additional periods of 1966-1994 and 1995-2023. The research identified N=94 mass shooting incidents that met the inclusion criteria. Research identified N=60 incidents in California compared to N=34 in Texas within the designated time frame. From 1966 through 1994, there were 15 mass shooting incidents in California (65.3%) compared to eight

(34.7%) in Texas. Forty-five of sixty incidents from 1995-2023 occurred in California (63.4%) compared to 26 (36.6%) in Texas. Results revealed that within both periods, there was an approximate two-to-one ratio difference in frequency trending toward California in mass shooting incidents compared to Texas. From 1966 to 2023, California recorded approximately 76.5% more incidents than Texas. Table 1 illustrates mass shooting periods.

Table 1

Time Periods of 1966-1994 and 1995-2023

Years	Texas (N)	%	California (N)	%	Total (N)	Total %
1966-1994	8	34.7	15	65.3	23	24.5
1995-2023	26	36.6	45	63.4	71	75.5
1966-2023	34	36.2	60	63.8	94	100

Temporal Patterns

Temporal patterns consisting of month, day of the month, day of week, year, season, and time of shooting incidents were assessed concerning Texas and California to identify potential patterns as to when mass shooting incidents occur within each state. In California, 36.7% of mass shootings occurred in January, April, and July. In Texas, 49.9% of mass shootings occurred in April, May, and August. In California, 53.4% of the mass shootings occurred on Wednesday, Thursday, and Friday. In Texas, 55.9% of incidents occurred on Saturday, Sunday, and Monday. In Texas, 20.6% of shootings occurred on the 3rd and 29th day of the month. In California, 15% of the incidents occurred on the 1st and second day of the month. In Texas and California, seasonal incidents occurred in the Spring months of March, April, and May. Specifically, in Texas, 35.3% and in California, 30% of mass shooting incidents occurred in Spring, totaling 65.3%. In Texas, 50% of shootings occurred during morning hours, and in California, 43.3%. In California, 15% of mass shootings occurred in 1993 and 2001. In Texas, 25.6% of all mass

shootings occurred in 2016 and 2019. In 2020, during the advent of COVID-19, California had one public mass shooting, while Texas experienced none.

Perpetrator Demographics and Background

Notable statistics concerning perpetrator demographic and background characteristics revealed that in California and Texas incidents, 50% of the perpetrators were Caucasian, and 50% were of different races and nationalities other than Caucasian. The average perpetrator age in California was 36.5, compared to 34.3 in Texas. In Texas, the youngest perpetrator was 17 years old, and the oldest was 65 at the time of the shooting. In California, the youngest shooter was 15 years old, and the oldest was 72. In California, 10% of perpetrators were depicted as female, compared to none in Texas. In Texas, 26.5% of perpetrators were described as Hispanic, compared to 11.7% in California, totaling 18.8% of all mass shooters. In California, Asians represented 13.3% of mass shooting perpetrators compared to 2.9% in Texas. In California, 10% of perpetrators were of Middle Eastern descent, compared to 8.8% in Texas. In Texas, 58.8% of perpetrators had a criminal history, compared to 51.7% in California. In Texas, 35.3% of mass shooters were current or former military, compared to 6.7% in California, totaling 17% of the 94 documented incidents. Results revealed that mass shooting perpetrators may not be profiled based on race. However, the majority of shooting in Texas and California were committed by males with a criminal history. Table 2 illustrates perpetrator demographic/background characteristics.

Table 2

Perpetrator Demographics and Background

Demographics and Background	Texas (N)	%	California (N)	%	Total (N)	Total %
Average Age	34.3		36.5			
Male Gender	34	100	54	90	88	93.6
Female Gender	0	0	6	10	6	6.4
Caucasian	17	50	30	50	47	50
Hispanic	9	26.5	8	11.7	17	18.1
Black	4	11.8	7	13.3	11	11.7
Asian	1	2.9	8	13.3	9	9.6
Middle Easterner	3	8.8	10	10	13	13.8
Native American	0	0	1	1.7	1	.01
Criminal History	20	58.8	31	51.7	51	54.2
Military Service	12	35.3	4	6.7	16	17
N=94						

Motivated Offender

In California, 45% of the mass shooting incidents depicted a perpetrator motivated by a grievance and sought revenge, compared to 38.2% in Texas. In California, 16.7% of the perpetrators were motivated by political/religious and general hate, compared to 29.4% in Texas. In California, 80% of the perpetrators who committed a mass shooting depicted no evidence of prejudices, consisting of racism, misogyny, and homophobia. In comparison, 79.4% of perpetrators in Texas depicted no prejudices. In (California, 91.7%) and (in Texas, 91.2%) of perpetrators indicated no evidence of racism. In California, 6.7 percent of perpetrators were motivated by Radical extremism, compared to 8.8 percent in Texas.

Additional motivating factors included employment, relationship, legal, and economic issues. In California, perpetrators experienced employment issues at 23.5%, compared to 23.3% in Texas. In California, 26.7% of perpetrators experienced a relationship issue compared to 17.6% in Texas. In California and Texas, perpetrators confronted a legal issue in approximately

17% of mass shootings in each state. In California, 25% of perpetrators experienced an economic problem prior to the shooting, compared to 17.6% in Texas. Over 51% of mass shooting perpetrators planned the mass shooting events in both Texas and California. In Texas, 44.1 % of perpetrators intended to die during the shooting, compared to 40% in California. Notable statistics concerning motivated offenders indicated that in California, 61.7% of mass shooting perpetrators were motivated by either a grievance and sought revenge or promoted religious/political/general hate, compared to 67.6% in Texas. Table 3 illustrates data concerning perpetrator motivation.

Table 3

Motivated Offenders Comparison of Texas and California

Motivation	Texas (N)	%	California (N)	%	Total (N)	Total %
Revenge	13	38.2	27	45.0	40	42.5
Hate: Political Religious General	10	29.4	10	16.7	20	21.2
Radical Extremism	3	8.8	4	6.7	7	7.4
Perpetrator Intended to Die	15	44.1	24	40	39	41.4
History of Violence	17	50	22	36.6	39	41.4
N=94						

Target

In Texas, 61.8% of mass shootings occurred within an urban setting, compared to 53.3% in California. In California, 40% of shootings were considered workplace shootings due to the perpetrator's current or previous employment relationship to the target, compared to 23.5% in Texas. However, 68.3% of mass shootings in California constituted workplace violence incidents compared to 47.1 % in Texas. In California, 41.7% of perpetrators were current/former employees or current/former students, compared to 32.3% in Texas. In California, 48.3% of

offenders were considered patrons/customers of the target location, compared to 61.8% in Texas. In California, 53.3% of perpetrators had an insider connection to the target, compared to 44.1% in Texas. In California, 78.3% of incidents occurred in a confined or inside space, compared to 61.8% in Texas. In California, 71.7% of incidents occurred in an educational institution or a commerce/business location, compared to 52.9% in Texas. In Texas, 11.8% of targets were considered hard targets, compared to 8.3 percent in California. Table 4 illustrates perpetrator target selection.

Table 4

Target Comparisons of Texas and California

Target	Texas (N)	%	California (N)	%	Total (N)	Total %
Urban Setting	21	61.8	32	53.3	53	56.3
Business/Commerce	15	44.1	31	51.7	46	48.9
Education	3	8.8	12	20	15	15.9
Government	2	.05	7	15	9	9.5
Workplace Violence	16	47.1	41	68.3	57	60.6
Hard Target	4	11.8	5	8.3	9	9.5
Perpetrator Insider	15	44.1	32	53.3	47	50
N=94						

In California, 78.3% of perpetrators accessed the targeted location and confronted victims unimpeded, compared to 82.4% in Texas. In addition, in 11.7% of incidents in California, the offender bypassed security measures, compared to 8.8% in Texas. Fifteen percent of targeted locations promoted restricted access in California, compared to 11.8% in Texas. Business colleagues/acquaintances in California were targeted in 38.3% of incidents, compared to 26.5% in Texas. In California, teachers and students were targeted in 21.7% of events, compared to 8.8% in Texas. In Texas, 14.7% of incidents depicted a family member victim, compared to

6.7% in California. Table 5 illustrates targeted victim types and perpetrator access.

Table 5

Descriptive Statistics and Frequences of Targeted Victim Types and Access

Victims: Targets and Access	Texas (N)	%	California (N)	%	Total (N)	Total %
Students and Teachers	3	8.8	13	21.7	16	17
Random Public	10	29.4	12	20	22	23.4
Business	9	26.5	23	38.3	32	34
Acquaintances						
Restricted Access	4	11.8	9	15	13	13.8
Access Unimpeded	28	82.4	47	78.3	75	79.7
Access Bypassed Security	3	8.8	7	11.7	10	10.6
N=94						

Guardianship

In Texas, 23.5% of incidents depicted an armed guardian at the targeted location, compared to 16.7% in California. In Texas, 17.6% of the armed guardians were on/off duty law enforcement; 5.9 percent were armed civilians. In California, 11.7% of armed guardians were on/off duty law enforcement, and five percent were armed civilians. Armed guardianship was considered present if in the immediate area at the time the shooting commenced. In California, a guardianship type was present in 33.3% of mass shooting incidents, compared to 26.5% in Texas. In California, 21.7% of guardians were unarmed at the targeted location compared to 8.8 percent in Texas. In California, 18.3% of locations had some physical security measure, compared to 20.6% in Texas. In California, 11.7% of security measures depicted security technology/physical fencing and barriers, compared to 8.8 percent in Texas. In California, 38.3% of shooting incidents were interrupted due to guardianship, compared to 41.2% in Texas. In Texas, 35.3% of perpetrators were killed at the scene, and 23.5% committed suicide, totaling 58.8% of dead perpetrators at the scene. In California, 21.7% were killed by law enforcement,

and 30% committed suicide, totaling 51.7% dead perpetrators at the scene. Table 6 depicts data concerning physical security measures, armed guardianship, and types of guardianship.

Table 6

Descriptive Frequency Statistics of Guardianship

Guardianship	Texas (N)	%	California (N)	%	Total (N)	Total %
Individual Guardianship	9	26.5	20	33.3	29	30.9
Physical Security Measures	7	20.6	11	18.3	18	19.1
Armed at the Scene	8	23.5	10	16.7	18	19.1
Armed Law Enforcement	6	17.6	7	11.7	13	13.8
Armed Bystander	2	5.9	3	5	5	5.3
Unarmed Bystander	3	8.8	13	21.7	16	17
Shooting Interrupted	14	41.2	23	38.3	37	39.3
N = 94						

Firearms

In California, 63.3% of perpetrators purchased their weapons (s) legally, compared to 76.5% in Texas. In California, 50% of the perpetrators used one weapon at the time of the shooting, compared to 47% in Texas. In California, 55% illegally transported/possessed the weapon (s) at the time of the shooting, compared to 41.2% in Texas. In California, 80% of offenders used a semi-auto or revolver handgun, 35% used a semi-automatic or hunting rifle, and 18.3% used a shotgun. In Texas, 70.6% used a semi-automatic or revolver handgun, 35.3% used a semi-automatic or hunting rifle, and 17.6% used a shotgun. Table 7 illustrates details concerning the legality of weapon possession/purchase and the types of weapons used in the shootings.

Table 7

Guardianship: Firearms Used and Legally Obtained or Illegally Possessed and Transported

Weapons	Texas (N)	%	California (N)	%	Total (N)	Total %
Legally Purchased	26	76.5	38	63.3	64	68.1
Illegal Transport and Possession	14	41.2	33	55	47	50
Semi-Auto Handgun Revolver	24	70.6	48	80	72	76.5
Semi Auto Rifle	12	35.3	21	35	33	35.1
Shotgun	6	17.6	11	18.3	17	18.1
Used Only One Firearm	16	47	30	50	46	48.9
Used more than 2 Firearms	8	23.5	12	20	28	29.7
N=94						

Victimization

In Texas, the mean depicting the number of victims killed was 6.9, standard deviation of 6.95. The mean concerning victims injured was 10, with a standard deviation of 11.66. The mean concerning total victims injured/killed was 16.9, standard deviation of 16.24. In California, the mean concerning victims killed was 4.25, with a standard deviation of 3.69. The mean concerning injured victims was 5.82, with a standard deviation of 6.15. The mean depicting total victims was 10.07, with a standard deviation of 8.32. The general public and colleagues/business acquaintances were victimized in 58.3% of incidents in California, compared to 55.9% in Texas. In Texas, the perpetrator knew at least some victims in 52.9% of the documented incidents, compared to 50% in California.

From 1966-2023, 256 people were killed in California shootings compared to 235 in Texas. Within the same period, 349 injuries were sustained in California compared to 340 in Texas. From 1966 to 1994, 84 victims were killed in California in 15 incidents, compared to 70 in Texas in eight shootings. During the same period, 122 were injured in California compared to

123 in Texas. From 1995-2023, 172 victims were killed in California (45 incidents) compared to 165 in Texas in 26 shooting incidents. Table 8 represents victimization descriptive statistics concerning California. Table 9 illustrates victimization statistics concerning Texas.

Table 8

Descriptive Statistics of California and the Outcome Variable

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Stat.	Std. Error	Stat.	Std. Error
Number Killed	60	0	21	4.25	3.69	2.09	.309	6.57	.608
Number Injured	60	0	30	5.82	6..15	2.03	.309	4.43	.608
Victimization	60	4	40	10.07	8.32	2.34	.309	5.23	.608
Valid N	60								

Table 9

Descriptive Statistics of Texas and the Outcome Variable

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Stat.	Std. Error	Stat.	Std. Error
Number Killed	34	0	25	6.91	6.95	1.54	.403	1.45	.788
Number Injured	34	0	51	10	11.66	1.79	.403	3.50	.788
Victimization	34	4	53	16.97	16.21	1.21	.403	-.112	.788
Valid N	34								

Results

Multiple Linear Regression Assumptions

Multiple linear regression mandates at least two independent variables, nominal, ordinal, or ratio/interval scale (Fein et al., 2022). The dependent variable must be continuous, and the independent variables can be categorical or dichotomous. Dichotomous independent variables were computed using the dummy variables (1 and 0). The number 1 was designated as present, and 0 was designated as absent. The linearity assumption suggests that each independent variable must have a linear relationship with the dependent variable (Field, 2018). Since the independent variables were dummy-coded, the linearity relationship with the continuous dependent variable was satisfied (Field, 2018).

This research transformed the dependent variable using a natural log transformation. When the dependent variable is transformed via a natural log, a one-unit change in the independent variable is associated with a positive or negative percentage change in the dependent variable (Ford, 2018). After the dependent variable was natural log-transformed, the unstandardized Beta coefficient was exponentiated. The exponentiated coefficient promotes the multiplicative factor for every one-unit increase in the independent variable (Ford, 2018). The primary reason was the presence of heteroscedasticity in the regression model. The original model scatterplot portrayed positive skewness. The research-dependent variable (victimization) maintained a variance between (4-53). The variance potentially caused multiple regression assumption violations of heteroscedasticity. Ford (2018) noted that log-transforming data normally disperses data clumps and brings together the spread-out data, mitigating skewed data.

The assumption of homoscedasticity was verified by constructing standardized residual plots against the unstandardized predicted values. Figure 2 depicts the original regression model

scatterplot that violated the assumption of homoscedasticity. Figure 3 represents the impact of the natural log transformation satisfying the assumption of homoscedasticity. Predicted values are portrayed within the range of -2 through 3 on the x-axis and standardized residuals of -2.5 through 2.5 on the y-axis. Figure 4 represents the normality of the residual error distributions satisfying the normality assumption. Table 13 illustrates predictor variables below 10, satisfying the low or no multicollinearity assumption (Meier et al., 2014). VIF values in Table 12 ranged from 1.073-1.14. Table 10 represents statistics concerning residuals**.**

Figure 2

Scatterplot for Null Hypothesis 1 – Heteroscedasticity Assumption Violation

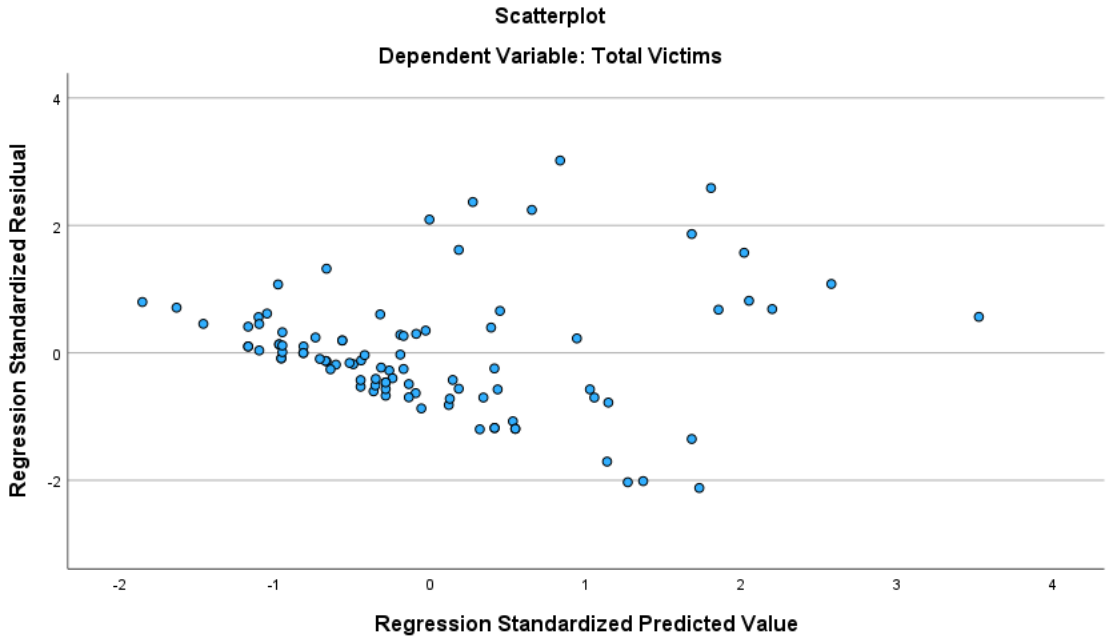
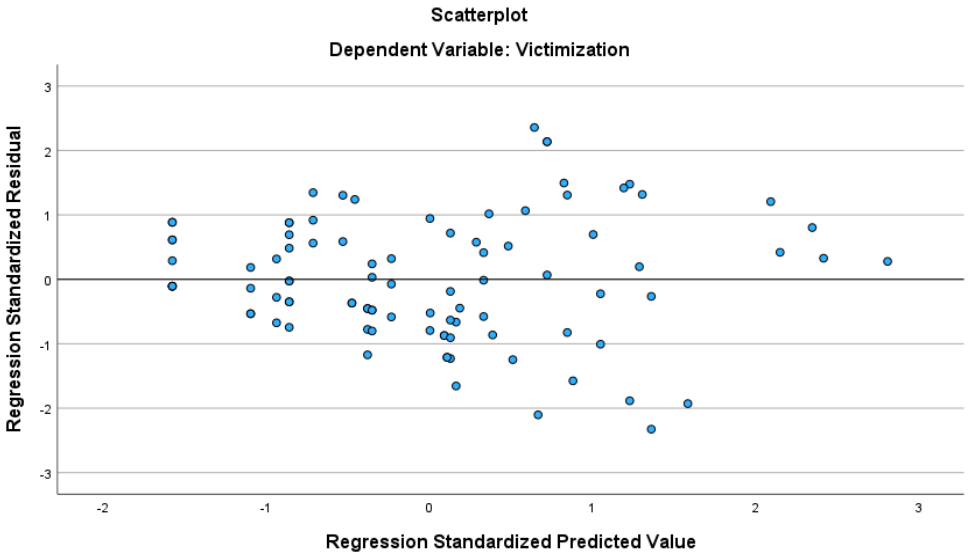


Figure 3

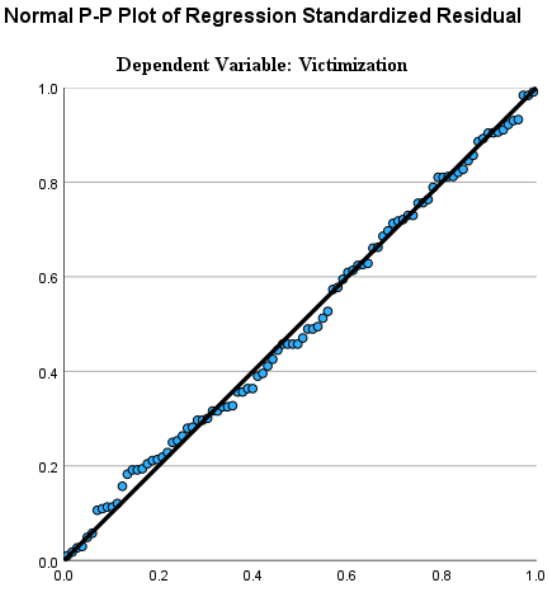
Scatterplot for Null Hypothesis 1 – Homoscedasticity



Note: Figure 3 depicts residuals primarily maintained equal variance; thus, the assumption of homoscedasticity was met. Points ranged from -1.7 to 2.7 on the x axis and -2 to 2 on the y axis.

Figure 4

Normal P-P Plot for Null Hypothesis 1



Note: The data predominantly follows the line, thus indicating the normality of errors assumption.

Table 10

Assumption Testing for Null Hypothesis 1: Residuals

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.446	3.65	2.24	.503	94
Std. Predicted Value	-1.574	2.81	.000	1.00	94
Standard Error of Predicted Value	.114	.32	.170	.041	94
Adjusted Predicted Value	1.43	3.62	2.24	.499	94
Residual	-1.31	1.33	.000	.540	94
Std. Residual	-2.33	2.36	.000	.956	94
Stud. Residual	-2.47	2.50	.001	1.01	94
Deleted Residual	-1.48	1.50	.001	.607	94
Stud. Deleted Residual	-2.55	2.58	.001	1.03	94
Mahal. Distance	2.79	28.03	7.92	4.71	94
Cook's Distance	.000	.113	.014	.022	94
Centered Leverage Value	.030	.301	.085	.051	94

Note. An observation outside -3, 3 is considered an outlier (Penn State University, 2023). This study depicted an acceptable range of -2.33 to 2.35.

RQ1 Null Hypothesis

The Null Hypothesis of research question 1 stated that there was no statistically significant difference in perpetrator motivation, target selection, and guardianship among victimization rates in public mass shootings in Texas and California from 1966-1994 and 1995-2023. Based on the results documented below, the null hypothesis was rejected, and the alternate hypothesis was accepted concerning the victimization difference in periods related to routine activity theory predictors. The difference in states was notable but not statistically significant. Thus, the null hypothesis was accepted, and the alternate hypothesis was rejected concerning the

difference between Texas and California. However, a statistically significant difference was evident when the same sample size was used to compare both states using a portion of the same predictors in the primary regression model. Findings revealed that when the sample size of both states was equal (N=34), there was a statistically significant difference in predictors among Texas and California. The following regression models depicted an increase or decrease in percentage change in the outcome variable. A one-unit increase in the independent "dummy coded" variable, moving from (0 to 1), was associated with an increase or decrease percentage change in the outcome variable, victimization.

The findings of the primary regression model were statistically significant, F (9, 85) = 9.22, p = < .001, R2 = <.465, indicating that collectively the predictors were statistically significant related to mass shooting victimization. The regression model explained 46.5% of the variability in Texas and California mass shooting victimization. Periods (1966-1994 and 1995-2023) (B = -0.434, Exp(B) = -1.54, t = -3.03, p = .003) results revealed a statistically significant difference in victimization rates, indicating that incidents in (1995-2023) revealed a 54% decrease in victimization compared to (1966-1994). The state code depicting California and Texas (B = 0.241, Exp(B) = 1.27, t = 1.88, p = <.062) revealed a notable but not statistically significant difference in victimization rates. Results indicated a 27% decrease in victimization in California compared to Texas from 1966-2023. However, California endured approximately 76.5% more mass shooting incidents than Texas (California, N=60, Texas, N=34) from 1966-2023.

Physical security measures (B = 0.321, Exp(B) = 1.38, t = 2.02, p = <.046) results indicated a statistically significant predictor of victimization rates, indicating that incidents in which physical security measures were present revealed a 38% increase in victimization

compared to incidents with no security measures, holding all other variables constant. A notable aspect concerning the presence/ absence of physical security measures revealed that of the 94 mass shooting incidents investigated, 18 of 94 incidents depicted some physical security measure. The perpetrator's history of violence (B = 0.360, Exp(B) = 1.43, t = 2.94, p = <.044) results revealed a statistically significant relationship to victimization rates. Findings revealed that incidents in which the perpetrator had a history of violence depicted 43% increased victimization in comparison to incidents in which the perpetrator did not have a history of violence, holding all other variables constant. The perpetrator's motive of political/religious/general hate towards groups (B = 0.553, Exp(B) = 1.74, t = 3.65, p = <.001) results revealed a statistically significant predictor of victimization rates, indicating that a perpetrator's motive of political/religious/general hate in mass shooting incidents promoted 74% increased victimization severity in comparison to incidents in which the perpetrator's motive was not political/religious or general hate, holding all other variables constant.

Government/Civic targets (B = 0.838, Exp(B) = 2.31, t = 2.71, p = <.008) results revealed a statistically significant predictor of victimization rates, indicating that when mass shooting incidents in Texas or California occurred at a location considered a government/civic target, there was a 131% increase in victimization compared to a non-governmental target, holding all other variables constant. When mass shooting incidents occurred, targeted victim types classified as the general public (B = 0.615, Exp(B) = 1.85, t = 4.26, p = <.001) revealed a statistically significant relationship to victimization rates, indicating that there was an 85% increase in victimization compared to any other targeted victim type, holding all other variables constant. In addition, when the targeted victims were students/teachers (B = 0.525, Exp(B) = 1.69, t = 3.12, p = < .002), results indicated a statistically significant relationship to

victimization severity, revealing that there was a 69% increase in victimization compared to non-student/teacher targeted victim types. Tables 11,12 and 13 illustrate the regression model results.

Table 11

Multiple Linear Regression Model Summary of Texas and California

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.682[a]	.465	.414	.56438

Table 12

ANOVA Table for Null Hypotheses 1

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.504	9	2.938	9.224	<.001[b]
	Residual	27.074	85	.319		
	Total	50.578	94			

Note. F (9, 85) = 9.224, p < .001, R2 =.465

Table 13

Multiple Linear Regression Model with Victimization as the Outcome Variable

		Unstandardized Coefficients		Standard			Collinearity Statistics	
	B	B(Exp)	Std. Error	Beta	t	Sig.	Tol.	VIF
(Constant)	2.31		.274		8.43	<.001		
California	-.241	-1.27	.128	-.158	-1.89	<.062	.898	1.12
Time Period of 1995-2023	-.434	-1.54	.143	-.254	-3.03	<.003	.897	1.11
History of Violence	.360	1.43	.122	.242	2.94	<.004	.932	1.07
Motive: Hate: Political and Religious	.553	1.74	.152	.309	3.65	<.001	.880	1.13
Target: Government	.838	2.31	.308	.231	2.71	<.008	.875	1.14
Physical Security Measures	.321	1.38	.158	.172	2.03	<.046	.875	1.14
Victim Type: Random Public	.615	1.85	.144	.355	4.26	<.001	.906	1.10
Victim: Student or Teacher	.525	1.69	.168	.269	3.12	<.002	.847	1.18

Note. In Texas and California, the strongest predictors of increased victimization comprised of perpetrators motivated by political/religious/general hate, having a history of violence, targeting governmental targets, in addition to random public and student/teacher targets.

Texas and California Comparison/Equal Sample Size

California and Texas were assessed independently to explore similarities and differences in regression models. A random sample of California incidents (N=60) was generated via SPSS to match the sample of cases in Texas evenly (N=34). Routine activity theoretic independent variables were used identically in both datasets for comparison. The findings of the California regression model determined a statistically significant difference compared to Texas F (4, 30) = .800, p < .504, R2 = <.074. The regression model explained 7.4% of the variability in the outcome variable. California results indicated that political/religious hate (B =.501, Exp(B) = 1.65, t = 1.53, p = <.136); public targets (B = 0.155, Exp(B) = 1.17, t = .513, p = <.612); and

physical security measures (B = -0.003, Exp(B) = -1.00, t = -.008, p = <.993); were not statistically significant to the outcome variable. The results indicated that for every one-unit increase in the predictor, there was a 65% increase in victimization when the motive was political/religious/general hate, a 17% increase when the random public was targeted, and neither an increase nor a decrease in victimization for a one-unit increase in physical security measures. However, none of the results were statistically significant. In Texas, all three predictor variables depicted were determined to be statistically significant. Tables 14, 15, and 16 depict the regression model results concerning the California regression model.

Table 14

Multiple Regression Model Summary of California Comparison

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.272[a]	.074	-.019	.66179

Table 15

ANOVA Table for Null Hypotheses 1 of California Comparison

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.051	4	.350	.800	.504[b]
	Residual	13.139	30	.438		
	Total	14.189	34			

Note. F (4, 30) = .800, p < .504, R2 = .074

Table 16

Multiple Linear Regression Model of California with Victimization as the Outcome Variable

Model		Unstandardized Coefficients		Standardized Coefficients		
	B	B(Exp.)	Std. Error	Beta	t	Sig.
1 Constant)	2.075		.147		14.08	<.001
Physical Security Measures	-.003	-1.00	. 298	-.001	-.01	.993
Motive: Political, Religious or General Hate	.501	1.65	.327	.274	1.53	.136
Target: Random Public	.155	1.17	.303	.092	.513	.612

The findings of the Texas regression model were determined to be statistically significant, F (4, 30) = 7.48, p = < .001, R2 = .428. The regression model explained 42.8% of the variability in mass shooting victimization. Texas results indicated that the perpetrator's motive of political/religious and general hatred (B = 0.823, Exp(B) = 2.28, t = 3.03, p = <.004); public target types (B = 0.693, Exp(B) = 2.0, t = 2.58, p = <.015); and the presence/absence of physical security measures (B = 0.828, Exp(B) = 2.29, t = 2.73, p = <.011); depicted a statistically significant relationship to Texas mass shooting victimization. The results indicated that there was a 129% increase in victimization for a one-unit increase in the presence of physical security measures compared to no physical security measures, a 128% increase in victimization when the perpetrator's motive was political/religious general hatred compared to not motivated by hate and a 100% increase in victimization when the targets were classified as the random public, compared to other target types, holding all other variables constant. Seven of the 34 incidents in Texas indicated a physical security measure type. Four of the seven incidents had either an unarmed security officer or an implemented technology/barrier measure. Tables 17, 18, and 19 illustrate the regression model results concerning Texas.

Table 17

Multiple Regression Model Summary of Texas

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.654[a]	.428	.371	.69925

Table 18

ANOVA Table for Null Hypotheses 1 of Texas

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.973	4	3.658	7.481	<.001[b]
	Residual	14.669	30	.489		
	Total	25.642	34			

Note. F (4, 30) = 7.48, p < .001, R2 = .428

Table 19

Multiple Linear Regression Model of Texas with Victimization as the Outcome Variable

	Unstandardized Coefficients			Standardized Coefficients		
Model	B	BExp)	Std.Error	Beta	t	Sig.
1 (Constant)	1.810	.18			10.06	<.001
Motive: Political or Religious or General Hate	.823	2.28	.268	.432	3.07	.004
Physical Security Measures	.828	2.29	.304	.386	2.73	.011
Target: Random Public	.693	2.00	.269	.363	2.58	.015

Note. The number of predictor variables assessed within the model were limited based on the Texas sample size (N=34).

California Regression Model

This research assessed California independently to assess the relationship of routine activity theory components to victimization. The analysis was relevant to the overall study since California maintained a larger sample size of incidents (N=60) than Texas. The findings of the California regression model were determined to be statistically significant, F (8, 52) = 6.45, p = < .001, R2 = .498. The regression model explained 49.8% of the variability in mass shooting victimization. The results indicated a statistically significant difference in victimization concerning the period (1995-2023) (B = -0.340, Exp(B) = -1.405, t = -2.29, p = <.026) compared to (1966-1994). The results indicated a 40.5% decrease in victimization in 1995-2023 compared to 1966-1994.

California results indicated that the perpetrator's intent to die at the scene of the shooting B = 0.162, Exp(B) = 1.18, t = 2.57, p = <.013); the perpetrator's history of domestic abuse (B = 0.618, Exp(B) = 1.86, t = 4.06, p = <.001); and the perpetrator's selection of a governmental target (B = 0.873, Exp(B) = 2.39, t = 3.45, p = <.001); depicted a statistically significant relationship to California mass shooting victimization. The results indicated that there was an 18% increase in victimization for a one-unit increase in the perpetrator's intent to die at the scene compared to no intent to die at the scene, an 86% increase in victimization when the perpetrator had a history of domestic abuse compared to no history of domestic abuse, and a 139% increase in victimization when the targets selected were classified as government targets compared to non-governmental targets, holding all other variables constant. In addition, there was a statistically significant relationship between perpetrators who were current/former employees (B = -0.293, Exp(B) = -1.34, t = -2.09, p = <.042) and the outcome variable. Findings indicated a 34% decrease in victimization when the perpetrator was a current/former employee. Results

indicated a 114% decrease in victimization when the target was considered “hard” (B = -0.763, Exp(B) = -2.14, t = -2.61, p = <.012) compared to “soft.”

California regression results indicated that in public mass shootings, there was a statistically significant relationship between the use of legally purchased weapons (B = -0.751, Exp(B) = -2.12, t = -2.08, p = <.042) and victimization. However, there was not a statistically significant relationship between the use of illegally possessed and transported weapons (B = -0.472, Exp(B) = -1.60, t = 1.33, p = <.190) and victimization. Findings revealed that when a legally purchased weapon is used in a mass shooting, there is a 112% decrease in victimization compared to illegally purchased weapons. However, when a weapon was illegally possessed and transported, there was a 60% decrease in victimization compared to firearms legally possessed or transported. The results suggest that a legally purchased weapon, compared to an illegal purchase, decreases victimization severity. However, when the weapon was illegally possessed and transported by the perpetrator, victimization decreased compared to when legally possessed and transported. Findings suggest that weapon purchase legality was 52% more statistically significant to a decrease in victimization than legal/illegal weapon possession and transport to the scene. Tables 20, 21, and 22 illustrate the regression model results concerning California.

Table 20

Multiple Regression Best Model Summary of California

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.706[a]	.498	.421	.47350

Table 21

ANOVA Table for Null Hypotheses 1 of California

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.569	8	1.446	6.450	<.001[b]
	Residual	11.659	52	.224		
	Total	23.228	60			

Note. F (8, 52) = 6.450, p < .001, R2 = .498

Table 22

Multiple Linear Regression Model of California with Victimization as the Outcome Variable

Model		Unstandardized Coefficients			Standardized Coefficients		
		B	B(Exp)	Std. Error	Beta	t	Sig.
1	(Constant)	2.826		.376		7.52	<.001
	Hard Target	-.763	- 2.14	.292	-.339	-2.61	<.012
	Current or Former Employee	-.293	- 1.34	.140	-.216	-2.09	<.042
	History of Domestic Abuse	.618	1.86	.152	.421	4.06	<.001
	Perpetrator Intended to Die	.162	1.18	.063	.257	2.57	<.013
	Target: Government	.873	2.39	.253	.451	3.45	<.001
	Period: 1995-2023	-.340	-1.40	.148	-.237	-2.29	<.026
	Legally Purchased or Acquired	-.751	-2.12	.360	-.585	-2.09	<.042
	Illegal Possession/Transport	-.472	-1.60	.355	-.373	-1.33	<.190

Note. In California, perpetrator history of domestic violence and governmental targets were strongest predictors for increased victimization. The strongest predictors for decreased

victimization were current or former employees, “hard” targets from 1995-2023 compared to 1966-1994, holding all other variables constant.

Firearms and Perpetrator Background

California and Texas regression models concerning weapons and perpetrator background characteristics related to victimization were determined to be statistically significant, F (9, 84) = 9.940, p = < .001, R2 =. 516.. The regression model explained 51.6% of the variability in mass shooting victimization. California and Texas regression results indicated that in public mass shootings, there was a statistically significant relationship between current or former military service (B = -0.543, Exp(B) = 1.72, t = 3.24, p = <.002), history of violence (B = -0.369, Exp(B) = 1.45, t = 2.60, p = <.011), perpetrator criminal//juvenile records (B = -0.504, Exp(B) = -1.66, t = -3.66, p = <.001), history of substance abuse (B = -0.499, Exp(B) = 1.65, t = 3.53, p = <.001), and victimization. Findings revealed a 72% increase in victimization when the perpetrator was current/former military compared to non-military, holding all other variables constant. Results revealed a 45% increase in victimization when the perpetrator had a history of violence compared to no history of violence and a 65% increase in victimization when the perpetrator had a history of substance abuse compared to no history of substance abuse, holding all other variables constant. However, findings revealed that the presence of a criminal/juvenile arrest record revealed a 66% decrease in victimization compared to perpetrators having no criminal/juvenile arrest history, holding all other variables constant.

The Texas and California regression model (N=94) assessed the relationship between perpetrator weapon type, number of weapons used, and illegal possession and transport. Findings suggested a statistically significant relationship between a perpetrator's use of more than two firearms (B = -0.337, Exp(B) = 1.40, t = 2.29, p = <.025) and the use of a semi-automatic rifle(s)

(B = -0.345, Exp(B) = 1.41, t = 2.71, p = <.008). A notable but not statistically significant finding concerned the relationship between the illegal possession and transport of firearms (B = 0.246, Exp(B) = 1.28, t = 1.96, p = <.054) and victimization. Findings suggested that victimization increased by 40% when more than two firearms were used in the public mass shooting. The use of semi-automatic rifles increased victimization by 41% compared to shootings where semi-automatic rifles were not used. Perpetrators who illegally possessed and transported firearms increased victimization by 28% compared to legal possession and transport, holding all other variables constant.

Based on the variables mentioned above related to public mass shooting victimization, results indicated that California (B = -0.073, Exp(B) = -1.08, t = -5.70, p = <.570) does not statistically differ compared to Texas. However, a statistically significant difference was determined from 1995-2023 (B = -0.297, Exp(B) = 1.35, t = - 2.16, p = <.033), corresponding to 1966-1994. Findings revealed an eight percent decrease in victimization in California compared to Texas. In addition, there was a 35% decrease in victimization from 1995-2023 compared to 1966-1994. The findings reflect the relationship between perpetrator weapon type used, total number of weapons, illegal possession/transport, and background characteristics to victimization. Tables 23, 24, and 25 illustrate the California and Texas regression model concerning firearms, perpetrator background, and victimization.

Table 23

Multiple Linear Regression Model of Texas and California with Victimization as the Outcome Variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.718[a]	.516	.464	.54204

Table 24

ANOVA Table for Null Hypotheses 1

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.284	9	2.920	9.940	<.001[b]
	Residual	24.680	84	.294		
	Total	50.964	93			

Note. F (9, 84) = 9.940, p < .001, R2 = .516

Table 25

Multiple Linear Regression Model of California and Texas concerning Firearm and Perpetrator Background Characteristics

	Unstandardized Coefficients			Standardized Coefficients			Collinearity Statistics	
Model	B	B(Exp)	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	2.050		.184		11.11	<.001		
California	-.073	-1.08	.128	-.048	-.570	.570	.822	1.22
1995-2023	-.297	-1.35	.137	-.173	-2.16	.033	.897	1.11
Military Service	.543	1.72	.168	.277	3.24	.002	.786	1.27
Firearms > 2	.337	1.40	.147	.194	2.29	.025	.805	1.24
Rifle/Semi-Automatic	.345	1.41	.127	.222	2.71	.008	.861	1.16
History of Violence	.369	1.45	.142	.248	2.60	.011	.638	1.57
Criminal/Juvenile Record	-.504	-1.66	.138	-.341	-3.66	<.001	.666	1.50
Illegal Possession/Transport	.246	1.28	.126	.167	1.96	.054	.790	1.27
History of Substance Use	.499	1.65	.141	.299	3.53	<.001	.801	1.25

Note. In Texas and California, the strongest predictors for increased victimization comprised of perpetrators that had a history of violence, a history of substance abuse, current or former military service, the use of a semi-automatic rifle, and more than two firearms used at the shooting, holding all other variables constant. The strongest predictors of decreased victimization entailed perpetrators having a criminal/juvenile arrest record from 1995-2023.

RQ2 Null Hypothesis

The Null Hypothesis Ho2 in research question 2 stated that there was no notable difference in the number of public mass shootings in Texas and California between 1966-1994 and 1995-2023. Results indicated a rejection of the null hypothesis and an acceptance of the alternate hypothesis, which revealed a notable difference in mass shooting incidents in California

compared to Texas. The analysis determined that from 1966 to 2023, California had N=60 mass shooting incidents that met the research inclusion criteria, compared to Texas's N=34.

RQ3 Null Hypothesis

The Null Hypothesis Ho3 in research question 3 stated that there was no notable difference in the number of public mass shootings before and during the coronavirus pandemic in Texas and California between 2016 and 2023. Results indicated a rejection of the null hypothesis and an acceptance of the alternate hypothesis. A notable difference was substantiated in the number of mass shootings from 2016-2019 compared to 2020-2023, specifically in 2020 when the pandemic commenced. Research revealed that from 2016-2019, there were 20 mass shootings in Texas and California, compared to 14 from 2020-2023. However, in 2020, the year the pandemic commenced, only one incident that occurred in California was included in the study that met the inclusion criteria.

Results indicated that in 2020, mass shooting incidents may have transferred from public to private locations due to pandemic lockdowns. When the difference in incidents between 2016-2019 was assessed, Texas experienced 11 mass shootings compared to nine in California. However, from 2020-2023, Texas endured five; nine were documented in California. Thus, there were a combined 34 public mass shooting incidents in Texas and California combined between 2016-2023. From 2008-2015, results indicated 19 shooting incidents combined in Texas and California. In California, there were 14 incidents, compared to five in Texas. From 2000-2007, results indicated 13 incidents: 10 in California and three in Texas. Table 26 illustrates frequency statistics concerning years.

Table 26

Time Periods-1966-1994, 1995-2023, 2016-2019, 2020-2023, 2008-2015, 2000-2007, and 1966-2023

Years	Texas (N)	%	California (N)	%	Total (N)	Total %
1966-1994	8	34.7	15	65.3	23	24.5
1995-2023	26	36.6	45	63.4	71	75.5
2016-2019	11	55	9	45	20	21.2
2020-2023	5	35.7	9	64.2	14	14.8
2008-2015	5	26.3	14	73.6	19	20.2
2000-2007	3	23	10	76.9	13	13.8
1966-2023	34	36.2	60	63.8	94	100

Summary

Descriptive data revealed that the majority of mass shootings in California and Texas consisted of workplace violence. The majority of mass shootings occurred between 1995-2023, compared to 1966-1994. Findings revealed that there was a statistically significant difference concerning victimization rates in 1966-1994 compared to 1995-2023. Results revealed a statistically significant difference in victimization related to predictor variables in Texas compared to California. The differences in states revealed that different predictors concerning routine activity theory between states were evident when the sample size was equal (N=34). In addition, results revealed a 40.5% decrease in victimization in California from 1995-2023 compared to 1966-1994.

The most significant predictors of mass shooting victimization revealed a perpetrator motivated by political/religious/general hate having a history of violence that targeted a government/civic location such as an airport, a military base, or a government employee, including law enforcement. Victimization was determined statistically significant when the target was students/teachers and the public. However, most incidents concerned a perpetrator motivated

by a grievance/revenge that targeted business acquaintances/ co-workers. In California, a decrease in victimization was determined statistically significant when perpetrators were current/former employees who targeted the workplace. In California, 45% of the mass shooting incidents depicted a perpetrator motivated by a grievance and sought revenge, compared to 38.2% in Texas. In California, 16.7% of the perpetrators were motivated by political/religious and general hate, compared to 29.4% in Texas. In California, 78.3% of perpetrators accessed the targeted location and confronted victims unimpeded, compared to 82.4% in Texas. In addition, in 11.7% of California incidents, the offender bypassed security measures, compared to nine 8.8% in Texas.

The physical security measures evident at some of the mass shootings failed to deter or prevent the mass shooting incident. Armed guardianship was not a significant predictor of victimization. The predominant number of incidents involving armed guardianship consisted of shootings that were longer in duration and enabled law enforcement response, subsequently mitigating additional victimization. In California, there were more shootings in which unarmed bystanders subdued the shooter compared to Texas. In California, 21.7% of guardians were unarmed at the targeted location compared to 8.8 percent in Texas. In California, 80% of perpetrators used a semi-automatic handgun or revolver, 35% used a semi-automatic or hunting rifle, and 18.3% used a shotgun. In Texas, 70.6% used a semi-automatic or revolver handgun, 35.3% used a semi-automatic or hunting rifle, and 17.6% used a shotgun. The majority of mass shooting incidents in Texas and California concerned a weapon, specifically a handgun legally obtained. In California, 55% were illegally transported/possessed at the scene.

When concerning perpetrator background characteristics, firearm types, and the illegality of firearm possession and transport, results determined a statistical significance concerning

victimization prediction. Variables were measured and corresponded to guardianship and motivation components of routine activity theory. The perpetrator's history of violence, history of substance abuse, and military service were all determined statistically significant predictors for increased victimization. However, the perpetrator's criminal/juvenile history predicted a decrease in victimization. The perpetrator's use of semi-automatic rifles and the use of more than two firearms during a mass shooting were statistically significant predictors for increased victimization. Finally, California and Texas had a notable but not statistically significant difference from 1966 through 2023. However, a statistically significant difference in victimization was substantiated from 1995-2023 compared to 1966-1994 based on the predictor variables assessed in the final regression model. There was a 35% decrease in victimization from 1995-2023 compared to 1966-1994. California depicted an 8% decrease in victimization compared to Texas concerning the firearms and perpetrator background regression model related to victimization, holding all other variables constant.

CHAPTER 5: CONCLUSIONS

Overview

Chapter 5 comprises a detailed discussion concerning the results of the study. Research implications were discussed concerning the advancement of routine activity theory as it examined the results of public mass shooting comparisons in Texas and California related to victimization. Research limitations explained challenges using publicly available data and the designated inclusion criteria to investigate public mass shootings. Future research conveyed prospects for further investigation using routine activity theory as a foundation to compare mass shootings between additional states, separated by United States regions. This research employed an acceptable statistical significance level determined at $p = < .05$. There is a 5 percent probability that the result occurred by chance and a 95% probability that the results are valid (Fein et al., 2022). Findings discussed within the chapter reflect statistical significance concerning public mass shootings via routine activity theory in Texas and California related to victimization. Public policy was briefly discussed concerning hardening known vulnerable targets through sufficient security measure implementation combined with access control and armed guardianship.

Discussion

This study aimed to investigate public mass shootings in California and Texas from 1966 through 2023 using the routine activity theoretical framework to advance a knowledge gap. No literature was found that compared public mass shootings in Texas and California using the routine activity theoretical framework. This research advanced recent public mass shooting research that used a routine activity framework to examine public mass shootings in the United States (Schildkraut et al., 2022; Silva & Greene-Colozzi, 2021; Green-Colozzi, 2022;

Schildkraut et al., 2019). This research advances mass shooting knowledge through a theoretical lens comparing the two most populous states in the United States. The first 28 years (1966-1994) were compared to the subsequent 28 years (1995-2023) concerning mass shootings in Texas and California. In addition, 2016-2019 was compared to 2020-2023, and 2000-2007 was compared to 2008-2015. This research investigated the components of routine activity theory to predict victimization via a quantitative casual comparative study that used multiple regression data analysis.

Routine activity theory posits that a motivated offender selects a suitable target absent a capable guardian for a crime to transpire in time and space (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019; Hollis & Hankhouse, 2019). Further, theoretic advancements argued that controllers' impact motivated offenders, suitable targets, and capable guardianship. Offenders are controlled by handlers, targets by place managers, and guardians protect the target. The most important concepts consist of place managers and guardians. Place managers have the authority to implement facets that harden vulnerable targets. Hardening the target entails implementing security measures that mitigate access and neutralize potential threats toward targets (people and locations). The advanced concepts of routine activity theory promoted the crime triangle. The outer triangle's presence or absence impacts each routine activity theory component. Mass shooting victimization rates transpire based on the offender's motivation, target selection, and the presence or absence of security measures and capable guardianship. The micro-environment characteristics were investigated to assess when, where, why, and how these public mass shootings transpired. The following research questions directed the study:

RQ1*: Is there a statistically significant difference in perpetrator motivation, target selection, and guardianship among victimization rates in public mass shootings in Texas and California between 1966-1994 and 1995-2023?*

RQ2: *Is there a notable difference in the number of public mass shootings in Texas and California between 1966-1994 compared to 1995-2023?*

RQ3: *Is there a notable difference in the number of public mass shootings before and during the coronavirus pandemic in Texas and California between 2016 and 2023?*

Null Hypothesis 1

Ho1 was as follows: No statistically significant difference was determined in perpetrator motivation, target selection, and guardianship among victimization rates in public mass shootings in Texas and California between 1966-1994 and 1995-2023. Multiple regression data analysis indicated a statistically significant difference in mass shooting victimization probability between 1966-1994 compared to 1995-2023. In addition, the analysis determined a statistically significant difference in routine activity theoretic components concerning victimization in Texas compared to California within the designated 57-year span. An SPSS random computer-generated sample was performed on the California dataset to match the sample size of Texas (N=34) to promote the comparison. However, when California, N=60, was compared to Texas, N=34, there was a notable yet not statistically significant difference between both states.

Findings revealed that although California had 76.5% more mass shooting incidents than Texas from 1966-2023, in addition to (1966-1994) and (1995-2023), Texas shootings produced almost the same victimization numbers as California. Results concluded that mass shootings in Texas during this span were more violent, killed and injured more victims per shooting incident compared to California. Since mass shootings are associated with weapon type in most instances,

it is important to note that from 1966-2023, semi-automatic rifles were used in approximately 35% percent of shootings in both California and Texas. In addition, there was only a 10% difference between California and Texas concerning the perpetrator's use of handguns (80%) in California and approximately (70%) in Texas. Capellan and Gomez (2018) concluded that mass shooting incidents more than doubled from 2000-2015 compared to 1984-1999. This research found that from 1966-1994, there were 23 mass shooting incidents in Texas and California, compared to 71 from 1995-2023; findings were consistent with Capellan and Gomez's (2018) research conclusions.

In addition to the disparities in mass shooting incidents in Texas and California, both states have differing gun law strengths. Specifically, California is ranked first in the United States, and Texas is ranked 33 (Donnelly et al., 2023b). Donnelly et al. (2023b) determined that state gun law strength protects against mass shooting victimization. Repping et al. (2019) found minimal evidence indicating that more permissive state gun laws are associated with a higher mass shooting incident rate. This research, consistent with Reeping (2019), revealed that the firearm type and number of firearms used by the perpetrator failed to explain the difference in victimization severity per incident and the dramatic disparity of incidents in California (N=60) compared to Texas (N=34).

This research determined that the perpetrator’s use of semi-automatic rifles and the use of more than two firearms at a shooting site were statistically significant predictors of increased victimization. The use of more than two firearms increased victimization by 40% compared to the use of one or two firearms. In addition, the use of semi-automatic rifles increased victimization by 41% compared to handguns and shotguns. Contrarily, Blau et al. (2016) investigated 184 mass shootings and nine distinct gun laws between 1982 through October 2015.

Blau et al. (2016) determined that assault weapons/semi-automatic rifles did not correlate with increased victimization.

However, consistent with this research, Silva and Greene-Colozzi (2021) determined that the use of semi-automatic rifles and more than one handgun increased victimization. Donnelly et al. (2023b) assert that the gun law strength protects against mass shooting victimization. This study found that gun law strength did not reveal an association between victimization and the number of mass shooting incidents. In addition, California's gun law strength compared to Texas ultimately contradicted the notion that gun laws and regulations reduce public mass shooting incidents and victimization. However, Federal firearm laws mandated in both states were not considered.

Motivation

Findings revealed that a perpetrator's motive was a significant predictor of victimization in Texas and California. An offender's motivation of political/religious and or general hate towards a group of people ($p = <.001$), combined with a history of violence ($p = < .044$), was a strong predictor for increased victimization. However, when isolating and analyzing Texas and California independently, a perpetrator's motivation of political/religious or general hate was not a significant predictor of victimization in California. In Texas mass shooting incidents, there was a 128% increase in victimization probability when the perpetrator was motivated by political or religious hate, compared to a 65% victimization increase in California. Although most mass shootings analyzed in California and Texas indicated the motivation of a disgruntled current/former employee/student in pursuit of revenge, revenge did not reveal a statistically significant predictor of victimization. In California, 42.5% of its shootings revealed a perpetrator motivated by revenge, compared to 38.2% in Texas. Capellan and Jiao's (2019) research

similarly revealed that 48% of 154 mass public shootings were motivated by revenge. Freilich et al. (2021) noted that victimization may depend on protective measures implemented, guardianship presence at the scene, and law enforcement response time to an active shooter event, not on the perpetrator's intent (Freilich et al., 2021). Findings suggest that from the routine activity theoretical perspective, the perpetrator's motivation can vary depending on the micro-environment and significantly impact victimization.

Perpetrator Background/History

A perpetrator's history of violence revealed a 43% increase in victimization in Texas and California. Results indicate that understanding a perpetrator's history of violence prior to a mass shooting attack can assist in preparation and threat management considerations, specifically if there is a direct threat and warning from the suspect toward a specific target. A perpetrator's history of violence substantiates the offender's capacity to commit future violence. When conducting threat management investigations within the private and public sectors, the results depicted in this study can further reinforce and advance the notion that prior violence is a strong predictor of future violence. A concerning prospect when assessing a potential offender's history of violence is the ultimate intentions of the perpetrator. Results revealed that in Texas, approximately 44% of shooters intended to die during the act of violence, compared to 41% in California. This research revealed that a perpetrator motivated by hate who has a history of past violence is a higher victimization risk compared to any other motivated offender who committed a mass shooting. In addition to a motivated offender, target selection and the presence of guardianship directly impact victimization and the ability to mitigate a potential threat.

Additional findings concerning perpetrator background characteristics revealed a statistically significant difference when assessing together via multiple regression the

perpetrator's history of violence (p = <.011); history of substance abuse (p = <.001; criminal/juvenile history (p = <.001); and military service (p = <.002). All background predictor characteristics increased victimization by no less than 45%, except the perpetrator's criminal/juvenile history, holding all other variables constant. Research revealed a 66% decrease in victimization when the perpetrator has a criminal/juvenile history compared to no arrest history. Military service implies well-trained individuals in the use of firearms and tactics. In addition, individuals in the military are trained for combat, regardless of whether they are deployed to a war zone or not. Research revealed a 72% increase in victimization when the perpetrator was current or former military compared to no military experience. In Texas, 35% of public mass shootings were committed by a current or former military service member, compared to 6.7% in California.

Furthermore, this research determined that in California, perpetrators who had a history of domestic abuse (p = <.001) increased victimization by 86%. Geller et al. (2021) determined that between 2014-2019, in 68.2% of 128 mass shootings, the perpetrator either had a domestic violence history or killed at least one family member or intimate partner. In addition, offenders who intended to die at the scene (p = <.013) increased victimization by 18%. Capellan and Jiao (2019) determined that during public mass shootings (55%) of perpetrators died. Capellan et al. (2022) determined that out of 320 mass shooters, 174 died during the attack (54%). This research revealed that 41% of perpetrators intended to die at the scene, consistent with previous research. In Texas and California, in 52.7% out of 94 incidents, the perpetrators committed suicide or were killed at the scene by a capable guardian.

Target

Findings revealed that approximately 53% of perpetrators had an insider relationship with the target in California, compared to 44% in Texas. In addition, 51.7% of shootings in California occurred at a place of business or commerce, compared to 44% in Texas. In California, research revealed that approximately 72% of mass shootings occurred at an educational or business location, compared to approximately 53% in Texas. However, Schildkraut et al. (2019) concluded that 65% of public mass shootings occur at schools or within the workplace, almost averaging the difference between Texas and California. *Businesses* are open-access, soft-target locations designed to generate revenue. Businesses normally opened to the public, specifically retail locations, are consistent targets frequented daily by the general public.

From a routine activity perspective, owners or "place managers" of these facilities have the authority and obligation to implement security measures to protect their property and employees; however, hardening a business target is somewhat contradictory in retail locations or other places routinely open for business to the public. Schildkraut et al. (2019) contend that routine activity theory promotes the prospect of target analysis and guardianship concerning sufficient hardening prevention measures to protect vulnerable, high-risk populations. Removing one element of the crime triangle can mitigate public mass shootings. This research advanced the notion that a hard or soft target and capable guardianship are associated with increased or decreased victimization.

Research findings revealed that government/civic targets ($p = <.008$) increased victimization in Texas and California by 131% compared to non-governmental targets and 139% in California ($p = <.001$) assessed separately from Texas. Mass shooting incidents that have occurred on military bases, airports, government sites, municipal sites, and law enforcement

targets constituted the government target classification. Capellan and Silva (2019) argued that increasing security measures or target hardening will presumably not prevent mass shooters that are victim-specific and focused on selecting government/civic targets due to their political/ideological motivation. However, in California, this research revealed that targets that were considered "hard" ($p = <.012$) decreased victimization by 114% compared to soft targets. This research revealed that perpetrators who targeted educational institutions or other locations where students/teachers ($p = <.002$) were present increased victimization by 69%. Students/teachers are considered vulnerable targets, and educational facilities often lack capable guardianship. Furthermore, findings suggested that perpetrators' targeting the random public was statistically significant ($p = <.001$) and increased victimization by 85%.

In California, there was a statistically significant relationship between perpetrators who were current/former employees ($p = <.042$) and the outcome variable. In shootings where current/former employees targeted the workplace, there was a 34% decrease in victimization. Findings suggest that perpetrators who committed workplace violence in California (N=60) were less violent than those who selected any other target. Results revealed that perpetrators who commit mass shootings depicted as targeted violence are less severe because the perpetrator intentionally selects specific targets. Research suggests that victimization may be associated with the perpetrator's intent and target selection. Capellan et al. (2019) determined that when assessing 318 public mass shootings, findings revealed that disgruntled employees motivated by revenge that targeted the workplace were less lethal than any other public mass shooting target.

Case Examples

The public is often targeted randomly in open spaces or publicly accessible locations. On April 27, 1989, mass shooter Ira Attebury opened fire at an outside parade in San Antonio,

Texas, killing two and injuring 51 people (Crewdson, 1979). On July 18, 1984, mass shooting perpetrator James Huberty killed 21 and injured 19 at a McDonald's in San Ysidro, California (Tarke, 2022). On May 6, 2023, Mauricio Garcia committed a mass shooting in Allen, Texas, at an outside outlet mall, killing eight and injuring seven (Reyes, 2023). The mass shootings in populated public places targeted the random public. By pure chance, law enforcement was on the scene in Allen, Texas, on an unrelated service call and was able to neutralize further victimization. Outsiders committed these mass shootings with no connection to the targets.

On November 5, 2009, in Fort Hood, Texas, mass shooter Nidal Hassan, an insider, killed 13 and injured 32. Although this occurred on a military base, military personnel were not authorized to carry personal firearms (Mackey, 2009). On April 2, 2014, in Kileen, Texas, located at a military site, Ivan Lopez, an insider killed three and injured 12. No armed guardianship was on site to mitigate the attack (Fernandez & Blinder, 2014). On December 2, 2015, Syed Farook and Tashfeen Mallik targeted a San Bernardino County, California, government function. Farook, an insider employed by the San Bernardino County Department of Public Health, facilitated a mass shooting terror attack that killed 14 and injured 24. No armed guardianship was present to mitigate victimization (Los Angeles Times, 2015). Except for mass shooter Ivan Lopez, the other incidents were classified as domestic terrorism. The above incidents were committed by insiders with easy access to harder targets. However, the absence of capable guardianship promulgated increased victimization.

In Austin, Texas, on August 1, 1966, there was no immediate armed presence when Charles Whitman bypassed an unarmed security officer to gain access to the University of Texas Tower, subsequently killing 17 and injuring 31 (Bell, 2022). On March 1, 2001, in Santee, California, Charles Williams Jr. killed two and injured 13. No armed guardianship was

designated at the school. However, two off-duty police officers were coincidentally on the scene and were able to mitigate further victimization (Purdum, 2001). In Texas, on May 24, 2022, there was no armed guardianship when Salvador Ramos accessed the elementary school in Uvalde, Texas, killing 21 and injuring 17 (Griffin & Steinbuch, 2022). Victimization and mitigation of school shootings present challenges based on the size and area of the school, the number of access points, whether the perpetrator barricades himself/herself in a confined space, and the presence or absence of armed guardianship capable of mitigating victimization. Perpetrators' target selection concerning the workplace and educational institutions combines the prospect of soft target and insider access with the presence or absence of capable guardianship.

Guardianship

Research revealed that physical security measures present at the scene of a shooting increased victimization by 38%. When Texas was isolated from California, the presence of security measures increased victimization by 129%. *Physical security measures* are physical or technological security implemented to mitigate access and or deter the perpetrator. In 85 of 94 identified mass shooting incidents, perpetrators either accessed the target unimpeded or bypassed security measures. The finding contradicts logic on its surface. However, there is an important distinction to explain. Physical security measures are implemented to prevent access and deter crime and are considered an informal guardianship type. For example, an unarmed security officer was present and considered a "physical security measure" at the Charles Whitman mass shooting in 1966.

A physical security measure was present on July 28, 2019, when mass shooting perpetrator Santino Legan avoided guardianship at the entrance to a festival and cut through a fence, subsequently killing three and injuring 12 in Gilroy, California (Vives et al., 2019). A

physical security measure was present on January 30, 2006, when Jennifer San Marco accessed her former workplace facility by entering through a security gate and shot and killed seven (Chawkins, 2006). An unarmed security officer was present on November 7, 2018, in Thousand Oaks, California, when Ian David Long targeted college students at a bar, subsequently killing 12 and injuring 21. Physical security measures, absent armed guardianship, were present on August 3, 2019, when Patrick Crusius killed 23 and injured 26 at a Walmart in El Paso, Texas. Research findings concluded that physical security measures, absent armed guardianship, do not mitigate victimization.

Research results did not depict any statistically significant relationship between armed guardianship related to victimization in Texas and California. In 18 of 94 incidents, armed guardianship was present or in the immediate area of the mass shooting. In 37 of 94 incidents, (39%) of the perpetrators were interrupted during the shooting. However, in most instances where the shooter was interrupted, law enforcement arrived at the scene and neutralized the threat. In most instances, the perpetrator had already facilitated increased victimization due to the absence of capable guardianship on the scene at the time of the shooting. The concept of routine activity theory promotes the prospect that capable guardianship is considered when in the immediate presence of the potential shooter. Capable armed guardianship near the shooter when the shooting started was determined to be minimal in the 94 incidents investigated. Thus, this research could not measure the effectiveness of armed guardianship related to victimization. In addition, this study could not substantiate a statistically significant difference in various regression models assessing capable guardianship presence or absence, armed guardianship, and guardianship types related to an increase or decrease in victimization.

Peterson et al. (2021) found no relationship between armed guardianship and violence deterrence in educational settings. Peterson et al. argued that an armed officer on the scene was the second most significant factor associated with increased fatalities behind the perpetrators' use of assault rifles. Peterson et al. did not determine or measure deterred/averted shootings and how armed guardianship could impact victimization by reducing the inclusion criteria of a four-fatality minimum fatality count. Furthermore, the presence of armed law enforcement or security may promote a causal argument concerning increased fatalities while a guardian was present. Peterson et al. assertions are considered potentially misleading primarily due to the depiction of what constituted armed guardianship. "In the immediate area" differs from on-site or near the offender."

This research found evidence that in instances where armed guardianship was present, the perpetrator was deterred and stopped prior to inflicting an increase in mass casualties. Capable armed guardianship is a more efficient option when encountering armed perpetrators motivated to inflict mass casualties. Specific circumstances may not have been considered to account for Peterson et al. (2021) conclusions. The geographic size and area of various educational institutions, the number of entry/exit points, the number of armed officers, proximity to the perpetrator or shooting, and whether the perpetrator had barricaded himself within a locked classroom are all potential factors that could impact the efficacy of armed guardianship.

Silva (2021) and Schildkraut et al. (2022) noted that an adequate security presence may determine victimization rates and whether events are averted or completed. In this research, there were instances where armed guardianship mitigated or prevented a perpetrator from selecting a target. On August 10, 1999, mass shooter Buford Furrow frequented three Jewish Community Centers yet did not select the targets due to the presence of armed guardianship (Weinstein,

2001). Rather, Furrow frequented the fourth Jewish Community Center in Los Angeles, California, which did not have an armed presence, subsequently killing one and injuring five (Weinstein, 2001). On December 29, 2019, mass shooter Keith Kinnuen targeted a house of worship in White Settlement, Texas. An armed citizen providing security on the scene immediately neutralized the threat and prevented further victimization (Ross, 2019).

In addition to the prospect of armed guardianship, informal guardianship was assessed in Texas and California concerning the legal or illegal purchase, possession, and transport of firearms used and their relationship to victimization. Informal guardianship suggests that firearm laws and regulations impact the number and severity of public mass shootings (Silva & Green-Colozzi, 2021). In California, research revealed a 52% decrease in the victimization when the perpetrator used a legally accessed weapon (s) compared to illegal firearm(s) acquisition. Findings suggest that the perpetrator's unlawful access to firearms promotes increased victimization in public mass shootings compared to legal firearm acquisition. This research indicates that those who violate firearm laws are more violent and induce increased harm in public mass shootings. In 94 mass shootings, 33.7% of perpetrators illegally obtained their weapons. Furthermore, research revealed that in Texas and California, statistically significant predictors of victimization concern the use of semi-automatic rifles ($p = <.008$) and more than two firearms at the scene ($p = <.025$). A notable predictor was determined concerning the illegal possession/transport of weapons on the property ($p = <.054$) of a mass shooting event.

RQ2 Null Hypothesis

Null Hypothesis Ho2 was as follows: There was no notable difference in the number of public mass shootings in Texas and California between 1966-1994 and 1995-2023. Findings revealed that from 1966 through 1994, California had 15 documented incidents, compared to

eight in Texas, totaling 23. From 1995-2023, California had 45 documented incidents, compared to 26 in Texas, totaling 71. The perpetrator weapon usage percentages were almost identical. Specifically, 35% used a semi-automatic rifle capable of large capacity magazines, and between 70- and 80% used handguns. Based on weapon use, conclusions suggest other unsubstantiated causes as to why California had almost 76.5% more incidents than Texas from 1996 to 2023.

Temporal Patterns

Routine activity theory suggests that when and where mass shootings transpire in time and space are the result of an offender's motivation, selection of a suitable target, and capable guardianship (Schildkraut et al., 2022; Schildkraut et al., 2019; Silva & Greene-Colozzi, 2021). Temporal patterns between Texas and California were as follows. In California, 36.7% of mass shootings occurred in January, April, and July. In Texas, 49.9% of mass shootings occurred in April, May, and August. In California, 53.4% of the mass shootings occurred on Wednesday, Thursday, and Friday. In Texas, 55.9% of incidents occurred on Saturday, Sunday, and Monday. Results suggest that Monday and Tuesday incidents in both states are not as prevalent.

Texas and California depict a clear distinction in days of the week when shooting incidents occur. In Texas, 20.6% of shootings occurred on the 3rd and 29th day of the month. In California, 15% of the incidents occurred on the 1st and second day of the month. In both states, temporal patterns differed in these shootings' month, day, and weekday. Schildkraut et al. (2022) investigated temporal patterns of 401 public mass shootings in the United States and determined that mass shootings are not uniformly distributed across space and time. This research determined that patterns in Texas and California are distinct concerning public mass shootings, not uniformly distributed. Findings further advance the notion that where and when public mass

shootings transpire differs between micro-environments and people's daily routine activities (Schildkraut et al., 2022; Ruderman & Cohn, 2021).

Null Hypothesis 3

Ho3 is as follows: There was no notable difference in the number of public mass shootings before and during the coronavirus pandemic in Texas and California between 2016 and 2023. Research determined that from 2016-2019, there were 20 mass shootings in Texas and California, compared to 14 from 2020-2023. However, in 2020, the year the pandemic commenced, only one incident that occurred in California was included in the study that met the inclusion criteria. Research revealed that from 2016-2019, Texas endured 11 mass shooting incidents compared to nine in California. However, from 2020 to 2023, California had nine incidents, compared to five in Texas. In 2020, California had one recorded incident. Further analysis revealed that from 2008-2015, California had 14 incidents, compared to five in Texas. In addition, from 2000-2007, California experienced ten incidents, compared to three in Texas. Research revealed that within the last 57 years, California endured almost double the mass shooting incidents compared to Texas within specified periods. The only exception to this pattern was from 2016-2019.

COVID 19 Pandemic

In 2020, there was one documented mass shooting that occurred in California. Texas had no known public mass shootings in 2020. Koppel et al. (2023) determined that routine activity theory concepts were consistent regarding daily routine changes that can impact community crime distributions and victimization. This research further advanced Koppel et al. (2023) determinations that daily routine activity changes from public to private in 2020 impacted victimization in public places. Due to the pandemic, daily activities dramatically changed from

people frequenting public to private locations such as residences. The pandemic directly impacted public mass shootings, as depicted in this research.

Implications

Routine Activity Theory

This research aimed to use routine activity theory as a framework to investigate public mass shootings in Texas and California from 1966 to 2023. No prior research investigated public mass shootings from 1966-2023 in Texas and California using routine activity theory via a quasi-experimental causal-comparative analysis. Findings advance routine activity theory in explaining when and where mass shootings transpired. A perpetrator's motivation, target selection, and capable guardianship differed between Texas and California. Findings substantiated the notion that Texas and California mass shootings differed concerning where and when they transpired, including differences in temporal patterns. In addition, perpetrator motivation, target selection, and guardianship associated with victimization differed between both states. Research implications further advanced routine activity theory in explaining victimization severity and public mass shooting frequencies. In most public mass shooting research, studies have been globally focused on the United States as a whole, not accounting for potential differences among states. Research implications revealed evidence that there is a distinct statistical difference in frequency and victimization severity between Texas and California that can be generalized. To advance further understanding concerning the differences in micro-environments to promote harm mitigation, each state must be assessed to understand how, when, and where mass shootings transpire to facilitate security best practices, public policy, awareness, and training.

Case examples and discussion explained the consequences of incapable or ineffective guardianship protecting vulnerable targets. In addition, findings revealed the positive impact of

armed guardianship deterrence when a perpetrator searches for suitable targets. However, because this study used routine activity theory to investigate mass shootings that had transpired, future research should include documented incidents that were attempted, prevented, averted, and disrupted in Texas and California. Furthermore, future research could formulate comparisons between additional states concerning capable guardianship, discussed in another section. Silva and Greene-Colozzi (2021) determined that routine activity theory does not emphasize mass shooting prevention. However, the framework promotes strategies for averting target selection and victimization severity mitigation when a mass shooting commences (Silva & Greene-Colozzi, 2021; Schildkraut et al., 2019). Routine activity theory is further advanced by analyzing attempted, averted, or prevented mass shootings due to site target hardening and the presence of guardianship.

Public Mass Shootings Frequency/Victimization

The number of mass shooting incidents from 1966-2023 was significantly distinct between California and Texas, which suggested that weapon use and state firearm laws and regulations did not appear to have an impact on incidents and victimization severity. Furthermore, results contradicted the notion that firearm laws and regulations mitigate public mass shootings. In addition to the disparity in the number of incidents, there was a disparity in victimization per incident. Results indicated that although Texas had 76.5% fewer incidents than California from 1966-2023, the severity of fatalities in Texas was 2.6 times higher per incident (6.9) than in California (4.3). The victimization severity in Texas concerning the number of injuries (10.0) compared to California (5.8) was over four times higher per incident. In Texas, the total number of people victimized per incident (16.9) was approximately seven times higher per incident compared to California (10.07). In California, findings revealed a 40.5% decrease in

victimization from 1995-2023 compared to 1966-1994. Research suggested a decreasing trend in public mass shooting victimization compared to previous decades. Important research findings revealed the disparity and severity in victimization (fatalities and injuries) per incident in Texas, compared to California from 1966-2023. Questions concerning disparities in incidents and victimization severity among Texas and California promote opportunities for future research.

Routine activity theory components enabled an analysis of perpetrator motivation, targets, and capable guardianship. Findings suggested a statistically significant difference between Texas and California regarding perpetrator motivation, target selection, and capable guardianship when using the same sample size. Routine activity theory differences were notable but not statistically significant when assessing both states combined. The primary reason was the disparity in incidents (California N=60 and Texas N=34). The implications depict micro-environmental differences between suitable targets within state comparisons.

Target Selection and Guardianship

The type of target presents distinct challenges in preventing mass shootings committed at vulnerable targets. For example, educational institutions are high-risk, vulnerable targets that must have efficient security measures, training, and response plans to mitigate victimization. Schildkraut et al. (2019) revealed that access control, a target-hardening measure, may be one of the most beneficial tactics for harm mitigation during mass shootings. This research revealed that physical security measures, absent armed guardianship, did not mitigate victimization once the shooting commenced. This research determined that physical security measures that do not promote capable guardianship were insufficient and ineffective in mitigating victimization.

A target with no armed personnel positioned in schools or other locations to thwart or deter a potential offender may assume victimization risk. State and local governments must

review and assess mass shooting research and understand that the risk can no longer be accepted in locations where there is an ongoing constant threat and risk to vulnerable populations. Since the Columbine, Colorado, school shooting, mass shootings have increased in frequency. These incidents do not occur daily. However, public mass shootings are rare, high-impact events. Capable guardianship must be implemented due to the ongoing risk of a potential mass casualty event. Implementing security can be a deterrent or a plan for adequate response.

This research revealed that most public mass shootings in Texas and California transpired within the workplace, consisting of workplace violence. Furthermore, in Texas and California, 61 of 94 mass shooting incidents occurred within the workplace and educational facilities, totaling approximately 65%. of all public mass shootings from 1966-2023. Mass shooters predominantly select target locations with legitimate access as students or employees (Silva & Greene-Colozzi, 2022; Schildkraut et al., 2019; Silver et al., 2018). These findings are consistent with previous mass shooting global research (Silva & Greene-Colozzi, 2022; Silver et al., 2018), where the workplace and educational institutions pose the highest risk for mass shooting incidents.

This research determined that government and educational institution targets, including the random public, are significant predictors concerning victimization in Texas and California. Students/teachers are at risk based on the perpetrator's perception of vulnerability. In addition, government facilities are normally considered hard targets. However, military bases in Texas did not allow the carrying of personal firearms on campus when Nidal Hassan and Ivan Lopez committed mass shootings. In addition, when analyzing the targeted government locations in California, airports are open access and publicly accessible until you pass the security screening checkpoint. Educational institutions normally do not authorize concealed or open carry on

campus except for designated armed security or law enforcement. Furthermore, the workplace generally has internal code of conduct policies that do not allow employees to carry weapons. Perpetrators target people and places that cannot mitigate the threat due to the perpetrator's perception that the target is unarmed, vulnerable, and most probably defenseless.

Mass shootings must be mitigated through the vantage point of the potential target. Promoting security at a designated physical structure may be more viable and managed than attempting to monitor, control, and isolate the potential offender. Mass shootings cannot be predicted concerning the time, location, and would-be offender. Understanding perpetrator motivations is important; however, not a reasonable mitigation expectation to isolate high-risk offenders who do not provide warning or generate a direct threat toward a target. This research substantiated that an offender's history of violence is a significant predictor of mass shooting violence and victimization in Texas and California. A perpetrator's history of violence promotes the concept of Threat assessments.

Harm Mitigation Strategies

Threat Assessments

Findings enforce the importance of threat assessments when there is an identified direct threat of violence. Threat assessments are comprehensive investigations to assess the perpetrator's threat level, credibility, and capacity to carry out the threat (Schildkraut & Geller, 2022). Action plans are then formulated to respond to and mitigate the threat based on the designated threat level. Threat assessments concern both the private and public sectors. Criminal history and background analysis are necessary functions during the threat assessment process. Criminal history analysis and background investigations that have determined that an offender has a history of repeated violent acts can be used to plan and prepare to mitigate violence at a

designated site. However, identifying individuals that pose a credible threat is generally more difficult than implementing efficient security at high-risk targets.

This research revealed that almost all of the mass shootings were conducted without advanced warning or leakage. There was no warning or advance notice as to whom, when, and where a shooting will transpire. These findings question the practical relevance that perpetrators who commit public mass shootings depict pre-attack warning signs and behaviors (Cowan & Lankford, 2023; Lankford et al., 2019; Silva, 2021). Regardless of whether perpetrators depict pre-attack warnings and behaviors, those behaviors normally do not pinpoint the offender in real-time, inform the potential targets, or enable predictions of where and when the perpetrator will commit a mass shooting. Public mass shootings are rare occurrences that promote increased victimization. These incidents cannot be forecasted; there are no definitive predictions concerning when and where a public mass shooting will occur. However, target preparation and planning by place managers that control the financial budget necessary to implement effective and sufficient security measures may mitigate perpetrator target selection through target hardening (Hollis & Hankhouse, 2019; Felson & Eckert, 2019). Security vulnerability assessments can be a viable tool for investigating target vulnerability and implementing measures promoting target hardening.

Security Vulnerability Analysis

The Security Vulnerability Analysis (SVA) promotes vulnerabilities and threat assessments confronting a critical asset" (Bennett, 2018, p.238). The (SVA) is a methodical technique that considers and estimates the threat probability and evaluates the attack consequence concerning a critical asset. The (SVA) identifies and evaluates the threats, hazards, and vulnerabilities confronting a critical asset. The SVA is an analytical procedure to recognize

and categorize critical infrastructure assets and key resources and to evaluate risks that pose potential threats to an organization or critical infrastructure. In addition, the analysis concentrates on system security vulnerabilities that promulgate a potential bad actor to harm or adversely affect the asset or resource.

The (SVA) identifies security program shortcomings and deficiencies, including physical and technological resource inadequacies, insufficient protection measures, and vulnerabilities that expose the asset or resource to a bad actor or some harm (Bennett, 2018). The (SVA) examines each critical asset at a designated site. The analysis distinguishes if measures are sufficient to protect the asset or resource, including whether benchmarks that promote hard or soft target access or exposure are evident. The assessment promotes security to thoroughly determine the system's vulnerabilities that are unprotected, insufficient, or exposed to conceivable intentional or unintentional harm. (SVA) can be invaluable in identifying and facilitating vital physical security measures at educational institutions, healthcare systems, and government facilities.

Limitations

Sample Size

This study encountered several limitations. The research sample size was representative and comprised of all mass shootings in Texas and California between 1966 and 2023 based on the research inclusion criteria. However, the disparity in mass shootings between Texas and California created comparison challenges. Performing a random computer-generated sample size using SPSS of the California dataset to equal Texas (N-34) limited the number of predictors in the multiple regression model for analysis. However, the sample size allowed a holistic analysis of both states within the designed period. In addition, due to the variance in victimization (4-53),

the dependent variable was transformed via natural log via SPSS, and the unstandardized coefficients were then exponentiated, “back transformed” to their original values for interpretation. Thus, results were examined from the perspective of a one-unit change in the independent variable promoting a multiplicative effect. Results were then communicated in terms of percentage changes rather than unit changes.

Public Data/Datasets

Using publicly available data presented challenges in finding information on less severe and non-newsworthy mass shooting incidents. Researchers and scholars commonly do not publish their datasets for purview. In addition, public mass shooting research does not use one designated mass shooting definition. Many researchers argue for the use of one definition. However, this would limit research opportunities to assess various types, details, and distinct mass shooting parameters. Public mass shooting research may be limited to well-known published researchers instead of a more comprehensive group of scholars.

The publicly available datasets provided the foundation of information within the study. However, verifying detailed information relevant to assessing the routine activity framework components posed challenges and required extensive review of publicly available news sources to locate necessary details. Open records requests were sent to various major police departments in Texas and California. Requests for information concerning computer-aided dispatch (CAD) records, investigative details, reports, and data available for public purview were denied. Interestingly, open records requests were denied, regardless of how long ago the incident transpired and whether the perpetrator committed suicide or was sentenced. For example, one Californian police department claimed the incident was still "under investigation," even though the perpetrator was killed and the incident occurred in 2017. Although there was no access to law

enforcement investigative reports, excluding publicly available governmental reports and news releases, the information obtained was triangulated for reliability and validity and checked for accuracy.

Guardianship

The research criteria required the inclusion of four or more fatalities or injuries. By implementing a minimum number killed or injured, the research did not select public mass shooting incidents that would have promulgated the theoretical notions of guardianship concerning routine activity theory. The inability to measure guardianship from the perspective of public mass shootings prevented or averted before the shooting starts may have hindered a more comprehensive assessment of guardianship's importance in threat mitigation. In addition, not comprehensively including those incidents with fewer than four or more killed or injured, specifically when an armed or unarmed bystander neutralizes the threat immediately after the shooting starts, may have limited the research's theoretical foundation. Routine activity theory may be more sufficiently examined from the context of public mass shootings when the inclusion criteria are more expansive to include those shootings where guardianship was present and effective.

Recommendations for Future Research

Future research concerning mass shootings and victimization, specifically comparing Texas, California, and other states, may modify the victimization inclusion criteria to increase the sample size to promote increased generalization. In addition, since this study revealed that perpetrators in both states used semi-automatic rifles in 35% of the incidents and handguns between 70-80%, findings suggest the need for future research in assessing the disparity of the number of incidents associated with victimization. Firearm regulations and laws, based on the

rankings in both states, posed contradictory findings. Results suggested that firearm law strength could not explain the mass shooting incidents and victimization disparities between Texas and California. In addition, if firearm laws and regulations mitigated the number of public mass shootings, the results should have posed opposing results. Future research is needed to assess potential causes of why California had almost twice as many mass shooting incidents. However, Texas victimization was significantly more severe (fatalities and injuries) than California per incident.

Although California and Texas have represented more public mass shootings since 1966 than any other two states, future research should add additional state comparisons using routine activity theory by region, controlling for population. States with large populations, such as Florida, Illinois, Michigan, Pennsylvania, and New York, can be accessed via the same inclusion criteria, promoting various multi-state comparisons to understand micro-environments and mass shootings more efficiently. Future research may assess state political party differences among state comparisons via routine activity theory and how state leadership and political philosophy impact mass shooting frequencies.

Guardianship

This research used routine activity theory to investigate mass shootings that have already transpired. The capable guardianship component could be assessed more sufficiently by implementing attempted, averted, or mitigated incidents before commencement due to guardianship circumstances. In assessing the inclusion criteria, the number of fatalities and injuries would be reduced to no definitive victim count; rather, the perpetrator's intent would be operationalized in selecting incidents for analysis. In addition, from a global guardianship perspective, this research did not focus on quantifying specific firearm laws and how those relate

to victimization. However, global guardianship was assessed in Texas and California concerning legal/illegal purchase, possession/transport, firearm numbers, and type. Although there was statistical significance concerning the use of rifles compared to other firearms and the use of more than two firearms at a mass shooting scene, the research found that only 23.5% of Texas shootings revealed the use of more than two firearms compared to 20% in California. Future research may determine precisely how offenders accessed their weapons, existing laws, and the victimization impact, comparing Texas, California, and other states.

Summary

This research investigated public mass shootings in Texas and California from 1966-2023 using routine activity as the theoretical framework. Publicly available data was assessed to identify and analyze public mass shooting incidents that met the definition inclusion criteria for the study. A total of 94 mass shooting incidents were selected for analysis, California N=60 and Texas N-34. A comparative quasi-experimental research design was employed. Multiple regression analysis using SPSS, version 29, was used to assess the relationship between routine activity components to public mass shooting victimization.

Research findings revealed that California endured 76.5% more public mass shootings than Texas from 1966-2023. In addition, consistency in percentages was evident between 1966-1994 and 1995-2023. Public mass shooting trends indicated a consistent two-to-one ratio difference in mass shooting incidents between California and Texas. However, Texas victimization per incident was significantly more severe in both fatalities and injuries. Findings revealed that public mass shooting weapon use was statistically similar, which suggested that firearm laws and regulations did not appear to impact mass shooting incident numbers and victimization.

Research determined a statistically significant difference in perpetrator motivation, target selection, and guardianship among Texas and California when the sample size was equal to Texas, N=34. However, when California and Texas were combined, a notable statistical difference was determined concerning routine activity components. The results indicated that although California and Texas were the two most populated states, public mass shooting characteristics concerning motivation, target selection, and guardianship were not similar, indicating that micro-environments are distinct concerning public mass shootings. The when, where, and how public mass shootings transpired were distinct when comparing Texas with California.

Findings revealed that in Texas and California, most mass shooting perpetrators were motivated by the pursuit of revenge within the workplace, including businesses where the random public was targeted. However, government and educational targets were determined to be statistically significant to victimization. In addition, target victim types concerning students/teachers and the general public were determined statistically significant concerning the probability of increased victimization. A perpetrator's history of violence and political/religious and general hate toward groups were strongly associated with mass shooting victimization in Texas and California. Physical security measures absent capable armed guardianship were determined to be associated with increased victimization. In most of the public mass shootings investigated, there was no armed guardianship present to mitigate the threat. Results provide evidence that target hardening and armed guardianship can mitigate further victimization once a shooting commences. Having no armed guardianship at the scene capable of averting the threat suggests increased reliance on an immediate response from law enforcement. Unfortunately, law enforcement is not normally at the scene when a mass shooting transpires.

This research advances routine activity theory concerning public mass shootings in Texas and California. No research had previously used routine activity theory to investigate mass shootings comparing Texas and California. Public policy must implement laws conducive to guardianship resources to protect vulnerable populations such as students/ educators in educational facilities. Sufficient security management protocols must be formulated to protect vulnerable targets. Because most public mass shootings occur in commerce locations, businesses should use security vulnerability assessments to assess risks associated with their facilities. Although public mass shootings account for less than one percent of homicides, places of business pose an ongoing threat of violence due to accessibility and limited, if any, guardianship.

Mass shootings cannot be predicted concerning where and when, and the public is consistently susceptible to being at a location through their daily routine activities and potentially targeted for violence. Research revealed that businesses and educational institutions are more exposed to attack than other locations. However, government targets were associated with increased victimization probability. Hardening a potential soft target and implementing capable guardianship may prove more conducive to preventing victimization than attempting to control and isolate potential offenders, including increasing firearm laws and regulations. In addition, research revealed that a mass shooter in the act may be neutralized by a capable armed guardian or bystander in close proximity to engage, not necessarily law enforcement, in response to an active shooter event. In most of the 94 incidents investigated, by the time law enforcement arrived at the scene, the shooter promulgated victimization that may have been mitigated if capable guardianship had been present at the time the shooting commenced.

APPENDIX: IRB Approval Letter

December 1, 2023
Mason Feinartz
Timothy Seguin

Re: IRB Application - IRB-FY23-24-882 Public Mass Shootings in Texas and California: A Causal-Comparative Analysis Using Routine Activity Theory (1966-2023)

Dear Mason Feinartz and Timothy Seguin,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds that your study does not meet the definition of human subjects' research. This means you may begin your project with the data safeguarding methods mentioned in your IRB application.
Decision: No Human Subjects Research

Explanation: Your study is not considered human subjects research because it will not involve the collection of identifiable, private information from or about living individuals (45 CFR 46.102).
Please note that this decision only applies to your current application. Any modifications to your protocol must be reported to the Liberty University IRB for verification of continued non-human subjects research status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this determination or need assistance in determining whether possible modifications to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, PhD, CIP
Administrative Chair
Research Ethics Office

References

Alwahaibi, I., Al-Hadabi, D., & Al-Kharousi, H. (2020). Cohen's Criteria for Interpreting Practical Significance Indicators: A Critical Study. *Cypriot Journal of Educational Sciences, 15*(2), 246–258. https://doi.org/10.18844/cjes.v15i2.4624

Anisin, A. (2019). Mass Shootings and Their Asymmetric Effect on Societal Armament. *Crime, Law and Social Change, 72*(4), 483–500. https://doi.org/10.1007/s10611-019-09832-x

Anisin, A. (2021). Quantitative Analysis of Mass Shootings in Central and Eastern Europe. In *Mass shootings in Central and eastern Europe* (pp. 107–127). Springer International Publishing. https://doi.org/10.1007/978-3-030-89373-6_6

Arluke, A., Lankford, A., & Madfis, E. (2018). Harming Animals and Massacring Humans: Characteristics of Public Mass and Active Shooters who Abused Animals. *Behavioral Sciences & the Law, 36*(6), 739–751. https://doi.org/10.1002/bsl.2385

Aronow, P. M., & Samii, C. (2016). Does Regression Produce Representative Estimates of Causal Effects? *American Journal of Political Science, 60*(1), 250–267. https://doi.org/10.1111/ajps.12185

Axford, W., & Criel, L. (2016, May 31). Gunman Appeared in Midst of a 'Mental Health Crisis'. *Houston Chronicle*. https://www.houstonchronicle.com/news/houston-texas/houston/article/Houston-news-7955711.php

Bailey, E. (2001, April 24). Driver Fatally Shot, 3 Wounded at School Bus Depot in San Jose. *Los Angeles Times*. https://www.latimes.com/archives/la-xpm-2001-apr-24-mn-54869-story.html

Baumann, M., & Teasdale, B. (2018). Severe Mental Illness and Firearm Access: Is Violence Really the Danger? *International Journal of Law and Psychiatry*, *56*, 44–49. https://doi.org/10.1016/j.ijlp.2017.11.003

Becerra, H., & Khan, I. (2011, December 17). Edison Office Shooting Victims, Killer Identified. *Los Angeles Times*. https://www.latimes.com/local/la-xpm-2011-dec-17-la-me-shooting-follow-20111218-story.html

Bell, B. (2022, June 3). I hid from the Texas Tower Sniper. His Successors Have Found us all. *Washington Post*. https://www.washingtonpost.com/outlook/2022/06/03/university-texas-tower-charles-whitman-shooting/

Bennett, B. T. (2018). *Understanding, Assessing, and Responding to Terrorism: Protecting Critical Infrastructure and Personnel* (2nd ed.). Wiley-interscience.

Binns, C. A. (2021). *Safety and Security in Hotels and Home Sharing* (R. J. Kempf, Ed.; 1st ed.). Springer Nature. https://doi.org/978-3-030-59306-3

Blair, J., Sandel, W. L., & Martaindale, M. (2021). Correlates of the Number Shot and Killed in Active Shooter Events. *Homicide Studies*, *25*(4), 335–360. https://doi.org/10.1177/1088767920976727

Blau, B. M., Gorry, D. H., & Wade, C. (2016). Guns, Laws and Public Shootings in the United States. *Applied Economics*, *48*(49), 4732–4746. https://doi.org/10.1080/00036846.2016.1164821

Blume, H., & Graneberry, M. (1993, October 31). 7 Hit, 2 Die as Sniper Fires at Children. *Los Angeles Times*. https://www.latimes.com/archives/la-xpm-1993-10-31-mn-51776-story.html

Booty, M., O'Dwyer, J., Webster, D., McCourt, A., & Crifasi, C. (2019). Describing a "Mass Shooting": The Role of Databases in Understanding Burden. *Injury Epidemiology*, *6*(1). https://doi.org/10.1186/s40621-019-0226-7

Bridges, T., Tober, T., & Brazzell, M. (2023). Database Discrepancies in Understanding the Burden of Mass Shootings in the United States, 2013–2020. *The Lancet Regional Health - Americas*, *22*, 100504. https://doi.org/10.1016/j.lana.2023.100504

California Office of Attorney General. (2021). *California Firearm Laws Summary* (R. Bonta, Ed.) [Report]. California Department of Justice. https://oag.ca.gov

Capellan, J. A., & Gomez, S. (2018). Change and Stability in Offender, Behaviours, and Incident-Level Characteristics of Mass Public Shootings in the United States, 1984-2015. *Journal of Investigative Psychology and Offender Profiling*, *15*(1), 51–72. https://doi.org/10.1002/jip.1491

Capellan, J. A., Johnson, J., Porter, J. R., & Martin, C. (2019). Disaggregating Mass Public Shootings: A Comparative Analysis of Disgruntled Employee, School, Ideologically Motivated, and Rampage Shooters. *Journal of Forensic Sciences*, *64*(3), 814–823. https://doi.org/10.1111/1556-4029.13985

Capellan, J. A., & Silva, J. R. (2019). An Investigation of Mass Public Shooting Attacks Against Government Targets in the United States. *Studies in Conflict & Terrorism*, *44*(5), 387–409. https://doi.org/10.1080/1057610x.2018.1551294

Capellan, J., & Anisin, A. (2018). A Distinction Without a Difference? Examining the Causal Pathways behind Ideologically Motivated Mass Public Shootings. *Homicide Studies*, *22*(3), 235–255. https://doi.org/10.1177/1088767918770704

Capellan, J., & Jiao, A. Y. (2019). *Deconstructing Mass Public Shootings Exploring Opportunities for Intervention* [Policy Brief]. Rockefeller Institute of Government. https://rockinst.org/wp-content/uploads/2019/10/10-24-19-Deconstructing-Mass-Shootings-Brief-1.pdf

Cavalea, A. C., Tedesco, A., Leonard, J. K., Hunt, J. P., Smith, A., Danos, D., Schoen, J. E., Marr, A. B., Greiffenstein, P., & Stuke, L. E. (2023). Comparison of Rampage and Non-Rampage Mass Shootings in the U.S.: A 5-year Demographic Analysis. *Injury*, 110789. https://doi.org/10.1016/j.injury.2023.05.020

Chan, F., & Gibbs, C. (2022). When Guardians Become Offenders: Understanding Guardian Capability through the Lens of Corporate Crime*. *Criminology*, *60*(2), 321–341. https://doi.org/10.1111/1745-9125.12300

Chawkins, S. (2006, February 1). Mass Killer Had Been Put on Leave by Postal Center. *Los Angeles Times*. https://www.latimes.com/archives/la-xpm-2006-feb-01-me-postal1-story.html

Cohen, J. S., Donnelly, K., Patel, S. J., Badolato, G. M., Boyle, M. D., McCarter, R., & Goyal, M. K. (2021). Firearms Injuries Involving Young Children in the United States During the Covid-19 Pandemic. *Pediatrics*, *148*(1). https://doi.org/10.1542/peds.2020-042697

Cohen, L. E., & Felson, M. (1979). Social Change and Crime Rate Trends: A Routine Activity Approach. *American Sociological Review*, *44*(4), 588. https://doi.org/10.2307/2094589

Cowan, R. G., & Lankford, A. (2023). The Virginia Beach Municipal Center Mass Shooting: A Retrospective Threat Assessment Using the Wavr-21. *Journal of Threat Assessment and Management*. https://doi.org/10.1037/tam0000203

Creswell, J. W., & Creswell, J. D. (2018). *Research Design Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). Sage Publications

Crewdson, J. M. (1979, April 29). San Antonio's Police Seek Clues on Why Sniper Fired at Crowd. *The New York Times*, 26. https://www.nytimes.com/1979/04/29/archives/san-antonios-police-seek-clues-on-why-sniper-fired-at-crowd-the.html

Crews, G., & Crews, G. (2019). Mother Knows Best. In *Handbook of Research on Mass Shootings and Multiple Victim Violence* (pp. 41–55). IGI Global. https://doi.org/10.4018/978-1-7998-0113-9.ch003

Cronk, B. C. (2020). *How to Use SPSS®: A Step-by-Step Guide to Analysis and Interpretation* (11th ed.). Routledge.

Cubeiro, M., & Michel, C. D. (2023). *California Gun Laws: A Guide to State and Federal Firearm Regulations* (10th ed.) [5th Edition]. Chipolte Publishing.

Dallas News Administrator. (2010, April 22). Wichita Falls Gunman Who Killed 1, Wounded 4 Yelled 'White Power,' Witness Says. *Dallas Morning News*. https://www.dallasnews.com/news/texas/2010/04/22/wichita-falls-gunman-who-killed-1-wounded-4-yelled-white-power-witness-says/

Damiano, A. D., Xie, W., & Jong, C. (2023). Gunning for Change: A Content Analysis of Tweets Following Three Mass Shootings in the United States. *Atlantic Journal of Communication*, 1–23. https://doi.org/10.1080/15456870.2023.2203495

de Jager, E., Goralnick, E., McCarty, J. C., Hashmi, Z. G., Jarman, M. P., & Haider, A. H. (2018). Lethality of Civilian Active Shooter Incidents with and Without Semiautomatic Rifles in the United States. *JAMA, 320*(10), 1034. https://doi.org/10.1001/jama.2018.11009

DiMaggio, C., Avraham, J., Berry, C., Bukur, M., Feldman, J., Klein, M., Shah, N., Tandon, M., & Frangos, S. (2019). Changes in US Mass Shooting Deaths Associated with the 1994–2004 Federal Assault Weapons Ban: Analysis of Open-Source Data. *Journal of Trauma and Acute Care Surgery*, *86*(1), 11–19. https://doi.org/10.1097/ta.0000000000002060

Donnelly, M., Grigorian, A., Inaba, K., Nguyen, N., de Virgilio, C., Schubl, S., Paladugu, A., Swentek, L., & Nahmias, J. (2023a). Trends in Mass Shootings in the United States (2013–2021): A Worsening American Epidemic of Death. *The American Journal of Surgery*. https://doi.org/10.1016/j.amjsurg.2023.03.028

Donnelly, M., Kuza, C., Sargent, B., Swentek, L., de Virgilio, C., Grigorian, A., Schubl, S., & Nahmias, J. (2023b). Firearm Violence Surrounding the Covid-19 pandemic: A Reopening Phenomenon. *Journal of Surgical Research*, *285*, 168–175. https://doi.org/10.1016/j.jss.2022.12.017

Doucette, M. L., Bulzacchelli, M. T., Frattaroli, S., & Crifasi, C. K. (2019). Workplace Homicides Committed by Firearm: Recent Trends and Narrative Text Analysis. *Injury Epidemiology*, *6*(1). https://doi.org/10.1186/s40621-019-0184-0

Duwe, G. (2020). Patterns and Prevalence of Lethal Mass Violence. *Criminology & Public Policy*, *19*(1), 17–35. https://doi.org/10.1111/1745-9133.12478

Duwe, G., Sanders, N. E., Rocque, M., & Fox, J. A. (2022). Forecasting the Severity of Mass Public Shootings in the United States. *Journal of Quantitative Criminology*, *38*(2), 385–423. https://doi.org/10.1007/s10940-021-09499-5

Eck, J. E. (2018). Regulation for High-Crime Places: Theory, Evidence, and Principles. *The ANNALS of the American Academy of Political and Social Science*, *679*(1), 106–120. https://doi.org/10.1177/0002716218778764

Eck, J. E., & Clarke, R. V. (2019). Situational Crime Prevention: Theory, Practice and Evidence. In *Handbooks of Sociology and Social Research* (pp. 355–376). Springer International Publishing. https://doi.org/10.1007/978-3-030-20779-3_18

Eck, J. E., & Madensen-Herold, T. D. (2018). Place Management, Guardianship, and the Establishment of Order. In *Deterrence, Choice, and Crime: Contemproary Perspectives* (pp. 269–307). Routledge.

Elsass, J. H., Schildkraut, J., & Stafford, M. C. (2016). Studying School Shootings: Challenges and Considerations for Research. *American Journal of Criminal Justice*, *41*(3), 444–464. https://doi.org/10.1007/s12103-015-9311-9

Federal Bureau of Investigation. (2020). *Active shooter Incidents in the United States in 2019* [Report]. https://www.fbi.gov/file-repository/active-shooter-incidents-in-the-us-2019-042820.pdf/view

Federal Bureau of Investigation. (2021). *Active Shooter Incidents: 20 Year Review* [Report]. https://www.fbi.gov/file-repository/active-shooter-incidents-20-year-review-2000-2019-060121.pdf/view

Federal Bureau of Investigation. (2022). *Active Shooter Incidents in the United States in 2021* [Report]. https://www.fbi.gov/file-repository/active-shooter-incidents-in-the-us-2021-052422.pdf/view

Federal Bureau of Investigation. (2023). *Active Shooter Incidents in the United States in 2022* [Report]. https://www.fbi.gov/file-repository/active-shooter-incidents-in-the-us-2022-042623.pdf/view

Fein, E. C., Gilmour, J., Machin, T., & Hendry, L. (2022). *Statistics for Research Students: An Open Access Resource with Self-Tests and Illustrative Examples*. University of Southern Queensland. https://www.jamovi.org

Felson, M., & Eckert, M. (2019). *Crime & Everyday Life: A Brief Introduction* (6th ed.). Sage Publications, Incorporporated.

Fernandez, M., & Blinder, A. (2014, April 7). Army Releases Detailed Account of Base Rampage. *The New York Times*. https://www.nytimes.com/2014/04/08/us/officials-give-account-of-fort-hood-shooting.html

Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics* (5th ed.). SAGE Publications, Ltd. (UK).

Flannery, D. J., Fox, J., Wallace, L., Mulvey, E., & Modzeleski, W. (2021). Guns, School Shooters, and School Safety: What We Know and Directions for Change. *School Psychology Review*, *50*(2-3), 237–253. https://doi.org/10.1080/2372966x.2020.1846458

Follman M, Aronsen G, Pan D. US Mass Shootings, 1982–2023: Data from Mother Jones' Investigation -Mother Jones; 2024. https://www.MotherJones.com/politics/2012/12 /mass-shootings-mother-jones-full-data/

Ford, C. (2018, August 17). *Interpreting Log Transformations in a Linear Model*. University of Virginia. Retrieved March 7, 2024, from https://library.virginia.edu/data/articles/interpreting-log-transformations-in-a-linear-model

Fowler, K. A., Leavitt, R. A., Betz, C. J., Yuan, K., & Dahlberg, L. L. (2021). Examining Differences Between Mass, Multiple, and Single-Victim Homicides to Inform

Prevention: Findings from the National Violent Death Reporting System. *Injury Epidemiology*, *8*(1). https://doi.org/10.1186/s40621-021-00345-7

Fox, J. A., Levin, J., & Fridel, E. E. (2019). *Extreme Killing: Understanding Serial and Mass Murder* (4th ed.). SAGE Publications, Inc. https://doi.org/978-1506349114

Fox, J., & Fridel, E. (2022). Keeping with Tradition: Preference for the Longstanding Definition of Mass Shooting. *Journal of Mass Violence Research*, *1*(2). https://doi.org/10.53076/jmvr59960

Fox, J., & Levin, J. (2022). Mass Murder in America: Trends, Characteristics, Explanations, and Policy Response. *Homicide Studies*, *26*(1), 27–46. https://doi.org/10.1177/10887679211043803

Fox News. (2016, September 26). Man in Military Uniform with Nazi Symbol Injures 9 in Houston shooting. *Fox News*. https://www.foxnews.com/us/man-in-military-uniform-with-nazi-symbol-injures-9-in-houston-shooting

Freilich, J. D., Chermak, S. M., Connell, N. M., Klein, B. R., & Greene-Colozzi, E. A. (2022). Using Open-Source Data to Better Understand and Respond to American School Shootings: Introducing and Exploring the American School Shooting Study (TASSS). *Journal of School Violence*, *21*(2), 93–118. https://doi.org/10.1080/15388220.2021.1991804

Freilich, J. D., Chermak, S. M., & Klein, B. R. (2020). Investigating the Applicability of Situational Crime Prevention to the Public Mass Violence Context. *Criminology & Public Policy*, *19*(1), 271–293. https://doi.org/10.1111/1745-9133.12480

Freilich, J. D., Gruenewald, J., & Chermak, S. (2021). Situational Crime Prevention and Terrorism. In *Theories of terrorism* (pp. 284–314). Routledge. https://doi.org/10.4324/9781003026303

Fridel, E. E. (2021). A Multivariate Comparison of Family, Felony, and Public Mass Murders in the United States. *Journal of Interpersonal Violence*, *36*(3-4), 1092–1118. https://doi.org/10.1177/0886260517739286

Gammell, S. P., Connell, N. M., & Huskey, M. G. (2022). A Descriptive Analysis of the Characteristics of School Shootings Across Five Decades. *American Journal of Criminal Justice*, *47*(5), 818–835. https://doi.org/10.1007/s12103-021-09636-7

Geller, L. B., Booty, M., & Crifasi, C. K. (2021). The Role of Domestic Violence in Fatal Mass Shootings in the United States, 2014–2019. *Injury Epidemiology*, *8*(1). https://doi.org/10.1186/s40621-021-00330-0

Gius, M. (2015). The Impact of State and Federal Assault Weapons Bans on Public Mass shootings. *Applied Economics Letters*, *22*(4), 281–284. https://doi.org/10.1080/13504851.2014.939367

Gorman, T. (1998, October 7). 6 Wounded in Shootout at Riverside City Hall. *Los Angeles Times*. https://www.latimes.com/archives/la-xpm-1998-oct-07-mn-30170-story.html

Griffin, A., & Steinbuch. (2022, May 24). What We Know so far about Salvador Ramos, the Suspected Texas School Shooter. *New York Post*. https://nypost.com/2022/05/24/what-we-know-so-far-about-salvador-ramos-the-suspected-texas-school-shooter/

Gun Violence Archive. General Methodology, Gun Violence Archive [Internet]. Gun Violence Archive; 2022. https://www. gunviolencearchive.org/methodology

Gun Violence Archive. (2024). *Gun Violence Archive* (2013-2024) [Data set]. https://www.gunviolencearchive.org/

Green-Colozzi, E. A. (2022). *Mitigating the Harm of Public Mass Shooting Incident Through Situational Crime Prevention* (Fellowship number 2019-R2-CX-0007) [Doctoral dissertation, University of New York]. Liberty University Library.

Greene-Colozzi, E., & Silva, J. (2022). Mass Outcome or Mass Intent? A Proposal for an Intent-Focused, No-Minimum Casualty Count Definition of Public Mass Shooting Incidents. *Journal of Mass Violence Research*, *1*(2). https://doi.org/10.53076/jmvr/63403

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis*.

Hamilton, M. (2016, September 1). LAX Shooter's Plea Agreement Reveals he did not Consider Himself a Terrorist, but a 'Patriot'. *Los Angeles Times.* https://www.latimes.com/local/lanow/la-me-ln-lax-shooter-guilty-plea-20160901-snap-story.html

Hesterman, J. (2019). Twenty Takeaways about Soft Target Hardening. In *Soft target hardening* (pp. 375–377). Routledge. https://doi.org/10.4324/9780429422966-10

Hollis, M. E., Fenimore, D. M., Caballero, M., & Hankhouse, S. (2019). Examining Guardianship in Action in Waco, Texas. *Crime Prevention and Community Safety*, *21*(1), 68–80. https://doi.org/10.1057/s41300-018-0056-5

Hollis, M. E., & Hankhouse, S. (2019). Crime Risks and Rural Routines: A Theoretical Examination of Guardianship Activities in Rural Areas. *International Journal of Rural Criminology*, *4*(2), 272–291. https://doi.org/10.18061/1811/87906

Huang, D.-D., Manley, N. R., Lewis, R. H., Fischer, P. E., Lenart, E. K., Croce, M. A., & Magnotti, L. J. (2022). The Sustained Effect of a Temporary Measure: Urban Firearm

Mortality Following Expiration of the federal Assault Weapons Ban. *The American Journal of Surgery*, *224*(1), 111–115. https://doi.org/10.1016/j.amjsurg.2022.03.027

Hunter, L. Y., Ginn, M., Storyllewellyn, S., & Rutland, J. (2021). Are Mass Shootings Acts of Terror? Applying Key Criteria in Definitions of Terrorism to Mass Shootings in the United States From 1982 to 2018. *Behavioral Sciences of Terrorism and Political Aggression*, *13*(4), 265–294. https://doi.org/10.1080/19434472.2020.1762108

Jewett, P. I., Gangnon, R. E., Borowsky, I. W., Peterson, J., Areba, E. M., Kiragu, A., & Densley, J. (2022). U.S. Mass Public Shootings since Columbine: Victims per Incident by Race and Ethnicity of the Perpetrator. *Preventive Medicine*, *162*, 107176. https://doi.org/10.1016/j.ypmed.2022.107176

Katsiyannis, A., Whitford, D. K., & Ennis, R. (2018). Historical Examination of United States Intentional Mass School Shootings in the 20th and 21st Centuries: Implications for Students, Schools, and Society. *Journal of Child and Family Studies*, *27*(8), 2562–2573. https://doi.org/10.1007/s10826-018-1096-2

Kim, C., Capellan, J. A., & Adler, A. (2021). Exploring the Empirical Literature on Mass Shooting: A Mixed-Method Systematic Review of Peer-Reviewed Journal Articles. *Aggression and Violent Behavior*, *58*, 101584. https://doi.org/10.1016/j.avb.2021.101584

Kitteringham, G., & Fennelly, L. J. (2020). Environmental Crime Control. In *Handbook of Loss Prevention and Crime Prevention* (pp. 207–222). Elsevier. https://doi.org/10.1016/b978-0-12-817273-5.00019-3

Klarevas, L. (2016). *Rampage Nation: Securing America from Mass Shootings* (Illustrated ed.). Prometheus.

Klarevas, L. (2019). Letter to the Editor re: Dimaggio, c. et al. “Changes in U.S. Mass Shooting Deaths Associated with the 1994–2004 Federal Assault Weapons Ban: Analysis of Open-Source Data. j Trauma Acute Care. 2019;86(1):11–19. “. *Journal of Trauma and Acute Care Surgery*, *86*(5), 926–928. https://doi.org/10.1097/ta.0000000000002220

Klarevas, L., Conner, A., & Hemenway, D. (2019). The Effect of Large-Capacity Magazine Bans on High-Fatality Mass Shootings, 1990–2017. *American Journal of Public Health*, *109*(12), 1754–1761. https://doi.org/10.2105/ajph.2019.305311

Koper, C. S. (2020). Assessing the Potential to Reduce Deaths and Injuries from Mass Shootings Through Restrictions on Assault Weapons and other High-Capacity Semiautomatic Firearms. *Criminology & Public Policy*, *19*(1), 147–170. https://doi.org/10.1111/1745-9133.12485

Koper, C. S., Johnson, W. D., Nichols, J. L., Ayers, A., & Mullins, N. (2018). Criminal Use of Assault Weapons and High-Capacity Semiautomatic Firearms: An Updated Examination of Local and National Sources. *Journal of Urban Health*, *95*(3), 313–321. https://doi.org/10.1007/s11524-017-0205-7

Koppel, S., Capellan, J. A., & Sharp, J. (2022). Disentangling the Impact of Covid-19: An Interrupted Time Series Analysis of Crime in New York City. *American Journal of Criminal Justice*, *48*(2), 368–394. https://doi.org/10.1007/s12103-021-09666-1

Kowalski, R., Leary, M., Hendley, T., Rubley, K., Chapman, C., Chitty, H., Carroll, H., Cook, A., Richardson, E., Robbins, C., Wells, S., Bourque, L., Oakley, R., Bednar, H., Jones, R., Tolleson, K., Fisher, K., Graham, R., Scarborough, M., Longacre, M. (2021). K-12, College/University, and Mass Shootings: Similarities and Differences. *The Journal of Social Psychology*, *161*(6), 753–778. https://doi.org/10.1080/00224545.2021.1900047

Krause, W. J., & Richardson, D. J. (2015). *Mass Murder with Firearms: Incidents and Victims, 1999-2013* (July 30, 2015) [Report]. Congressional Research Service. https://sgp.fas.org/crs/misc/R44126.pdf

Lankford, A., & Cowan, R. G. (2020). Has the Role of Mental Health Problems in Mass Shootings been Significantly Underestimated? *Journal of Threat Assessment and Management, 7*(3-4), 135–156. https://doi.org/10.1037/tam0000151

Lankford, A., & Silver, J. (2020). Why Have Public Mass Shootings Become More Deadly? *Criminology & Public Policy, 19*(1), 37–60. https://doi.org/10.1111/1745-9133.12472

Lawrence, F. P. (2023, April 20). *Causal-Comparative Research*. University of Phoenix. https://www.phoenix.edu/content/dam/edu/research/doc/2023/causal-comparative-research.pdf

Lei, X., & MacKenzie, C. (2023). Quantifying the Risk of Mass Shootings at Specific Locations. *Risk Analysis*. https://doi.org/10.1111/risa.14197

Livingston, M. D., Rossheim, M. E., & Hall, K. (2019). A Descriptive Analysis of School and School Shooter Characteristics and the Severity of School Shootings in the United States, 1999–2018. *Journal of Adolescent Health*, *64*(6), 797–799. https://doi.org/10.1016/j.jadohealth.2018.12.006

Lopez, B. E., Crimmins, D. M., & Haskins, P. A. (2020). Advancing Mass Shooting Research to Inform Practice. *National Institute of Justice Journal*, (282), 21–29. https://nij.ojp.gov/topics/articles/advancing-mass-shooting-research-inform-practice

Mackey, R. (2009, November 5). Mass Shooting at Fort Hood. *The New York Times*. https://archive.nytimes.com/thelede.blogs.nytimes.com/2009/11/05/reports-of-mass-shooting-at-fort-hood/

Mandala, M., & Freilich, J. D. (2018). Disrupting Terrorist Assassinations through Situational Crime Prevention. *Crime & Delinquency, 64*(12), 1515–1537. https://doi.org/10.1177/0011128717718488

Marchment, Z., Bouhana, N., & Gill, P. (2018). Lone Actor Terrorists: A Residence-to-Crime Approach. *Terrorism and Political Violence*, *32*(7), 1413–1438. https://doi.org/10.1080/09546553.2018.1481050

Marsh, S. M., Rocheleau, C. M., Carbone, E. G., Hartley, D., Reichard, A. A., & Tiesman, H. M. (2022). Occurrences of Workplace Violence Related to the Covid-19 Pandemic, United States, March 2020 to August 2021. *International Journal of Environmental Research and Public Health*, *19*(21), 14387. https://doi.org/10.3390/ijerph192114387

Martaindale, M., & Blair, J. (2019). The Evolution of Active Shooter Response Training Protocols since Columbine: Lessons from the Advanced Law Enforcement Rapid Response Training Center. *Journal of Contemporary Criminal Justice*, *35*(3), 342–356. https://doi.org/10.1177/1043986219840237

Mathews, J. (1984, February 25). Sniper Firing at School Kills Child, injures 13 Before Shooting Himself. *The Washington Post*. https://www.washingtonpost.com/archive/politics/1984/02/25/sniper-firing-at-school-kills-child-injures-13-before-shooting-himself/87145fce-57de-4de2-be12-3454ba4c5616/

Meier, K. J., Brudney, J. L., & Bohte, J. (2014). *Applied Statistics for Public and Nonprofit Administration* (9th ed.). Cengage Learning.

Messman, E., Heinze, J., Hsieh, H.-F., Hockley, N., Pomerantz, N., Grodzinski, A., Scott, B., Goldstein, N., & Zimmerman, M. (2022). Anonymous Reporting Systems for School-

Based Violence Prevention: A Systematic Review. *Health Education & Behavior*, 109019812110737. https://doi.org/10.1177/10901981211073734

Miller, M., Zhang, W., & Azrael, D. (2022). Firearm Purchasing During the Covid-19 Pandemic: Results from the 2021 National Firearms Survey. *Annals of Internal Medicine*, *175*(2), 219–225. https://doi.org/10.7326/m21-3423

Moir, E., Reynald, D. M., Hart, T. C., & Stewart, A. (2022). Exploring the Influence of Daily Microroutines on Residential Guardianship and Monitoring Patterns. In *Field Studies in Environmental Criminology* (pp. 61–80). Routledge. https://doi.org/10.4324/9781003240280-5

Monaghan, R., Slocombe, B., McIlhatton, D., & Cuddihy, J. (2023). Examining the Relevance of 'Evil Done' to the Current Terrorist Threat Landscape in the United Kingdom. *Behavioral Sciences of Terrorism and Political Aggression*, 1–27. https://doi.org/10.1080/19434472.2023.2220017

Mullaney, G., & Fortin, J. (2017, May 1). Gunman Killed After Mass Shooting at San Diego Pool Party. *The New York Times*. https://www.nytimes.com/2017/05/01/us/san-diego-police-shooting-peter-selis.html

Murdoch, S., Davies, T., Ife, C., & Stringhini, G. (2019). *Bridging Information Security and Environmental Criminology Research to Better Mitigate Cybercrime*. https://www.researchgate.net/publication/336532612_Bridging_Information_Security_and_Environmental_Criminology_Research_to_Better_Mitigate_Cybercrime

Murillo, S., & Cardenas, J. (2002, June 1). A Morbid Aftermath to Store Rampage. *Los Angeles Times*. https://www.latimes.com/archives/la-xpm-2002-jun-01-me-rampage1-story.html

Newsome, K., Sen-Crowe, B., Autrey, C., Alfaro, S., Levy, M., Bilski, T., Ibrahim, J., & Elkbuli, A. (2022). A Closer Look at the Rising Epidemic of Mass Shootings in the United States and its Association with Gun Legislation, Laws, and Sales. *Journal of Surgical Research*, *280*, 103–113. https://doi.org/10.1016/j.jss.2022.07.012

Olive, D. J. (2017). *Linear Regression*. Springer International Publishing. https://doi.org/10.1007/978-3-319-55252-1

Osborne, J. R., & Capellan, J. A. (2017). Examining Active Shooter Events Through the Rational Choice Perspective and Crime Script Analysis. *Security Journal*, *30*(3), 880–902. https://doi.org/10.1057/sj.2015.12

Peña, P. A., & Jena, A. (2021). Mass Shootings in the U.S During the Covid-19 Pandemic. *JAMA Network Open*, *4*(9), e2125388. https://doi.org/10.1001/jamanetworkopen.2021.25388

Penn State University. (2023). *STAT 501Regression Methods* [11.3 - Identifying Outliers (Unusual Y Values)]. Stat.Psu. Edu. https://online.stat.psu.edu/stat501/lesson/11/11.3

Peterson, J., & Densley, J. (2019). *The Violence Project Database of Mass Shootings in the United States, 1966-2019* (Report number: 2019-1) [Report].

Peterson, J., & Densley, J. (2023). *The Violence Project: Mass Shooting Database* (7.0) [Data set]. https://www.theviolenceproject.org/mass-shooter-database/

Peterson, J., Densley, J., & Erickson, G. (2021). Presence of Armed School Officials and Fatal and Nonfatal Gunshot Injuries During Mass School Shootings, United States, 1980-2019. *JAMA Network Open*, *4*(2), e2037394. https://doi.org/10.1001/jamanetworkopen.2020.37394

Pugmire, L., & Rosenblatt, S. (2005, October 10). Man Held After Rampage Kills 3. *Los Angeles Times*. https://www.latimes.com/archives/la-xpm-2005-aug-10-me-colton10-story.html

Purdum, T. S. (2001, March 6). Shooting at School Leaves 2 Dead and 13 Hurt. *The New York Times*. https://www.nytimes.com/2001/03/06/us/shooting-at-school-leaves-2-dead-and-13-hurt.html

Ramirez, E. (2002, October 10). Panel Probes LAX Gunman. *Los Angeles Times*. https://www.latimes.com/archives/la-xpm-2002-oct-10-me-lax10-story.html

Reeping, P. M., Cerdá, M., Kalesan, B., Wiebe, D. J., Galea, S., & Branas, C. C. (2019). State Gun Laws, Gun Ownership, and Mass Shootings in the U.S.: Cross Sectional Time Series. *BMJ*, l542. https://doi.org/10.1136/bmj.l542

Repard, P. (2019, January 30). 40 years ago, Brenda Spencer took Lives, Changed Lives in San Diego School Shooting. *Los Angeles Times*. https://www.latimes.com/local/lanow/la-me-ln-san-diego-shooting-anniversary-20190130-story.html

Reyes, R. (2023, May 7). Texas Mall Shooting Suspect Accused of Killing 8 Identified as Mauricio Garcia. *New York Post*. https://nypost.com/2023/05/07/what-he-know-about-texas-shooting-suspect-mauricio-garcia/

Rocque, M., & Duwe, G. (2018). Corrigendum to "Rampage Shootings: An historical, Empirical, and Theoretical Overview'' Current Opinion in Psychology 19 (2018) 28–33]. *Current Opinion in Psychology*, *22*, 95. https://doi.org/10.1016/j.copsyc.2018.06.002

Ross, B., Jr. (2019, December 31). *Texas Church Grieves, Prays, Sings After Deadly Shooting*. ChristianChronicle.org. https://christianchronicle.org/texas-church-grieves-prays-sings-after-deadly-shooting/

Ruderman, D., & Cohn, E. G. (2021). Predictive Extrinsic Factors in Multiple Victim Shootings. *The Journal of Primary Prevention*, *42*(1), 59–75. https://doi.org/10.1007/s10935-020-00602-3

Rush, J., & Keenan, S. J. (2020). Mass Killings Past, Present, and Future. In G. A. Crews (Ed.), *Handbook of Research on Mass Shootings and Multiple Victim Violence* (pp. 1–17). IGI Global. https://doi.org/9781799801146

Sabbath, E. L., Hawkins, S., & Baum, C. F. (2020). State-Level Changes in Firearm Laws and Workplace Homicide Rates: United states, 2011 to 2017. *American Journal of Public Health*, *110*(2), 230–236. https://doi.org/10.2105/ajph.2019.305405

Sandel, W., & Martaindale, H. (2022). What are we Talking About? Definitional Confusion Within Active and Mass Shooting Research. *Journal of Mass Violence Research*, *1*(2). https://doi.org/10.53076/jmvr47829

Serna, J., Rocha, V., & Kelley, S. (2017, June 15). Victims of shooting at San Francisco UPS facility are identified as families and co-workers mourn. *Los Angeles Times*. https://www.latimes.com/local/lanow/la-me-ln-ups-shooting-san-francisco-20170615-story.html

Schildkraut, J., & Elsass, H. J. (2016). *Mass Shootings: Media, Myths, and Realities (Crime, Media, and Popular Culture)* (1st. ed.). Praeger.

Schildkraut, J., & Geller, L. B. (2022). Mass Shootings in the United States: Prevalence, Policy, and a Way Forward. *The ANNALS of the American Academy of Political and Social Science*, *704*(1), 181–203. https://doi.org/10.1177/00027162231164484

Schildkraut, J., & Simons, N. (2023). *A Regional Breakdown of Mass Shootings*. Rockefeller Institute of Government. https://rockinst.org/gun-violence/mass-shootings-by-region/

Schildkraut, J., Elsass, H., Stafford, M. C., & Sheingold, J. (2022). Understanding More than 50 Years of Mass Public Shootings as a Function of Routine Activities. *Homicide Studies*, 108876792210836. https://doi.org/10.1177/10887679221083607

Schildkraut, J., Naman, B. M., & Stafford, M. C. (2019). Advancing Responses to Mass Shootings Using a Routine Activity Approach. *Crime Prevention and Community Safety*, *21*(4), 346–361. https://doi.org/10.1057/s41300-019-00077-3

Schildkraut, J., & Turanovic, J. J. (2022). A New Wave of Mass Shootings? Exploring the Potential Impact of Covid-19. *Homicide Studies*, *26*(4), 362–378. https://doi.org/10.1177/10887679221101605

Schleimer, J. P., McCort, C. D., Shev, A. B., Pear, V. A., Tomsich, E., De Biasi, A., Buggs, S., Laqueur, H. S., & Wintemute, G. J. (2021). Firearm Purchasing and Firearm Violence during the Coronavirus Pandemic in the United States: A Cross-Sectional Study. *Injury Epidemiology*, *8*(1). https://doi.org/10.1186/s40621-021-00339-5

Schmid, A. P. (2021). *Handbook of Terrorism Prevention and Preparedness* (1st ed.). ICCT Press Publication.

Sheets, C. (2022, July 9). It was California's Forgotten Mass Shooting. But for Victims, the 'Hell' Never Ends. *Los Angeles Times*. https://www.latimes.com/california/story/2022-07-09/rancho-tehama-california-mass-shooting-victims-suffer

Shoenberger, N. A. (2021). Applying Routine Activity Theory: A Case Study of the Sonya Farak Drug Scandal. *Open Journal of Social Sciences*, *09*(10), 118–129. https://doi.org/10.4236/jss.2021.910009

Siegel, M., Goder-Reiser, M., Duwe, G., Rocque, M., Fox, J., & Fridel, E. E. (2020). The Relation Between State Gun Laws and the Incidence and Severity of Mass Public

Shootings in the United States, 1976–2018. *Law and Human Behavior*, *44*(5), 347–360. https://doi.org/10.1037/lhb0000378

Silva, J. R. (2019). *A Media Distortion Analysis of Mass Shootings* (ProQuest: 13886637) [Doctoral dissertation, John Jay College and the Graduate Center, CUNY]. https://www.proquest.com/docview/2235329531?pq-origsite=gscholar&fromopenview=true

Silva, J. R. (2021). A Comparative Analysis of Foiled and Completed Mass Shootings. *American Journal of Criminal Justice*, *46*(2), 187–208. https://doi.org/10.1007/s12103-020-09552-2

Silva, J. R. (2022). A Comprehensive Study of Public, Family, and Felony Mass Shootings in the United States, 2006–2020. *Violence and Victims*, *37*(6), 717–738. https://doi.org/10.1891/vv-2021-0020

Silva, J. R., & Capellan, J. A. (2019). A Comparative Analysis of Media Coverage of Mass Public Shootings: Examining Rampage, Disgruntled Employee, School, and Lone-wolf Terrorist Shootings in the United States. *Criminal Justice Policy Review*, *30*(9), 1312–1341. https://doi.org/10.1177/0887403418786556

Silva, J. R., & Greene-Colozzi, E. (2021). Mass Shootings and Routine Activities theory: The Impact of Motivation, Target Suitability, and Capable Guardianship on Fatalities and Injuries. *Victims & Offenders*, *16*(4), 565–586. https://doi.org/10.1080/15564886.2020.1823919

Silva, J. R., & Greene-Colozzi, E. (2022). An Exploratory Study of Failed Mass Shootings in America. *Security Journal*, *35*(2), 367–399. https://doi.org/10.1057/s41284-020-00281-z

Silva, J. R., & Lankford, A. (2022). The Globalization of American Mass shootings? An Assessment of Fame-Seeking Perpetrators and their Influence Worldwide. *International Journal of Comparative and Applied Criminal Justice*, 1–24. https://doi.org/10.1080/01924036.2022.2162095

Silver, J., & Silva, J. R. (2022). A Sequence Analysis of the Behaviors and Experiences of the Deadliest Public Mass Shooters. *Journal of Interpersonal Violence*, *37*(23-24), NP23468–NP23494. https://doi.org/10.1177/08862605221078818

Skeem, J. L., & Mulvey, E. (2019). What Role Does Serious Mental Illness Play in Mass Shootings and How Should We Address it? *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3473392

Smith, A., Fitzpatrick-Schmidt, T., Beiter, K., Cavalea, A. C., Scharf, P., Schoen, J., Stuke, L., Greiffenstein, P., Marr, A., Tedesco, A., & Hunt, J. P. (2023). The Covid-19 Pandemic and its Impacts on Mass Shootings in Six Major US Cities. *Injury*, *54*(7), 110766. https://doi.org/10.1016/j.injury.2023.04.053

Snipes, J. B., Bernard, T. J., & Geroud, A. L. (2019). *Vold's Theoretical Criminology* (Eight ed.). Oxford University Press.

Ssentongo, P., Fronterre, C., Ssentongo, A. E., Advani, S., Heilbrunn, E. S., Hazelton, J. P., Oh, J. S., McCall-Hosenfeld, J. S., & Chinchilli, V. M. (2021). Gun Violence Incidence During the Covid-19 Pandemic is Higher than Before the Pandemic in the United States. *Scientific Reports*, *11*(1). https://doi.org/10.1038/s41598-021-98813-z

Stallings, R., & Hall, J. (2019). Averted Targeted School Killings from 1900-2016. *Criminal Justice Studies*, *32*(3), 222–238. https://doi.org/10.1080/1478601x.2019.1618296

Stanford Mass Shootings of America. (2017). Mass shootings in America. Stanford Geospatial Center, Stanford Libraries.

Sürücü, L., & Maslakçi, A. (2020). Validity and Reliability in Quantitative Research. *Business & Management Studies: An International Journal*, *8*(3), 2694–2726. https://doi.org/10.15295/bmij.v8i3.1540

Tabachnick, B. G., & Fidell, L. S. (2019). *Using Multivariate Statistics* (7th ed.). Pearson Higher Ed.

Taylor, H. (2019). Domestic Terrorism and Hate Crimes: Legal Definitions and Media Framing of Mass Shootings in the United States. *Journal of Policing, Intelligence and Counter Terrorism*, *14*(3), 227–244. https://doi.org/10.1080/18335330.2019.1667012

Texas Penal Code § 46.01-46.15 (West, current through 2022).

Thrane, C. (2022). *Doing Statistical Analysis: A Student's Guide to Quantitative Research* (1st ed.). Routledge. https://doi.org/10.4324/9781003252559

Tomsich, E. A., Crawford, A., McCort, C. D., Wintemute, G. J., & Laqueur, H. S. (2023). Firearm Acquisition Patterns and Characteristics of California Mass and Active Shooters. *Journal of Criminal Justice*, *86*, 102047. https://doi.org/10.1016/j.jcrimjus.2023.102047

Tarke, H. (2022, June 3). Opinion: In 1984, the Deadliest Mass Shooting to Date was in San Ysidro. I Will Never Forget it. *The San Diego Union Tribune*. https://www.sandiegouniontribune.com/opinion/commentary/story/2022-06-03/1984-san-ysidro-mcdonalds-shooting

Los Angeles Times. (2015, December 14). Everything We Know about the San Bernardino Terror Attack Investigation so far. *Los Angeles Times*.

https://www.latimes.com/local/california/la-me-san-bernardino-shooting-terror-investigation-htmlstory.html

Turnovich, J., Pratt, T. C., Neville, K., & Latosa, A. (2022). *A Comprehensive Assessment of Deadly Mass Shootings, 1980-2018* (305090). Office of Justice Programs. https://www.ojp.gov/library/publications/comprehensive-assessment-deadly-mass-shootings-1980-2018

United States Department of the Army. (2014). *Report of Investigation into the 2 April 2014 Shooting Incident at Fort Hood* [Report]. https://www.hsdl.org/c/abstract/?docid=761564

Umstead, L. K., & Mayton, H. (2018). Using Correlational and Causal-Comparative Research Designs in Practice. In *Making Research Relevant* (pp. 95–108). Routledge. https://doi.org/10.4324/9781315179353-7

Vives, R., Ormseth, M., Nelson, L. J., Fry, H., & Winton, R. (2019, July 29). Police ID Gilroy Garlic Festival Shooter as Santino William Legan; Victims include 2 Children. *Los Angeles Times*. https://www.latimes.com/california/story/2019-07-29/gilroy-garlic-festival

Webster, D. W., McCourt, A. D., Crifasi, C. K., Booty, M. D., & Stuart, E. A. (2020). Evidence Concerning the Regulation of Firearms Design, Sale, and Carrying on Fatal Mass Shootings in the United States. *Criminology & Public Policy*, *19*(1), 171–212. https://doi.org/10.1111/1745-9133.12487

Weinstein, H. (2001, March 27). Furrow Gets 5 Life Terms for Racist Rampage. *Los Angeles Times*. https://www.latimes.com/archives/la-xpm-2001-mar-27-me-43302-story.html

Wilcox, P., & Cullen, F. T. (2018). Situational Opportunity Theories of Crime. *Annual Review of Criminology*, *1*(1), 123–148. https://doi.org/10.1146/annurev-criminol-032317-092421

Wollan, M. (2011, October 5). Three Die in California Workplace Rampage. *The New York Times*. https://www.nytimes.com/2011/10/06/us/workplace-shooting-kills-three-in-cupertino-calif.html

Yardley, J. (1999, September 16). Gunman Kills 7, and Himself, At Baptist Church in Fort Worth. *The New York Times*. https://www.nytimes.com/1999/09/16/us/gunman-kills-7-and-himself-at-baptist-church-in-fort-worth.html

Yelderman, L. A., Joseph, J. J., West, M. P., & Butler, E. (2019). Mass Shootings in the United States: Understanding the Importance of Mental Health and Firearm Considerations. *Psychology, Public Policy, and Law*, *25*(3), 212–223. https://doi.org/10.1037/law0000200