

MASS SHOOTINGS IN THE UNITED STATES: AN EXPLORATORY STUDY OF
THE TRENDS FROM 1982-2012

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DEDICATION

This is dedicated to my loving fiancé Abby, my two amazingly supportive parents Jim and Sandy, and my dogs Moxie and Griffin who are always helpful distractions.

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TABLE OF CONTENTS

	Page
List of Tables	vii
List of Figures	viii
Abstract	ix
Introduction	1
Literature review	6
Defining Mass Murder	6
Offender Characteristics	9
Mass Shooting Incidence and Trends	11
Micro and Macro Explanations for Trends	15
Assault Weapons in Mass Shootings	19
Method	22
Unit of Analysis	23
Data	24
Independent and Dependent Variables	29
Method of Analysis	30
Analysis	32
Mass Shooting Incidents over Time	32
Offender and Offense Characteristics	44
Demographics	44
Locations/Venues	50
Mental Illness	53
Weapons	56
Method of Acquisition	56
Weapon Type	56
Weapons – Assault Weapons and Large Capacity Magazines	61
Discussion	69

Summary of Findings	69
Theoretical and Policy Interpretations	70
The Role of Weaponry in Public Mass Shootings and its Implications for Policy ...	75
Study Weaknesses and Limitations.....	81
Future Research of Public Mass Shootings.....	83
Appendix A.....	86
References.....	88

LIST OF TABLES

Table	Page
Table 1. Mass Shootings Per Year During Time Periods	33
Table 2. Chi-Square Monthly Analysis 2005-2008 vs 2009-2012	34
Table 3. Offender Age Descriptive Statistics	45
Table 4 Offender Race	45
Table 5. Offender Age Range	46
Table 6. Offender Age Range over Time Periods.....	48
Table 7. Offender Race over Time Periods	49
Table 8. Venues over Time Periods.....	51
Table 9. Offender Age Range and Shooting Locations	53
Table 10. Offender Age Range and Evidence of Mental Deficiency	54
Table 11. Offenders Presence of Mental Illnesses over Time Periods	55
Table 12. Offender Age Range and Weapons in Possession	58
Table 13. Weapons Used at Different Venues.....	59
Table 14. Fatalities, Injured, and Victims by Venue	61
Table 15. Weapons in Possession Descriptive Statistics	61
Table 16. N of Shootings involving Assault Weapons and Large Capacity Magazines in Offender's Possession	64
Table 17. Independent T-test of Fatalities, Injured, Total Victim Counts for Assault Weapons.....	65
Table 18. Independent T-test of Fatalities, Injured, Total Victim Counts for Large Capacity Magazines (Contains Unknowns).....	66
Table 19. Independent T-test of Fatalities, Injured, Total Victim Counts for Large Capacity Magazines (Definitively Known)	67
Table 20. Independent T-test of Fatalities, Injured, and Total Victim Count for Assault Weapons and LCM	68

LIST OF FIGURES

Figure	Page
Figure 1: Total Mass Shootings during Time Periods	33
Figure 2: Number of Shooting Incidents per Month 1982-2012	36
Figure 3: Number of Shooting Incidents per Month 2005-2012	37
Figure 4: U.S. Homicides per Year 1982-2012 (U.S. Department of Justice Bureau of Justice Statistics 2012).....	40
Figure 5: U.S. Stranger Homicides per Year 1982-2005 (U.S. Department of Justice 2007)	41
Figure 6: USA Today Mass Shootings 2006-2012 (Schouten 2013)	43
Figure 7: Mass Shootings 1980-2010 (Fox 2013)	44
Figure 8: Offender Age Range over Time Periods	46
Figure 9: Offender Age Range over Time Periods	49
Figure 10: Offender Race over Time Periods	50
Figure 11: Offenders Presence of Mental Illnesses over Time Periods.....	55

ABSTRACT

MASS SHOOTINGS IN THE UNITED STATES: AN EXPLORATORY STUDY OF THE TRENDS FROM 1982-2012

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Past studies on mass murder have included public mass shootings along with familicides, felony murders, and gang associated murders. While all of these instances involve the murders of four or more people, there are not many other similarities between each classification. Therefore, public mass shootings are not truly accounted for in previous studies since they are rare events as opposed to familicides. This thesis examined in depth all public mass shootings occurring from 1982 to 2012 in the U.S. Specifically, trends in overall incidents, offense characteristics, and use of weapons were analyzed. The findings indicated that mass shootings are increasing slightly with almost half of all mass shootings analyzed occurring in the past eight years. Meanwhile, the trend of mass shooting incidents was not consistent with general homicide and stranger homicide levels which have decreased over the same time period. When assessing trends in offense characteristics, the significant findings were that offenders are becoming younger, mental illness is becoming an increasing factor, and venues for mass shootings are moving away from the more common workplace shootings of the 1980s.

Additionally, assault weapons or large capacity magazines were used in more than half of all cases with significant increases in fatalities, injuries, and total victim counts identified.

INTRODUCTION

Over the past decade, several highly publicized and horrendous murders involving multiple victims have occurred in the United States. Just in 2012, there were four high profile incidents over a span of six months including: James Holmes' Colorado movie theater shooting killing 12 people and injuring 58 others, Wade Page's Wisconsin Sikh temple shooting which killed 6 people and injured 4 others, Andrew Engeldinger's Minneapolis workplace shooting which killed 5 people and injured 4 others, and Adam Lanza's Connecticut Sandy Hook Elementary shooting which killed 26 people. The aforementioned incidents are what can be referred to as a mass murder or the act of killing at least four victims at any one immediate time (Federal Bureau of Investigation 2010). Since each of these mass murderers chose a firearm as their weapon of choice and each occurred in a public location, they are referred to as public mass shooting events.

Public mass shootings tend to get the largest amount of media attention and therefore have the widest spans of devastation. The problem facing criminal justice personnel and politicians alike is that there is a wide range of research on the topic of mass shootings, but very little is scholarly in nature and the small amount of scholarly research done on the subject does not address the more current issues. These personnel hold a public trust in the sense that they have a responsibility to create a safe environment for all citizens to enjoy their lives peacefully. However, in the minds of many, public

mass shootings create a disruption in their lives since they seem to be so random while occurring at types of places that they might visit frequently including stores, schools, and churches. It is this feeling of the unknown that creates the greatest fears for people. The purpose of the current study is to gain a better understanding as to if mass shooting incidents are increasing while attempting to analyze trends in the characteristics and natures of these violent actions. With the popular debate about gun control and assault weapons ban, a specific element which the study will address is the availability of assault weapons and the role that assault weapons and large capacity magazines play in mass shooting incidents. For the purpose of creating research that criminal justice practitioners and politicians can use as a reference, the present study will seek to dispel several pressing questions including: Have instances of public mass shootings been on the rise in recent years? Are there trending characteristics in public shooting incidents when focusing on offenders, settings, general methods, or typologies? What is the role of assault weapons and large capacity magazines in mass public shootings?

This study will focus specifically on mass public shootings since the majority of prior research has been skewed with a large proportion involving instances of family annihilation (Holmes and Holmes 1992) or familicides. While these instances of mass murder are still important to understand, murders involving family members tend to have completely different characteristics, motivations, and methods than the more public mass killings. The current study will contribute to the established literature by: exploring trends of mass shootings over a time period (1982-2012) where there have been gaps or inconsistencies evident in past studies; analyzing clusters of characteristics or methods

which are evident across time; and addressing the role of firearms, specifically assault weapons and large capacity magazines, in mass shootings. The present study is important since it focuses on trends and characteristics associated with one particular type of mass murder, public mass shootings, which have largely been ignored by scholarly works.

Overall, there has been little agreement over whether mass murder is a growing trend in the current American society and most studies have either included an entire century of cases or a small sample involving a short time frame. As evidenced in other works, a large proportion of the most violent crimes in American history have occurred since the 1980s (Fox and Levin 2012). Previous studies have not analyzed the trends in mass murders beginning from the start of this more violent generation leading into the current millennium. Also, there is substantial research which has indicated the difficulties in determining a profile for mass murder so that a crime prevention tactic could be applied (Holmes and Holmes 1992). The current study will explore this time period and address the recent trends of mass shootings while seeking to create a better understanding of the characteristics and weaponry involved in mass shootings. With the findings of this study, there are significant public policy and theoretical implications which could be considered regardless of any specific result. Public mass shootings are a pressing problem in today's society and any statistical research to assist in future policies is greatly needed.

Generally, the United States is a less violent country than it was even just a couple of decades ago. Homicide rates peaked in the early 1990s and have since rapidly declined to an unprecedented level last seen in the early 1960s (Cook and Ludwig 2000). However, there has not been a corresponding decline in mass murder (Fox and Levin

2012, Duwe 2000, Duwe 2007). The questions on this issue are exactly why do these senseless acts of violence happen and how can they be stopped? Similar to the causes of regular homicide, the major schools of theories could all address some underlying cause when attempting to make sense out of mass murders. However, whether supernatural, biological, psychological, or sociological theories have been applied to individual reasons for the commission of mass murder, there has been a corresponding lack of research to indicate a causal relationship. Additionally, there is a shortage of scholarly research on addressing the trends of mass shootings and possible macro level causes for the trends. While the present study will not causally test any particular individual or macro level theory, it will produce analyses which are necessary for future works to develop and test theories of mass shootings.

Along with mixed theoretical foundations, mass murder might also be influenced by an easy accessibility to weaponry in the United States. Guns are often the weapon of choice for mass murders for a number of reasons mentioned by Fox and Levin (2012). First, firearms produce greater lethality and spread of carnage as opposed to more blunt objects or knives. Second, the murderer is more able to be selective with their targets with the use of firearms instead of bombs or fire which maim or kill all individuals within a specific radius. Third, guns also distance the attacker psychologically from their victims which in the case of Adam Lanza might have contributed to his capacity to senselessly murder so many children. Finally, high-powered weaponry provide the offender with more control over the situation and thus more of a likelihood for success if their intent is indeed to kill specific targets or as many individuals as possible.

When assessing these benefits to using a firearm to commit mass murder, it is also easy to extrapolate how assault weapons might be favored instead of handguns. There have been ongoing debates about defining assault weapons, but federal laws have defined assault weapons based on the features of the weapon. These definitions have included semi-automatic rifles with detachable magazines and at least two of the following features: pistol grip, folding stock, flash suppressor, threaded barrel, bayonet mount, grenade launcher, or other military style additions (Koper 2004). Additionally, semi-automatic pistols or semi-automatic shotguns with two or more military style features are also included in an assault weapon definition. Assault weapon characteristics, especially with the addition of high capacity magazines, could feasibly enable an intent killer to shoot more people quicker and thus expand not only the lethality of the incident, but also the range of the incident as indicated in the number wounded.

Generally, the statistics on mass murder indicate that it is a phenomenon which does not appear to track with other types of violent crime. A majority of the carnage of these attacks defies comprehension, not only because of the magnitude of one single action, but also because there seems to be no clear consensus on a motive or theory which might be of a guide to stopping future events. Some killings might be motivated by a desire for vengeance, hate, politics, love, money, power, expression, fame, or maybe no observed motivation at all.

LITERATURE REVIEW

Defining Mass Murder

There is a lot of disagreement among criminologists on the definition of mass murder with some using the term to cover all multiple homicides such as serial killings or any other occasion in which someone kills more than a single person. Other sources indicate that a mass murder must have at least three victims (Dietz 1986, Holmes and Holmes 1992, Petee et al 1997) with some setting the minimum at four victims (Levin and Fox 1985, Ressler et al 1988, Fox and Levin 1998, Duwe 2000, Duwe 2007).

Overall, there is some agreement that the definition of mass murder is based on an element of time with multiple murders occurring in immediate succession to one another and the total number of victims killed (Dietz 1986, Levin and Fox 1985, Holmes and Holmes 1992, Fox and Levin 1998, Hempel et al 1999). Some other criteria which have also been used in the definition of mass murder are the location of the murder and distance between locations (Holmes and Holmes 1992), type of weapon used (Hempel et al 1999), offender motive (Rappaport 1988, Hempel et al 1999), the number of offenders (Dietz 1986), and the number of wounded victims (Dietz 1986). Mass murder can be carried out with bombs, poison, stabbing, firearms, or even choking in some instances. According to the FBI's Crime Classification Manual, someone who kills four or more people in close succession in a single location or in closely related locations is classified as a mass murderer (Federal Bureau of Investigation 2010). The FBI's classification of

mass murder is the most commonly used definition across previous works (Levin and Fox 1985, Ressler et al 1988, Fox and Levin 1998, Duwe 2000, Duwe 2007), and is the working definition for the present study.

On the other hand, spree killers, who might have similar motives and ambitions as mass murderers, are defined as committing their acts over several unrelated locations and having a passage of time in between separate incidents. With spree killings, the element of time is not any definitive amount, but rather is an indication that the murders occur separately while still being connected in the same act of violence. The general definition of spree murder is two or more murders committed by an offender or offenders, without a cooling off period (Federal Bureau of Investigation 2008). The lack of a cooling off period then marks the difference between a spree murder and a serial murder. Serial murder typically consists of three or more separate events in three or more separate locations with a cooling off period between the homicides (Federal Bureau of Investigation 2008). The serial murderer might have a cooling off period of hours, days, weeks, months, or years.

A mass murder will typically occur in a single location with the killing of as many victims as possible. Under this definition, individuals, organizations, or governments may commit mass murder. In the past, mass murderers have been defined and categorized with different methods because not every incident fits into a specific mold. Fox and Levin (1985) presented one of the more popular mass murder typologies based on categories of power, terror, loyalty, revenge, and profit. The power-oriented mass murderer seeks to satisfy a thirst for power and control who bears multiple weapons,

dressings similar to a soldier, and seeking a manner they feel will signal their power over others. The revenge oriented mass murderer feels that everybody in their lives is to blame for their hardships and should pay the price. The loyalty oriented mass murderer is typical of a family annihilator who has a warped sense of love for others close to them that the ultimate sacrifice is to save them from living. The profit oriented mass murderer is one who while in commission of a crime kills all others present in order to be more successful in their criminal act. Lastly, the terror oriented mass murderer is reminiscent of terrorism where the mission is to raise the panic in a society where the message is of a higher purpose to a belief system.

Holmes and DeBurger (1988) present a different set of typologies focusing on the motivations of intrinsic or extrinsic stimuli as a triggering effect for the event. The disciple killer has an extrinsic motivation to please the leader of some unit or organization and kills upon such leader's command. The family annihilator is much like the loyalty oriented mass murderer who feeds on an intrinsic feeling that his or her family is better off dead than living. The pseudo-commando typically has a stockpile of military-graded weapons and an intrinsic fear of not being in control of their lives. The disgruntled employee has an intrinsic motivation in that he or she feels that they have been wronged by their employment whether it is through the act of firing, punishment, or denied promotional opportunities. Finally, the set and run mass murderer can have a combination of motivations, but their method of operation consists of using means that enable them to kill from a far distance and observe the event.

Holmes and Holmes (2001) present the last of the predominant typologies of mass murderers modifying the original typology of Holmes and DeBurger (1988). Holmes and Holmes' (2001) typology includes all of the previous categories (disciple, family annihilator, set and run, and disgruntled employee) while replacing the pseudo-commando with three other categories: ideological, disgruntled citizen, psychotic, and youthful killers. The ideological mass murderer attempts to fulfill an agenda and considers their victims as just collateral damage to a higher mission. The disgruntled citizen mass murderer is upset with some element of society that they wind up lashing out at with violent actions. The psychotic mass murderer is detached from reality because of some underlying disorder and believes that the only escape from such a state is to commit violence. Youthful killers seek revenge against fellow classmates and teachers making them pay for something wrong in their own lives.

Offender Characteristics

While earlier research had focused on defining the difference between serial and mass murder (Levin and Fox 1985), others focused on developing typologies (Holmes and DeBurger 1988, Holmes and Holmes 2001), and some research had focused on larger numbers of case studies (Chester 1993, Kelleher 1997, Leyton 1996). Around the turn of the century right after the Columbine Killings, the main focus was more on developing a behavioral profile on offenders because the prior conception was that these would-be offenders came out of nowhere to commit these horrible acts. Hempel et al (1999) studied a nonrandom sample of North American mass murderers between 1949 and 1998 finding that the majority of them were single or divorced males beyond the age of 40 and had

paranoid, depressive conditions as well as narcissistic, schizophrenic, and antisocial behaviors. Additionally, they were classified as having an almost warrior mentality after suffering a major loss just prior to the commission of the murders (Hempel et al 1999). In a comparison of mass murder between other cultures and North Americans, it was found that there was a commonality between syndromes of uncontrollable rage, aggressive behavior, social isolation, loss, depression, anger, narcissism, paranoia, and psychosis (Hempel et al 2000). Meanwhile, Cantor et al (2000) analyzed a sample of cases from Australia, Britain, and New Zealand finding a common trend that the subjects killed mostly indiscriminately among randomly selected victims. The average age of their sample was 29 while the offenders were unsuccessful socially, resentful, egocentric, rigid, obsessional, and narcissistic (Cantor et al 2000). Also, Cantor et al (2000) indicated that the murderers were suffering from a deteriorating life course which combined with resentment and fantasies provided them with a breaking point.

When studying younger mass murderers, McGee and DeBernardo (1999) worked on a profile of a classroom avenger where the trending characteristics were a white male, age 16, raised in a middle class rural or suburban environment, and no history of any mental illness or disability. Although perceived as a loner with no history of violent behavior, the young offender has a background of attachment difficulties and is quite interested in violence, spending a large amount of his time involved in violent fantasies (McGee and DeBernardo 1999). Contrarily, another analysis of juvenile mass killers found that insufficient recognition of a mental illness was an important aspect in the killings (Fessenden 2000). Vossekuil et al (2000) argued that youth mass murder

incidents were rarely impulsive with most shooters having previously used guns. In addition with their access to firearms, young mass shooters were identified as bullying targets and those people around them were generally concerned about their behaviors prior to any external acts of violence (Vossekuil et al 2000). Meanwhile, Velinden et al (2000) identified five different trending factors among youthful killers: individual, family, school and peer, societal, and situational factors. Individual factors consisted of depression, threatening violence, uncontrolled anger, and blaming others while family factors were more indicated in a lack of parental supervision or troubled relationships within family structure. School and peer factors included rejection by peers or social isolation, as well as an identification with a deviant peer group. Societal factors focused on an access to firearms or gun enthusiast and a clustering of previous murders reported by the media while situational factors included a recent loss, stress, or humiliation which placed the juvenile in a dire situation.

Mass Shooting Incidence and Trends

Mass murders committed with the use of firearms or in other words, mass shootings, dominate political discussions on violence and gun control. However, these incidents make up a tiny fraction of the overall gun crime. Less than one percent of gun murder victims recorded by the FBI in 2010, were killed in incidents with four or more victims (Federal Bureau of Investigation 2010). A recent study analyzed every mass shooting which had occurred between January 2009 and January 2013 finding a total of 43 mass shootings or nearly one per month that had occurred in 25 states (Mayors Against Illegal Guns 2013). Another analysis by USA Today found that 934 people were

killed in 146 mass shooting incidents in the United States since 2006, but just under half of the victims were killed by family members (Schouten 2013). The same analysis indicated that mass killings occur about once every two weeks with more than three quarters involving the use of a firearm (Schouten 2013). These statistics illustrate the rarity of mass shootings, but they also highlight the multitude of these incidents occurring at a pace that in many minds seems as if it is almost every other week, in a different town, across the country.

Public mass murder is frequently conducted with the assistance of a gun. Of the 250 incidents that took place in a public location from 1900 through 1999, 191 involved offenders who used firearms and even if instances are excluded which occurred in connection with criminal activity, there were still 116 mass public shootings in the twentieth century (Duwe 2007). Also, mass murder in itself, is a rare offense with an average of 27 incidents per year or around two per month since 1976 (Duwe 2007). So if there are approximately 20,000 homicides each year as a historical average, mass murders account for only 0.1% of all homicides and approximately 0.7% of all homicide victims (Duwe 2007).

There has been much debate over whether mass shootings have actually increased over the years or if brutal attacks such as the ones in Colorado or Connecticut have created the mirage that mass shootings are rapidly abundant. Fox (2013), a criminologist at Northeastern University, argues that there has been no trajectory upward or downward with some years that have been particularly bad while others were not. Fox uses FBI and police data on shootings between 1976 and 2010 indicating that there are around 20 mass

murders per year with an annual death toll of about 100 with fatality counts fluctuating wildly from year to year (Fox 2013).

Meanwhile, Duwe (2007) in his examination of mass murder throughout the entirety of the twentieth century found that there were several trends in mass murder over three periods of time: 1900-1939, 1940-1965, and 1966-1999. During these trends, there were spikes in the amount of mass murders per year, but also valleys where mass murder was a rarity. Illustrating the reasoning behind these trends in the twentieth century, Duwe (2007) indicated that incidents of mass murder during the earliest part of the century consisted of race riots, bombings, familicides related to divorce and poverty, labor union strikes, and felony robberies. Throughout 1940-1965, there were overall lower crime rates in general along with fewer instances of mass murder which Duwe (2007) suggests might have been a result of the increased prosperity in the nation leading to increased employment, educational opportunities, and a rise in conformity. Additionally, there was a scarcity of a strong drug market during this time. However, some of the mass murder incidents included war veterans being offenders, parents being killed by their children, and murders related to the civil rights battle or racial tension. Then, the period of 1966-1999 is characterized as the second wave of mass murder with racism, extreme poverty, and a heightened social activism. During this time period, there was an increase in drug related and felony related killings as well as an increase in the amount of high profile school shootings and workplace related mass public shootings (Duwe 2007).

The frequency with which mass public shootings have occurred has accelerated since the 1960s where from 1900 through 1965 there were 21 shootings, but from 1966

through 1999 there were 95 (Duwe 2007). Duwe (2007) suggests that the rise in mass public shootings occurred during the 1980s and 1990s attributing the rise to substantial cultural and social developments during this period: a declining marriage rate, an increasing divorce rate, an increase in the number of single-parent households, and the growing amount of social isolation experienced by the adult population. Additionally, the rise in homicide and crime rates a few decades earlier might have been related to the increase of unattached, alienated, and unemployed or under employed young males (Duwe 2007).

Statistics compiled in the 2000s indicate mass murders are on the rise depending on how they are defined. Hargrove (2012) reported FBI statistics which showed that homicides involving two or more victims rose from 1,360 incidents in 2008 to 1,428 incidents in 2009. However, mass murders involving four or more victims have also been on the rise, at least indicated by Hargrove. During a three year period from 2006 to 2008, an annual average of 163 Americans were victims of mass killing, up slightly from the average of 161 throughout the 1980s (Hargrove 2012). These increases oppose the views of Fox (2013) who argued that incidents of mass murder are not recently increasing. Hargrove (2012) does not definitively indicate a cause as to why mass killings might be increasing, but he does propose the influence of the media and copycat killers as a possible reason.

In the same time frame, the upward trends in mass murder seem to be in contrast to the large drop in single victim murder which has declined more than 40% since 1980 (Cook and Ludwig 2000). 2012 has been especially bloody according to the data set

issued by Mother Jones magazine which the present study will also use. While the data set limits counts of mass murder to only public attacks and excludes robberies or gang violence, 2012 has been the deadliest for mass shootings since 1982 when its counts actually began. In its count, 80 people have been shot to death in mass incidents last year. While there is not a real consensus as to whether mass murder and mass shootings are increasing or decreasing, the high profile incidents have caused public fears to rise while influencing leaders to address possible solutions.

Micro and Macro Explanations for Trends

One possible solution has been to better control the availability and possession of firearms in the U.S. Additionally, there are other possible explanations to a recent upsurge in public mass shootings instead of increases in the availability of more high powered weaponry. However, the problem rests that there has not been any empirical analysis on applying any particular theory to mass shootings. Also, there is a level of uncertainty as to whether macro or individual level theories account for a larger indication of trends in mass shootings.

When focusing on why certain individuals might be more prone to commit public mass murder, psychological and sociological approaches have been applied conceptually (Duwe 2007), but not empirically. Psychological causes of violence hinge on the development of antisocial behavior through an individual's childhood and developmental years. Some children might have been physically and mentally mistreated or just simply were not effectively socialized to the norms of society leading to a failure to develop a capacity to bond with other people. Lorenz (1966) denied that behavior is a reaction to

environmental conditions and argued instead that it results from internal and spontaneous forces where, like animals, humans have a destructive disposition to violence. Building upon Lorenz, Fromm (1973) divided aggression into instrumental where violence is a means to an end and expressive aggression where violence is an end in itself learned in response to failures of society to not satisfy individuals' needs. Mental illness might also be a commonality in mass murders as well as in general crime (Fox and Levin 2012).

Contrasting the psychological approaches which believe violence is innate, social learning theory asserts that aggressive behavior involves skills that are learned from others and can be seen as a cause for a macro level increase in mass shooting incidents. There is a common assumption that the mass media provides powerful models for aggressive conduct; however, there is little evidence that clearly supports a causal link between violent media and aggressive behavior (Ferguson and Ivory 2012). Others though believe that there is a phenomenon called the copycat effect with regards to mass murder as there tend to be clusters of incidents after a previous incident has been widely reported in the media (Coleman 2004). Coleman (2004) argues that the media's over-saturation of mass murders feeds on the desires of other would-be offenders to become famous much like those publicized. Fox and Levin (2012) emphasize that a large number of mass murderers commit these acts because they crave attention in some manner and the media could be not only used as a source of learning methods to carry out their actions, but also as a motivation to be famous like those who have killed before.

Another possible reason behind the learning process involves the work of Sutherland's (1947) differential association theory or Akers (2000) differential

reinforcement theory. Differential association asserts that criminal behavior is learned during adolescence from those closest to the individual such as their family, friends, and peers. If surrounding attitudes are supportive towards violence, the individual is likely to develop pro-violence tendencies. Also, it is possible that they may develop criminal skills through these associations such as learning to shoot a firearm proficiently. Meanwhile, differential reinforcement theory suggests that accepting violence does not come from just the closest intimate group, but from associating with a group which reinforces violent behavior while punishing law-abiding behavior. Eric Harris and Dylan Klebold, the Columbine Killers, are clear examples of this theory in action. Harris and Klebold were social pariahs in their school, turning to both themselves and their group of fellow outcasts, the Trench Coat Mafia. Between one another, Harris and Klebold were fed up with being put down at school and in life so they constantly bounced violent ideas of vengeance back and forth. These violent actions were accepted and thus reinforced by both parties leading up to the plan being put in action and followed through on.

One of the more common explanations to both regular homicides and mass shooting incidents involves the frustration aggression hypothesis. Similar to Merton (1957), Messner and Rosenfeld (2007), and Agnew (1992), the frustration-aggression hypothesis proposes that frustration always causes some form of aggression and that aggression is always preceded by frustration (Dollard et al 1939). Therefore, if anything interferes with an individual's movement toward a goal, this restriction will cause frustration for the individual, leading to aggression, and in some cases might escalate to external acts of violence. Additionally, the tendency for frustration to lead to aggression

is at an absolute high when the frustration is severe and unexpected. Palmer (1960) found strong empirical support for this concept in all 51 murderers whom he had studied. This approach has yet to be empirically tested in the totality of mass shooting incidents. However, the frustration aggression hypothesis has been successfully used to explain certain individuals' motivations to commit mass murders (Holmes and Holmes 1992, Fox and Levin 2012) and can seemingly be used as reasoning behind possible increases in recent years with the restrictions imposed due to the economic downturn.

Another social perspective involves control theories where criminal behavior is a result of a lack of control rather than a component of learning. Hirschi's (1969) social control theory proposed that individuals only commit crime when their bonds – attachment, commitment, involvement, and beliefs – are weakened or absent. Mass murderers are commonly typified as loners who seem to lack connections with others as well as with any of society's activities or ideals. Similarly, Sampson and Laub (1993) suggested that these informal controls are instrumental in individuals' desistance from crime, but implied that an individual's status and thus controls in life may become detached or reattached repeatedly throughout one's life course. This approach appears to mirror the frustration-aggression hypothesis where there is a sudden change or severing of one's informal ties leading to the commission of a violent act. The mass murderer who comes back to their workplace after receiving a punishment or being fired is consistent with this theory in that the individual holds value in their lives through their work and when that is taken from them, their only purpose seems to be violence.

Assault Weapons in Mass Shootings

In the United States, a motivated mass murderer has easy access to a serious means of mass destruction, firearms. While massacres can happen in other countries with more rigid gun control measures, there is no match to the bloodshed in the United States because of the widespread availability of high-powered weaponry and ammunition (Fox and Levin 2012). According to the National Institute of Justice in 1994, 44 million people and approximately 35% of households owned a total of 192 million firearms with 74% of those individuals having reported more than one firearm (Krouse 2012). By the end of 1996, approximately 242 million firearms were in circulation. In 2000, the number of firearms had increased to 259 million: 92 million handguns, 92 million rifles, and 75 million shotguns (Krouse 2012). By 2007, the number of firearms had increased to 294 million. It can be safe to say that over the last few decades, the number of firearms has consistently increased beyond the normal population trends (Krouse 2012). Compared to similar nations, the U.S. homicide rates are 6.9 times higher than rates in other high-income countries, driven by firearm homicide rates which were 19.5 times higher (Richardson and Hemenway 2011).

While large capacity magazines have not been discussed in prior mass murder studies, their characteristics make them conducive to public mass shootings. Having the ability to carry multiple ammunition clips with more than ten bullets each clip facilitates firing of high quantities more rapidly. In the mid-1990s, approximately 40 percent of semiautomatic firearms being manufactured and sold had large capacity magazines included or at least the ability to accept large capacity magazines (Koper 2004). Overall,

a previous study found that 18% of all civilian-owned firearms were equipped with large capacity magazines (Cook and Ludwig 1996).

The more lethal a weapon may be, a motivated assailant who seeks to kill large numbers of victims can be more successful at reaching their desired outcome. Additionally, a mass murderer who seeks out certain people for revenge is especially more likely to use firearms because they are more predictable and controllable in their destructiveness than other explosive methods for example. As previously mentioned, there has been a growing number of high-powered, rapid fire weaponry available for private use in the U.S. Out of all of the deadliest mass murders in America, three quarters have occurred since 1980 with most of those involving firearms as the exclusive or primary weapon (Fox and Levin 2012).

Contrary to the popular belief, assault weapons are used very rarely in mass killings. Duwe (2007) discovered only 16, or 2% of all incidents, from 1900-1999 which involved the use of an assault weapon with all taking place since 1977. This statistic is somewhat misleading as it covers a time frame when the availability of assault weapons in the U.S. was smaller than more recent numbers. A more current statistic indicates that 12 of the mass shooting incidents since 2009 or 28% of all mass shootings involved assault weaponry (Mayors Against Illegal Guns 2013). While the use of assault weaponry is obviously higher than the numbers from the 20th century, their usage is still the minority weapon chosen in mass shooting incidents. However, despite the infrequent use of assault weapons, there is an increased likelihood of greater fatalities and number of wounded due to their semiautomatic abilities and capacity to have large ammunition

clips. Compared to other mass murders, incidents involving assault weapons have about one more fatality, but around twice as many wounded victims as other mass killings (Duwe 2007). A critical aspect of these findings is that the difference between assault weapon lethality and other mass murder lethality would have been higher if large death tolls as a result of a bomb or fire such as the Oklahoma City bombing were disregarded in the counts. Also, the findings include family murders which typically involve the use of a handgun at a close proximity leading to a higher fatality rate.

Duwe (2007) additionally presents an interesting concept about how the media portrays mass murder incidents especially those events where an assault weapon is used. Out of all mass murders expressed by the media and academia through 1900 to 1999, over 18% involved the use of an assault weapon as opposed to that actual 2% of the total incidents which actually used an assault weapon (Duwe 2007). The overemphasis on assault weapons being associated with mass shootings might be exaggerated by the media. Also, since assault weapons were banned from 1994 to 2004, there is a presumption that their availability has risen as the ban expired. In both cases, it references a particular angle that future research should address.

METHOD

The present study attempts to answer some questions about mass shooting incidents that have been previously contested, such as whether the recent trends of incidents have been increasing, decreasing, or remaining constant as compared to earlier time frames. Another highly contested issue is the nature of mass shootings specifically whether assault weapons are used in the majority or minority of the cases. The current study uses the theoretical framework involving the availability of high powered weaponry in the United States as a starting point towards answering both of these questions. As mentioned above, the availability of high powered weaponry such as assault weapons with large capacity magazines have increased over the past several decades. It is hypothesized that mass shooting incidents have increased more recently due to the easy access to high powered weaponry. Therefore, it is also proposed that the role of assault weapons in these incidents has likewise increased leading to higher fatality and injured counts as compared to non-assault weapon shootings. Additionally, the present study will attempt to address the nature of these cases to identify trends in the offenders, locations, or general characteristics of these incidents. There have been numerous theories and typologies used to provide the reasoning behind public mass shootings. Some of the more common approaches include an aspect of a frustration-aggression hypothesis where a triggering event precedes the external act of violence. However, there

might be other trends located within the data of these cases that have yet to be unveiled including the mental stability of the offender. The hope to the current study's results is to provide a better indication of the trends and characteristics of these deadly incidents so that formal prevention efforts could then at the very least provide warning or early detection of troublesome individuals and events.

Unit of Analysis

The unit of analysis in this study is classified as each individual mass shooting event occurring in the U.S. from 1982-2012. While several definitions of mass murder have previously been applied, the present study uses the FBI crime classification definition consisting of an individual killing four or more people in a single incident not including the suicide of him or her. Also included are high profile spree killing cases that fit closely with the criteria for mass murder, but that the killings occurred in more than one location over a brief period of time. Technically, the shooting at Sandy Hook Elementary School would be considered a spree killing since the suspect, Adam Lanza, had killed his mother at their house prior to going to the elementary school. However, this tragedy in Newtown as well as five other similar spree killings has been included since the details surrounding the offense are closely related. Excluded are instances of mass murder involving the commission of a felony, gang-related activity, or family annihilation. The present study seeks to only focus on public mass shooting incidents involving the fatalities of four or more people for several reasons. These include the fact that previous studies have focused on mass murders in general which are predominantly family killings that skew any results towards that one typology, seemingly random mass

shooting incidents typically invoke the typologies of offenders who will more often use assault weaponry, the majority of the high profile mass murder incidents which have been linked to political debates and litigations have been public mass shootings not tied to any other criminal activity, and public instances offer the best case scenario for developing trends in order to formulate formal criminal justice related prevention efforts.

Data

This specific analysis uses data conducted from an investigation on mass shootings by Mother Jones Magazine, a nonprofit news organization which specializes in investigative, political, and social justice reporting. The investigative team from Mother Jones consisted of Mark Follman, Gavin Aronsen, and Deanna Pan. Their investigation attempted to uncover every incidence of a mass shooting in the United States from 1982-2012. The investigation discovered 62 incidents of public mass shootings throughout this time frame. Mother Jones provided public access to their data set on their website (www.motherjones.com). This data set was selected for use in this study because of initial availability, but also because it covers a thirty year time frame which had relatively been understudied given the extensiveness of violence throughout this time period. Also, the investigation's purpose was to specifically detail the weapons used in each case of mass shooting and how each weapon was obtained by the shooter. Additional measures recorded in the data set are incident name, location, date, year, summary, fatalities, injured, total victims, venue, mental health/illness, race, and gender of the shooter. The importance involved in a data set such as this one is the inclusion of variables that are not available in the Supplementary Homicide Reports (SHR). Typically, studies involving a

similar topic tend to make use of the SHR; however, the SHR does not provide the level of detail necessary to analyze the locations, offenders, weapons, and circumstances surrounding the particular types of mass public shootings which are the interest of the current study.

Initially, there was some hesitation to use secondary data for a compilation of mass murder incidents because every researcher tends to define it differently, thus including or excluding certain cases. The Mother Jones data set which the present study uses has handpicked the events based on specific criteria: the killings are carried out by a lone shooter (except Columbine and Westside Middle School Killings), the shootings happened during a single incident in a public place, and the shooting involved the deaths of at least four people excluding the killer. Specifically, instances involving gang-related activity, commission of a felony, or family murders were excluded. In a critique of the Mother Jones investigation, Fox (2013) focused more on the cases that were not included on account of the aforementioned stipulations and the inconsistencies at which some of the conditions have been applied. For example, Fox (2013) referenced two instances of mass murder which had occurred at a business and were also classified as a robbery in addition to the mass murder. However, one event was included because it was committed by a former employee while the other was excluded because it was a stranger to the business and was seen as just mass murder while in the commission of a felony. It is significant to note that despite Fox's criticisms, there are only a couple problematic cases he identified out of the complete data set. On the other hand, Fox (2013) argues that in eliminating instances of family murder and gang-related murder, there are a large number

of total cases which are ignored which can affect the strength of any conclusions from the data.

Additionally, the Mother Jones data set does not rely on information contained within the Supplemental Homicide Reports. Instead it uses searches from media accounts and other sources to populate its cases so that a higher level of detail for individual cases could be ascertained. By using these methods to create the data set, it raises a question about the reliability of the data since other secondary sources might not be entirely accurate and the results of the searches might be sensitive depending on the methods that one uses.

Therefore, to adequately test the data set, other data sets were used solely as sources of validation. One of the data sets was conducted by the organization, Mayors Against Illegal Guns (2013). This data provided every mass shooting between January 2009 and January 2013 which granted a comparison of the most recent cases included in the Mother Jones data set. Mayors Against Illegal Guns (2013) defined a mass shooting similarly as any incident where at least four people were murdered with a gun, but did not choose to exclude any other occurrence as long as the victim count was at four. In their investigation, they indicated that 43 mass shootings had occurred in this four year period as opposed to the Mother Jones data set which included only 15 events during the same time period. Of the 28 extra instances covered by Mayors Against Illegal Guns while not included by Mother Jones, 20 events were family murders, 6 events were either gang-related or in the commission of a felony, 1 event only had three victims, and the remaining case seemed as if it should have been included because it fit Mother Jones'

criteria. The missing case involved a shooter opening fire on a group of people outside of a bar in Buffalo while killing four and wounding four others. After researching the incident, it was discovered that there was insufficient evidence to include the Buffalo bar killing to the data set. The information found on this instance was inconsistent across different media sources and there was not enough details to gather a proper diagnosis of the event. Overall, the comparison with this one data set provides an aspect of validity for the Mother Jones data set because almost all of the cases were included and the absent cases in the data set were mostly family mass murders with some felony and gang-related murders as well.

Another comparison of the same time frame used a listing of mass shootings in the United States since 2005 provided by the Brady Center to Prevent Gun Violence (2013). This compilation of mass shootings includes all substantial, as determined by the Brady Campaign investigators, acts of violence involving a gun and causing at the very least multiple fatalities or wounded victims. There are no other specific criteria to this data set which includes family, gang-related, and felony mass murders. Additionally, there are also events included which have no fatalities and several wounded or a combination of fatalities and wounded which are not sufficient under the Mother Jones' criteria of four fatalities. Therefore, it is already expected that the data set will contain a large amount of events which are not included in this current study's data set. However, it is still important to analyze roughly how many instances are excluded by the Mother Jones data set and what are some of the characteristics of these exclusions. By just focusing on the same time frame as the previous comparison of January 2009 to January

2013, the Brady Campaign listed a total of 300 cases compared to the 15 cases included in the Mother Jones investigation. Of those cases not included in this study's data set, 65 (22.8 %) involved the murder of family members and 47 (16.6%) involved either gang-related or felony murder. While a majority of those cases also did not meet the four fatality criteria, an additional 172 (60.3 %) involved shootings where three or fewer victims were killed. This analysis also left just one undecided case which was also the Buffalo bar shooting that the previous comparison had shown was missing from the Mother Jones data. By expanding the comparison between the data sets further from January 2005 to December 2008, the Brady Campaign listed a total of 171 cases compared to the 12 cases included in the Mother Jones investigation. Of those cases not included in this study's data set, 34 (21.4%) involved the murder of family members, 23 (14.4%) involved either gang-related or felony murder, and 98 (61.6%) did not meet the four fatality criteria. The analysis left four undecided cases, but all four of these cases while meeting the other criteria elements were not public shootings in nature so they do not fit with the purpose of the present study.

Due to these two comparisons, the present study felt comfortable that the data set included, with a high level of certainty, every necessary instance of mass shooting which met the criteria. While Fox (2013) has raised some important concerns regarding the selectiveness involved in the Mother Jones investigation, the current study wishes to focus specifically on instances of mass public shootings without the extra components which are consistent in family, gang-related, or felony murders. By being selective with just a couple of typologies of mass murder, the present study can more effectively

highlight individual trends of certain instances as well as detail the role that some of the more high powered weaponry plays in mass shootings.

Independent and Dependent Variables

Since the present study is exploratory in nature, there are several different variables which will be used and applied as either an independent or dependent variable. Similar to previous research on mass murder or mass shootings, this analysis uses variables such as offender age, gender, race, mental capacity, offense location or venue, weapons type, legality, and lethality. All of the aforementioned variables are obtained from the Mother Jones data set. Offender age and lethality of the event are measured numerically while every other variable is measured nominally indicating a yes or no response as to an investigation uncovering a presence or absence of a variable or categorically such as venue or race. Due to the purpose of the study and the variety of methods to define such variables, two significant operationalizations of variables to note involve assault weapons and large capacity magazines. The Mother Jones data set makes use of the assault weapon and large capacity magazine definition involved in the proposed Assault Weapons Ban of 2013. Dianne Feinstein's (2013) legislation would ban the sale, transfer, manufacturing, and importation of:

- All semiautomatic rifles that can accept a detachable magazine and have at least one military feature: pistol grip; forward grip; folding, telescoping, or detachable stock; grenade launcher or rocket launcher; barrel shroud; or threaded barrel.
- All semiautomatic pistols that can accept a detachable magazine and have at least one military feature: threaded barrel; second pistol grip; barrel shroud; capacity

to accept a detachable magazine at some location outside of the pistol grip; or semiautomatic version of an automatic firearm.

- All semiautomatic rifles and handguns that have a fixed magazine with the capacity to accept more than 10 rounds.
- All semiautomatic shotguns that have a folding, telescoping, or detachable stock; pistol grip; fixed magazine with the capacity to accept more than 5 rounds; ability to accept a detachable magazine; forward grip; grenade launcher or rocket launcher; or shotgun with a revolving cylinder.
- All ammunition feeding devices (magazines, strips, and drums) capable of accepting more than 10 rounds (Feinstein 2013).

The complete account of mass shootings used in the present study is shown in Appendix A.

Method of Analysis

In order to accomplish the purpose of the present study, there will be an assessment of the recent trends of mass shootings by comparing the instances of the earlier years in the data set to the later years while performing a chi-square analysis. To assess trends during recent years (2005-2012), the study will examine the likelihood of a public mass shooting occurring during a given month and use chi-square tests to determine if this likelihood has changed over time. Although the entire time frame of the data set (1982-2012) will be analyzed, a greater emphasis will be placed on the recent time frame (2005-2012) due to the extra validation of these cases. Additionally, there will be several visual plots to analyze the general trends over the time frames. To rule out the possibility of a historical threat or that the instances are just following a more general

trend, the trends of other data sets will be compared to this study's data set while using statistical analyses to see if trends are similar. In addition, a comparison will be made to other stranger murders recorded in the Uniform Crime Reports to rule out the historical threat of homicides involving strangers.

The last portion of analysis will consist of identifying individual trends on the nature of mass shootings and is more exploratory in nature. An important part of this analysis is the role of assault weapons in the facilitation of these types of crimes. The proposed analysis of assault weapons will attempt to test the following two things: compare the use of assault weapons and large capacity magazines in public mass shootings to their use in gun crime in general; and compare the numbers of deaths and injuries in mass public shootings that involved assault weapons or large capacity magazines to those that did not involve such weaponry. Other analyses will be descriptives of characteristics including those of the offender and location of the incidents. Ultimately, the end goal is to learn about the complete nature of these violent acts including the use of high powered weaponry so possible solutions can be identified.

ANALYSIS

Mass Shooting Incidents over Time

In order to analyze the amount of incidents over time and determine whether events are increasing, time periods are separated into half (1982-1997 and 1998-2012) and then divided into quarters (1982-1988, 1989-1996, 1997-2004, and 2005-2012). The first step in this analysis is to observe basic statistics for each period of years. When observing the number of incidents in the years 1982 to 1997, there were a total of 23 public mass shootings which equates to an average of 1.64 per year. Meanwhile, during the years of 1998 to 2012, there were a total of 39 shootings equating to an average of 2.79 incidents per year. Referenced in Table 1, from 1982 to 1988, there were 6 total incidents with an average of 0.86 per year. The next two time periods account for 15 and 14 total shootings respectively with an average of less than 2 per year. However, from 2005 to 2012, there were 27 mass shootings, almost half of the 31 year total equating to an average rate of 3.38 incidents per calendar year. When performing a basic ordinary least squares regression on this trend shown in Figure 1, the increase is moderately significant at $p < 0.10$. Throughout the time periods, there was an increase of over 6 mass shooting incidents per each clustering of years. The regression analysis has an R-squared measure of 0.85 meaning that the occurrence of time accounts for 85% of the variation in observed public mass shooting incidents.

Table 1. Mass Shootings Per Year During Time Periods

Time Period	Total N of Shooting Incidents	Shooting Incidents Per Year During Time Period
1982-1988	6	0.86
1989-1996	15	1.88
1997-2004	14	1.75
2005-2012	27	3.38

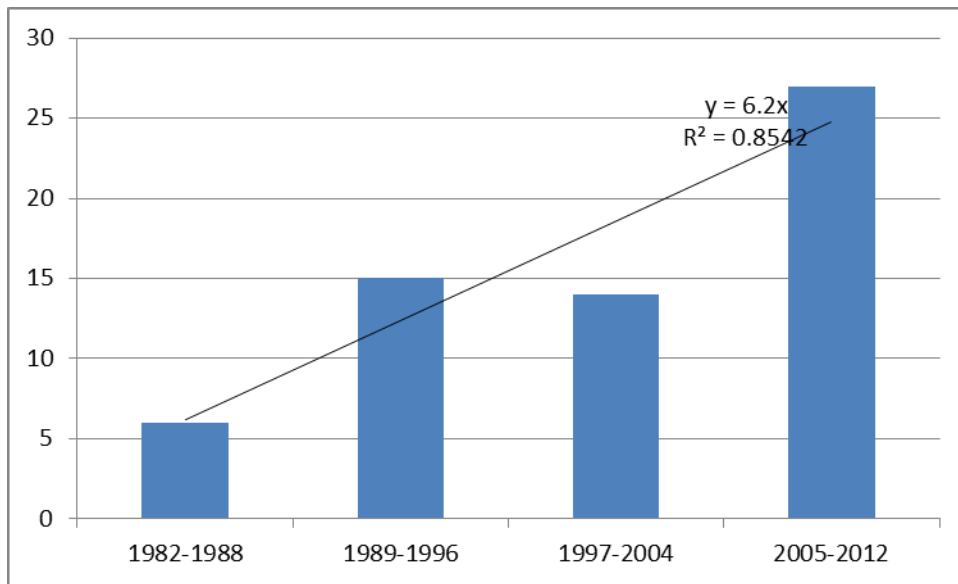


Figure 1: Total Mass Shootings during Time Periods

Since the current study provided additional validation for the data set during the time period of 2005-2012, extra analyses will be conducted with this most recent time frame. In order to establish if mass shooting incidents have increased over this eight year time period, a 2x2 chi-square analysis was conducted based on incidents per month. The results for this analysis can be referenced in Table 2. Between 2005 and 2012, there were a total of 24 months where there were at least one or more public mass shootings as opposed to 72 months which did not have any such event. By separating the last eight

years into two groups, there was a mass shooting recorded in 10 of the 48 months during 2005 to 2008 while 14 such events of 48 months were recorded between 2009 and 2012. In performing a chi-square analysis, however, the difference among the two time periods was not statistically significant at a $p < .05$ level. Therefore, the analysis showed no indication that the actual count of 10 and 14 months respectively are statistically different from the expected count of 12 months recording an event out of every 48 months.

Table 2. Chi-Square Monthly Analysis 2005-2008 vs 2009-2012

		N of Mass Shooting Months	
		No	Yes
2005-2008	Actual Count	38	10
	Percent Within Time Period	79%	21%
2009-2012	Actual Count	34	14
	Percent Within Time Period	71%	29%

However, even with this analysis not being statistically significant, any minor difference between the time periods is significant to note due to the nature of the crime. For example, during 2005 to 2008, a public mass shooting occurred around once every five months or an average of 2.5 months per calendar year. Meanwhile, during 2009 to 2012, a public mass shooting occurred around once every three to four months or an average of 3.5 months per calendar year. The average shooting incident occurred at almost a two month faster pace the past four years as it had the previous four year period from 2005 to 2008. This increased rate can be seen in Figure 3 towards the end of 2011

and 2012 where the bars which represent each month seem to blend together. After performing another basic OLS regression analysis, this trend is not statistically significant with a p-value over 0.25. In addition, the data only accounts for less than 2% of the variation in shooting incidents. While statistical tests for this time period do not indicate any significant increases, there was still an increase in observed incidents as discussed earlier. Overall, the faster incident rate accrued to an additional shooting incident per year. When the human casualties for each mass shooting are at a minimum of four victims, each additional incident is significant.

By expanding the analysis to the complete time frame 1982-2012, the results are similar. Figure 2 shows this complete time frame with the additional OLS regression line. Over time, there has been a very slight increase in the amount of observed public mass shooting incidents as indicated by the positive slope. The regression analysis was statistically significant at $p < .01$, but again with the R-squared less than 0.03 the analysis does not account for any real variation in shooting incidents over time. Still, it is significant to note that the most recent time frame 2005 to 2012 and the complete time frame 1982 to 2012 have witnessed an increasing level of public mass shootings. This result is a significant finding regardless of the actual values or significance measures.

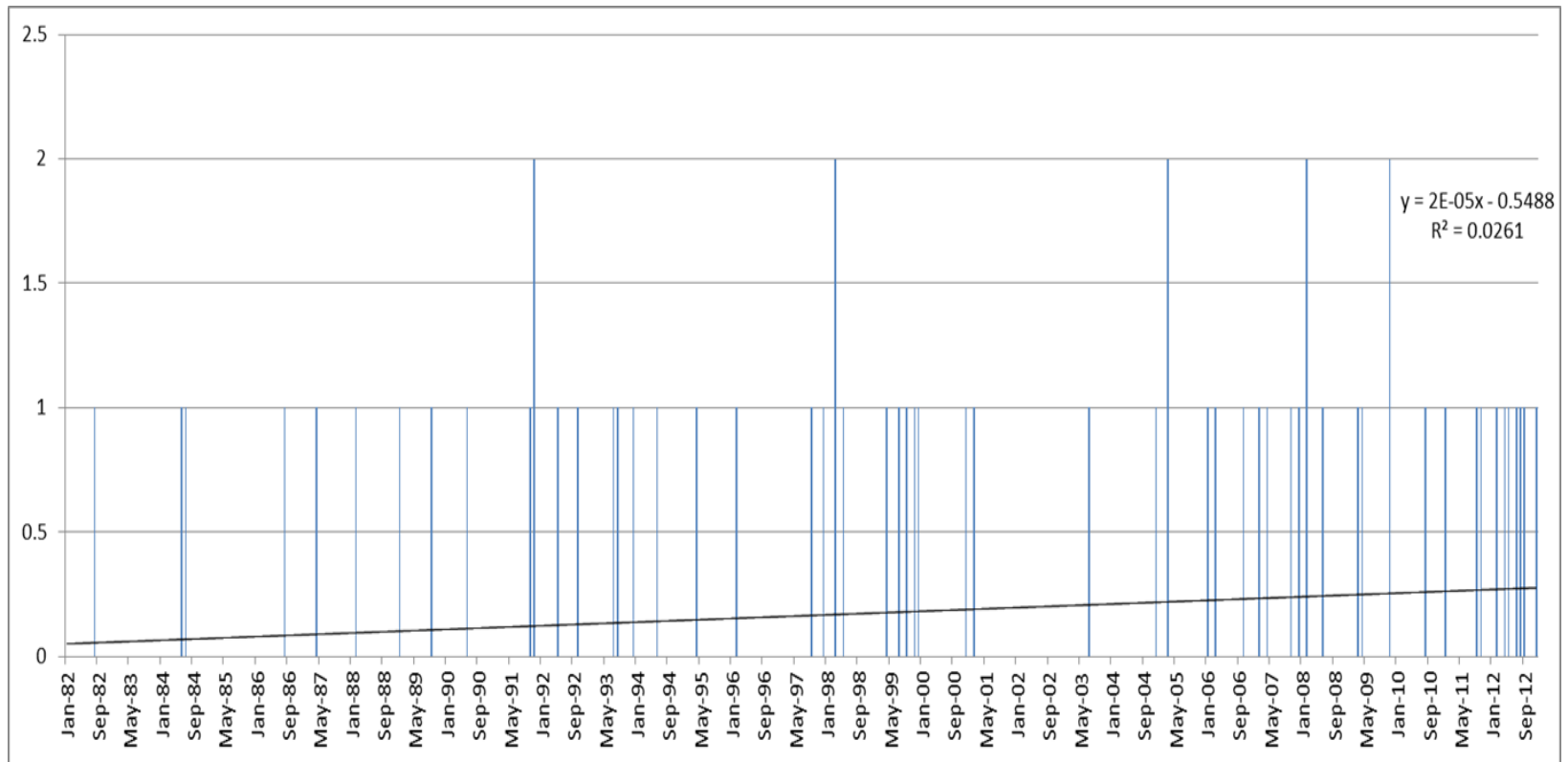


Figure 2: Number of Shooting Incidents per Month 1982-2012

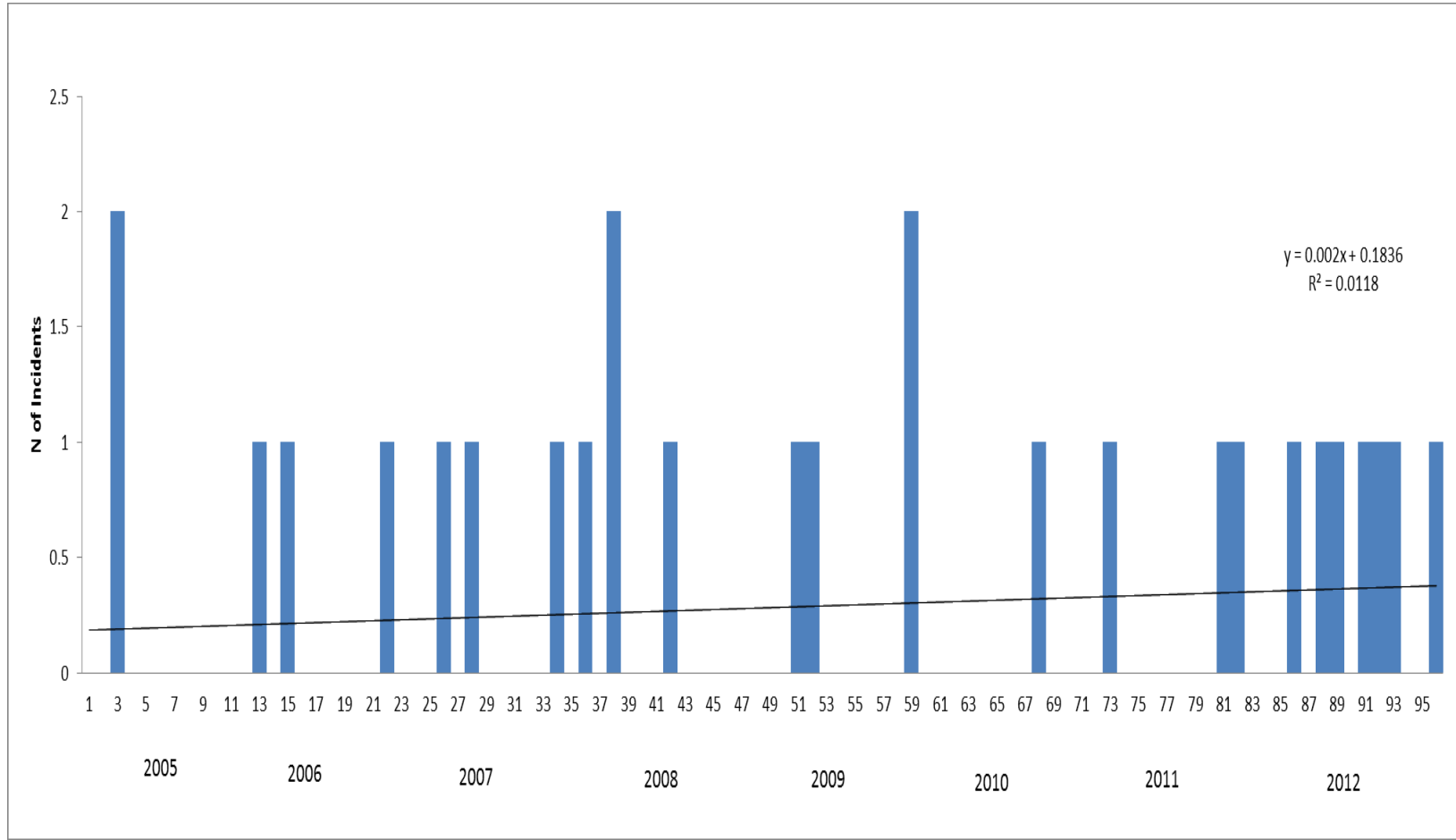


Figure 3: Number of Shooting Incidents per Month 2005-2012

Meanwhile, to clearly indicate whether public mass shootings are increasing, a comparison to overall homicide trends and offender/victim stranger homicides is necessary. Data for this specific analysis was pulled from the U.S. Department of Justice Bureau of Justice Statistics (1982-2012) in addition to Fox and Zawitz's U.S. Department of Justice (2007) work on homicide trends in the United States. Stranger homicide statistics were only available up until 2005, but a trend can still be established from the allowed time frame. Both total homicide rates and stranger homicide rates are plotted in Figure 4 and Figure 5 on the following pages. When analyzing the two trends, it clearly shows the peaks and valleys of homicides which were previously mentioned in the literature review section. Homicides in the U.S. appear to rapidly increase in the late 1980s and early 1990s while sharply declining through the 1990s to a more consistent level which it has been since around 2000.

Meanwhile, stranger homicides seem to have more abrupt changes in trends. As compared to general homicides, stranger homicides have pointy peaks indicating years where there was a sharp increase in stranger homicide. The three most pronounced peaks occur at years 1991, 1993, and 1995. After 1995, the amount of stranger homicides per year witnesses a steady decline similar to that of general homicide levels. When these trends are compared to Figure 4 and Figure 5, there do not appear many similarities. While public mass shootings did increase, on a small level, in rate during the late 1980s and early 1990s, there was no sudden increase or decrease as observed in general homicide statistics. Additionally, overall homicide levels remained moderately consistent during the 2000s. In contrast, public mass shootings have ensued at a more frequent rate

with almost half of the total instances in the last 31 years occurring from 2005 to 2012.

While this comparison does not prove that mass shootings are increasing, it does indicate that they are not occurring at a similar rate as general or stranger homicides. This finding is significant because it causes reasonable speculation that public mass shootings are independent of general homicide and therefore are not following the similar downward trend as observed in homicide rates since 1982.

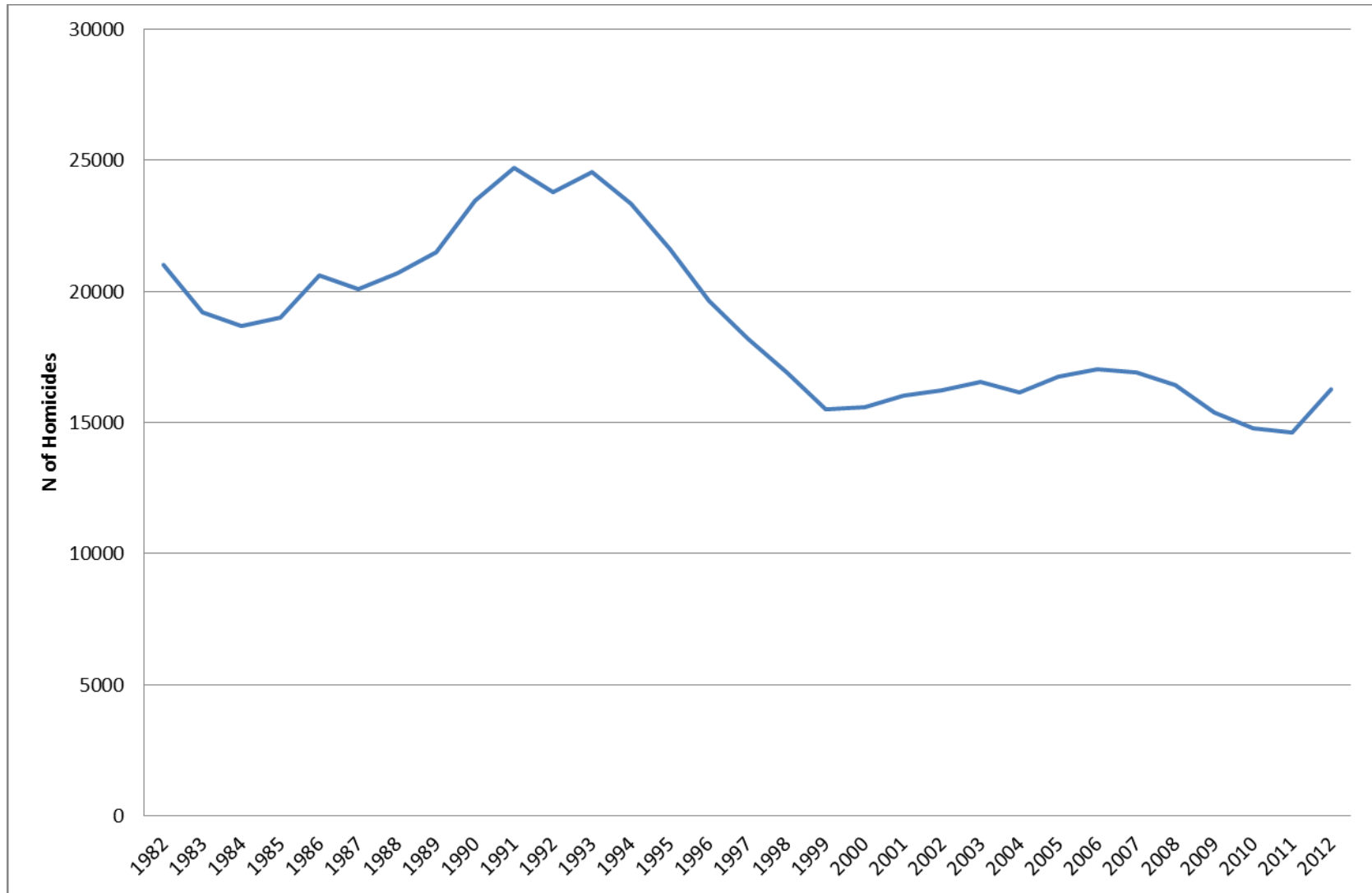


Figure 4: U.S. Homicides per Year 1982-2012 (U.S. Department of Justice Bureau of Justice Statistics 2012)

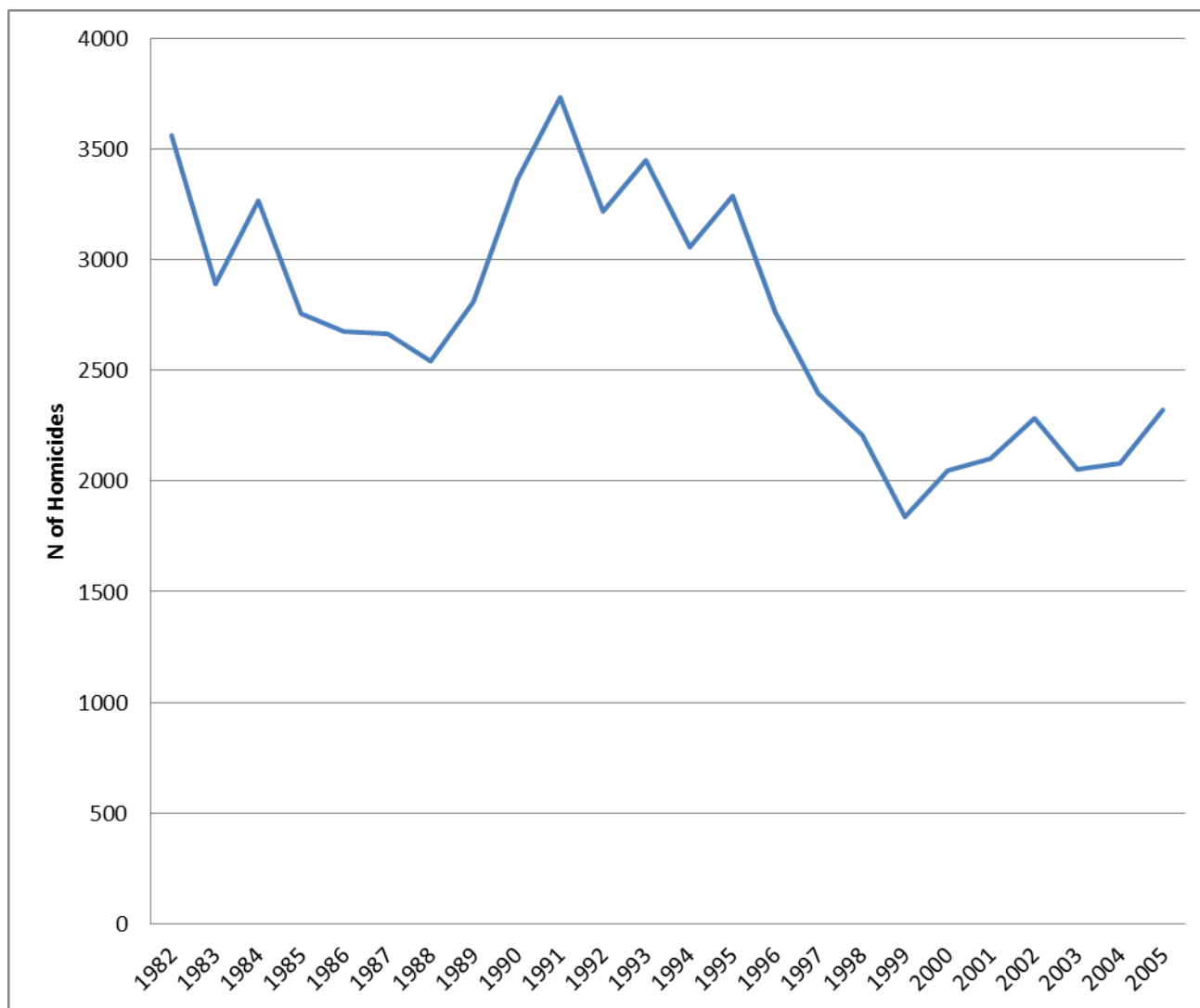


Figure 5: U.S. Stranger Homicides per Year 1982-2005 (U.S. Department of Justice 2007)

The final step in the analysis is to compare the recent trend of public mass shooting incidents used in this study to a different assessment of mass shootings. For the comparison, Schouten's USA Today 2013 investigation on mass shootings and Fox's (2013) assessment on mass murders have been used. Figure 6 shows the number of mass shooting incidents per year found in this investigation. It should be noted that USA Today defined mass shootings as events where four or more people are killed by firearm at one time. However, the criteria was not as selective as the present study's data as it includes all incidents regardless of location, public or private, and also includes the various classifications of murder including family murders. Almost half of the incidents involved the killing of family members. Overall, the investigation found a total of 146 mass shootings since 2006. On the other hand, the Mother Jones investigation found only 25 public mass shootings during the same time frame. In looking at the USA Today graph, mass shootings have been pretty consistent over the last seven years with an average of around 20 incidents per year. There are a couple of years with a rate slightly lower than the average as well as a couple of years with a slightly higher rate. Meanwhile, the last two years, 2011 and 2012, are right at the average indicating that mass shootings are not rapidly increasing. However, as mentioned above, this investigation included all shootings involving the deaths of four or more people. This comparison indicates that the trend in public mass shootings, as shown in the present study, does not follow the trend of mass shootings as defined by the USA Today study.

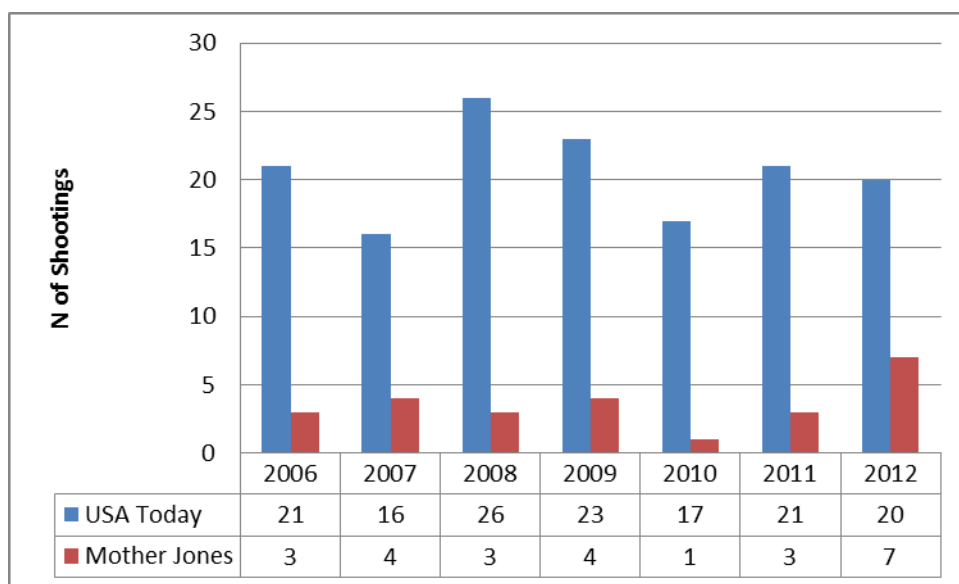


Figure 6: USA Today Mass Shootings 2006-2012 (Schouten 2013)

Additionally, Fox's (2013) assessment that mass shootings are not on the rise expanded the time frame to include 1980 to 2010. Similar to the USA Today analysis, Fox's (2013) investigation included all shootings where four or more victims had been killed while negating any other selective criteria such as the ones used in the present study's data. The graph representing the number of incidents, offenders, and victims for Fox's (2013) analysis is in Figure 6. Overall, the trend is relatively consistent indicating an average pace of about 20 mass shootings per year with a death toll of about 100. While casualty counts have fluctuated more wildly, the number of attacks has typically stayed level at fewer than 25 incidents per year. Like the USA Today analysis, Fox's (2013) data seems to indicate that mass shootings are not occurring at an increasing rate. Again, this fact leads more credence that public mass shootings are separate from other categories of mass shootings shown in these two comparisons as well as general homicide trends

shown in the earlier comparison. Public mass shootings which do not involve family altercations, felony commission, or gang affiliation appear to follow a more unique trend that is on a slight rise of incidence.

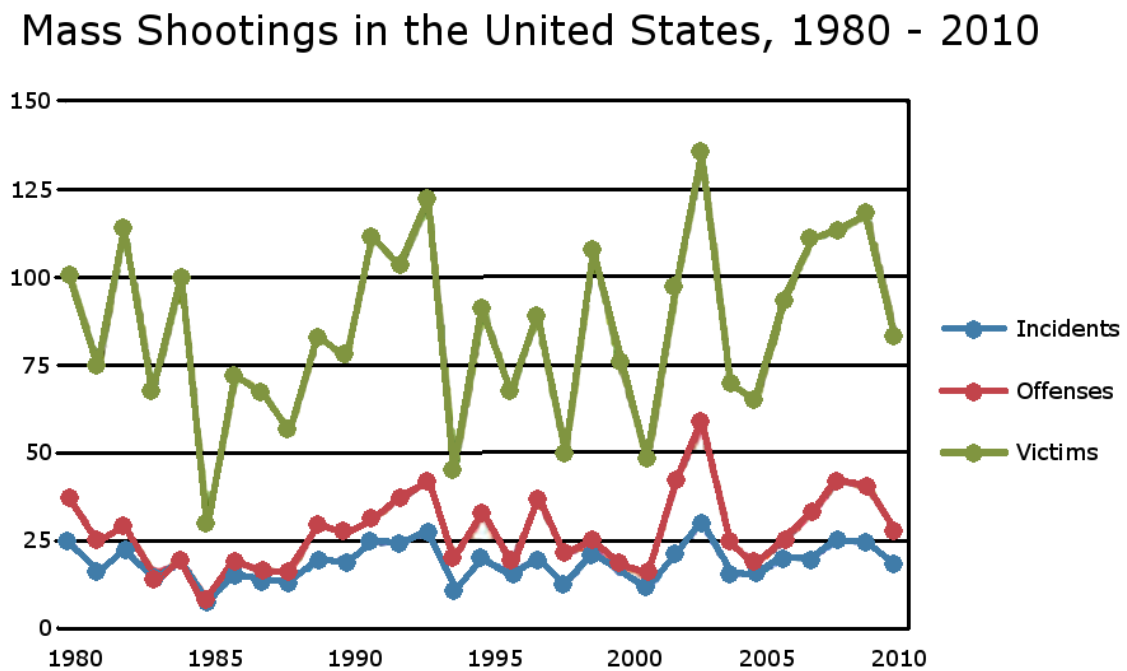


Figure 7: Mass Shootings 1980-2010 (Fox 2013)

Offender and Offense Characteristics

Demographics

Upon analyzing the descriptive statistics of the data, there was a wide variety of offenders who have committed public mass shootings over the last 31 years. As Table 3 shows, offenders' ages ranged from a minimum of 13 and a maximum of 66 with both a mean and median age of around 35-36 years old. Additionally, the overwhelming

majority of offenders are male (98%) and white (67%). The remaining race identifiers are African American (14%), Asian (10%), Latino (5%), and Native American (2%). These statistics support the previous research that mass shooters do not have a strict age typology with offenders ranging from grade school and college ages all the way until late adult and elderly ages. However, the findings also support what previous research has indicated as the most common typology consisting of a lone adult white male.

Table 3. Offender Age Descriptive Statistics

	Mean	Median	SD	Min	Max
Age	35.27	36.50	12.195	13	66

N=62

Table 4 Offender Race

Race	Frequency	Percent
White	42	67.7%
African American	9	14.5%
Asian	6	9.7%
Latino	3	4.8%
Other/Unknown	2	3.2%

N=62

Table 5 breaks down offenders into the following age ranges: Grade School (13-18), College/Young Adult (19-29), Adult (30-44), Middle Age (45-55), and Elderly (56-66). The majority of incidents involve offenders who are in the young adult and adult ranges. Meanwhile, there are only a handful of offenders at both ends of the spectrum in the grade school range (N=5) and the elderly age range (N=3).

Table 5. Offender Age Range

Age Range	N of Shooting Incidents (Percentage of Total)
Grade School (13-18)	5 (8%)
College/Young Adult (19-29)	17 (27%)
Adult (30-44)	28 (45%)
Middle Age (45-55)	8 (13%)
Elderly (56+)	3 (5%)

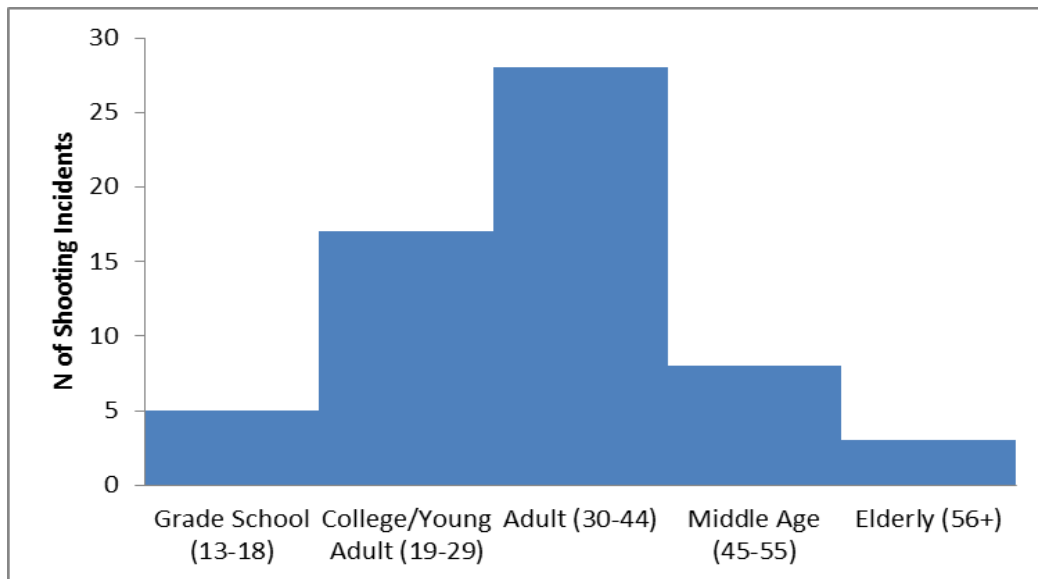


Figure 8: Offender Age Range over Time Periods

In comparison to general homicide offenders, trends in public mass shooters' demographics seem quite different. The comparison data comes from a Bureau of Justice Statistics 2007 report on the homicide trends from 1980-2008. Based from their analysis, African Americans were disproportionately represented as homicide offenders with the offending rate for blacks (34.4 per 100,000) as compared to whites (4.5 per 100,000) (U.S. Department of Justice 2011). Comparing this racial breakdown to mass shooters is the total opposite with almost 70% of the offenders being white as compared to only

around 15% African American. Meanwhile, general homicide offenders tend to peak earlier in age as opposed to mass shooters which often involves adult offenders. For example, from 1980 to 2008, almost half of the offenders were under the age of 25 while over 60% of the mass shooters during a similar time frame were over 30 years old (U.S. Department of Justice 2011).

Additionally, it is important to note whether there have been general changes in the types of offenders over time. In order to accomplish this plan, the four time periods from an earlier analysis were compared with regards to age and race. Table 6 and Table 7 show the results of such analysis with Figure 9 and Figure 10 displaying a visual graphic of the tables. The most significant findings for this evaluation are that race and age of offenders typically have remained consistent over the last several decades with mean ages hovering around the adult range and at least 60% of the incidents involving a person of white race. However, there were some minor discrepancies. For example, the last 15 years have seen five mass shootings conducted by offenders in the grade school range while the previous 16 years did not have any such event. Also, the Asian race has observed a slight increase in frequency over the last several time frames as it surpassed African American as the second highest category.

While public mass shooters have remained relatively consistent from 1982 to 2012, the age patterns for general homicide offenders have fluctuated. In the 1980s, the offending rates for teens (14 to 17 years old) and young adults (18 to 24 years old) increased dramatically while the rates for older age groups declined (U.S. Department of Justice 2011). Meanwhile, from 1980 to 2008, young adults (18 to 24 years old) have

consistently had the highest offending rate (U.S. Department of Justice 2011). The rate for this age group nearly doubled from 1985 to 1993, going from 22.1 offenders per 100,000 to 43.1 offenders per 100,000 (U.S. Department of Justice 2011). Since 1993, the offending rate for young adults has declined to 24.6 offenders per 100,000 in 2008 (U.S. Department of Justice 2011). The offending rates for adults age 35 and above have remained relatively stable since 2000 at a rate of under 5 offenders per 100,000 (U.S. Department of Justice 2011).

Table 6. Offender Age Range over Time Periods

Time Period	Age Range	Frequency	Percent of Cases for Time Period
2005-2012	Grade School	2	7%
	College/Young Adult	9	33%
	Adult (30-44)	13	48%
	Middle Age (45-55)	2	7%
	Age 56+	1	4%
1997-2004	Grade School	3	21%
	College/Young Adult	1	7%
	Adult (30-44)	7	50%
	Middle Age (45-55)	2	14%
	Age 56+	1	7%
1989-1996	College/Young Adult	7	47%
	Adult (30-44)	5	33%
	Middle Age (45-55)	3	20%
1982-1988	Adult (30-44)	4	67%
	Middle Age (45-55)	1	17%
	Age 56+	1	17%

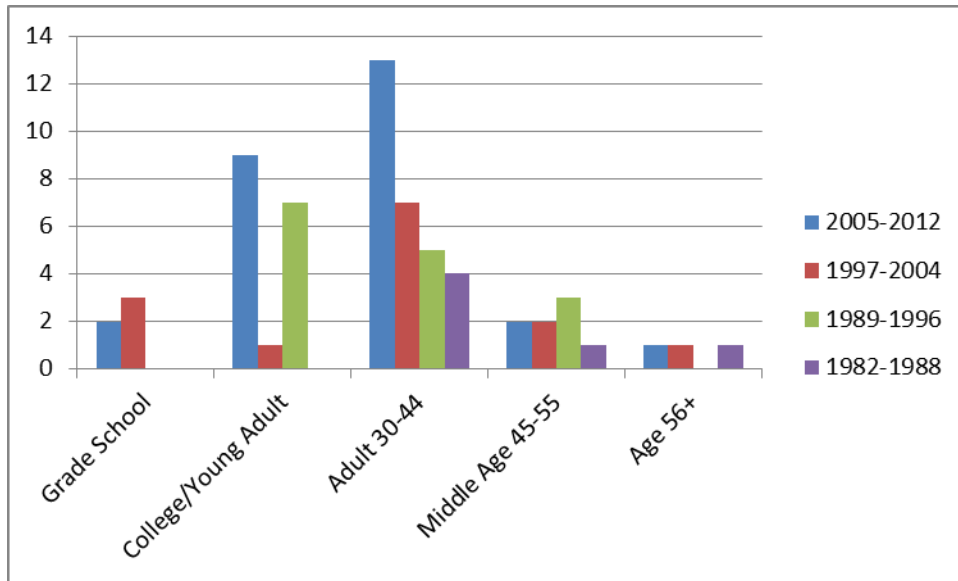


Figure 9: Offender Age Range over Time Periods

Table 7. Offender Race over Time Periods

Time Period	Race	Frequency	Percent of Time Period
2005-2012	White	18	67%
	African American	3	11%
	Asian	4	15%
	Latino	1	4%
1997-2004	White	9	64%
	African American	2	14%
	Asian	1	7%
	Latino	2	14%
1989-1996	White	9	60%
	African American	4	27%
	Asian	1	7%
1982-1988	White	6	100%

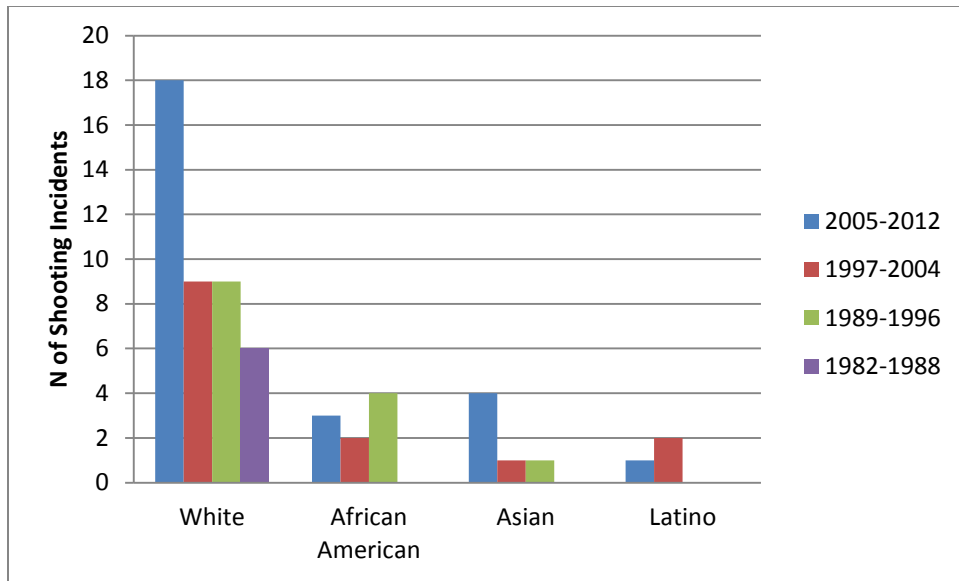


Figure 10: Offender Race over Time Periods

Locations/Venues

Over the last three decades, there have been public mass shootings in a variety of places. Since there has been a large diversity of locations, the present study divides shooting locations into five unique venue locations with a sixth category referencing all those cases which do not fit any particular mold. The venues are separated based on the following criteria: schools – any public or private learning facility; workplace – any corporate location or office building; religious facility –any structure which associates with a religious denomination; store/restaurant – any shopping or eatery establishment including the parking lot area; public attraction – any location where there is a public gathering to see the planned event including movies, concerts, speeches, etc. In total, there have been 12 school shootings, 23 workplace shootings, 3 religious facility shootings, 13 store/restaurant shootings, 2 public attraction shootings, and 9 other shootings. The significance of workplace locations witnessing the most public shootings

is that it supports previous research involving the frustration-aggression hypothesis and a disgruntled male who transcends pent up frustrations into violent outbursts. Additionally, Table 8 tallies the number of shooting incidents at each venue category over the different time periods. These results indicate that school shootings have increased over time both in the sense of total incidents and percentage of incidents per time period. Another important factor is in reference to the decline of workplace shootings. While workplace shootings are still the most frequent overall, the last eight years have seen a drastic rise in store and restaurant shootings as well as the aforementioned school shootings. It is possible that school shootings have increased due to the growing occurrence of younger offenders. Meanwhile, there is nothing pertinent in this data as to why store and restaurant shootings have increased. This result is an element which needs to be studied in future research.

Table 8. Venues over Time Periods

Time Period	School	Workplace	Religious Facility	Store/Restaurant	Public Attraction	Other
2005-2012	6	5	2	8	1	5
1997-2004	3	9	1	0	0	1
1989-1996	3	7	0	2	0	3
1982-1988	0	2	0	3	1	0
Total	12	23	3	13	2	9

When analyzing which offenders are more likely to commit violence at certain locations as is shown in Table 9, almost all of the school shootings involve offenders who are currently in school or in the early stages of adulthood (83%). Similarly, the vast majority of workplace shootings, 16 of the total 23, involve adult offenders. A possible reason for both of these findings could be that the offender is targeting a place that is a large part of his or her daily life and, in other words, is seen as a cause or motivation for the action. This situation is true in the case of the Columbine Killers where Harris and Klebold targeted their high school and fellow classmates who were the cause of their frustrations. However, there are other situations like the school shooting at Sandy Hook Elementary where there is still no evidence of a plausible connection between Lanza and the school. In the workplace scenario, 20 of the 23 (87%) work location based shootings involved offenders who were either current employees or former employees of the businesses they attacked. The other 3 cases involved offenders who were not directly tied to the workplace, but had a prior altercation with the corporation or had transferred their frustrations externally onto the business. For example, in 1993, failed businessman Gian Luigi Ferri chose an office building for the target although he was not directly connected.

Table 9. Offender Age Range and Shooting Locations

Age Range	School	Workplace	Religious Facility	Store/Restaurant	Public Attraction	Other
Grade School (13-18)	4	0	0	1	0	0
College/Young Adult (19-29)	6	3	0	3	1	4
Adult (30-44)	2	16	2	6	1	2
Middle Age (45-55)	0	3	1	1	0	3
Elderly (56+)	0	1	0	2	0	0
Total	12	23	3	13	2	9

Mental Illness

A large part of the discussion involving offenders and possible motivations for their actions has involved mental illnesses and their overall mental capacities (Holmes and DeBurger 1988, Holmes and Holmes 1992, Fox and Levin 2012, Fox et al 2012).

Although it should be noted that there has been no definitive causation provided between mental illnesses and violence (Fox and Levin 2012), it is still important to identify some of the reoccurring trends of public mass shootings. Negating the 7 cases where the offenders' mental capacities are unknown, investigations into 40 of the 55 cases (73%) have unveiled the possibility of a mental illness condition. As shown in Table 10 which breaks down each age range, every group had more instances of a possible mental condition as opposed to definitively having a full mental capacity. The largest discrepancy involved adult offenders where 21 of the 27 offenders (89%) were investigated to unveil some level of a mental deficit. While the present study cannot indicate the impact that an individual's mental condition could have on their future

violent actions, these findings suggest that future studies further explore the link between mental illness and public displays of violence.

Table 10. Offender Age Range and Evidence of Mental Deficiency

Age Range	Evidence of Mental Condition - <i>N</i>	No Instance of Mental Deficiency - <i>N</i>
Grade School (13-18)	3	1
College/Young Adult (19-29)	8	5
Adult (30-44)	21	6
Middle Age (45-55)	6	2
Elderly (56+)	2	1

Similarly, an important element in analyzing the role of mental illness in mass shootings is to test whether there has been an increase in offenders lacking in full mental capacities. If there is an increase in offenders whose post-investigations reported a mental deficit, then it is feasible that mental illness might play a role in mass shootings when matched with a similar increase in shooting incidents over the same time frame. Table 11 indicates the statistics for offender's mental status over the same four time periods as used previously. The results show that the recorded incidents of offenders' mental deficits have increased over time, but the percentage of observations per time period only increased from 1989 to 2012. Meanwhile, for the time period of 1982 to 1988 where there was only 6 shooting incidents, all 5 of the offenders indicated some level of mental condition where a reasonable understanding of their mental capacities could be discovered through investigation. If mental illness were a strong indicator for an offender committing a mass shooting, there would have either been more recorded incidents from

1982 to 1988 or fewer instances of offenders with a mental condition to lower the valid percentage of observations per time period thus accounting for fewer shooting incidents. On the other hand, it should be noted that between 1982 and 1996, only 57% of all shooting incidents involved an offender with a mental condition. Therefore, there is a noticeable leap in instances involving mental illnesses when discussing the more recent years of 1997 to 2012.

Table 11. Offenders Presence of Mental Illnesses over Time Periods

Time Period	Evidence of Mental Condition - N	Valid Percentage of N During Time Period
2005-2012	18	78%
1997-2004	10	71%
1989-1996	7	47%
1982-1988	5	100%

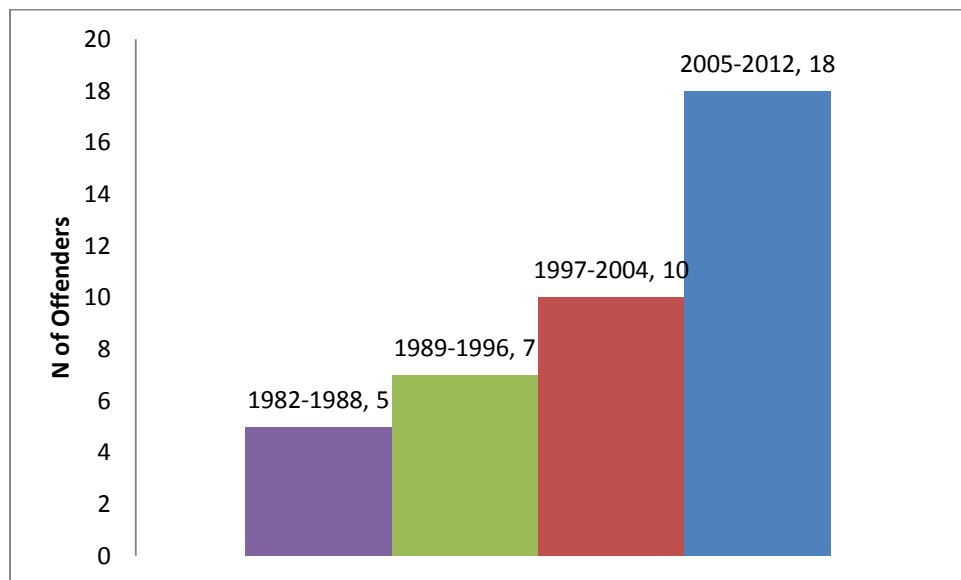


Figure 11: Offenders Presence of Mental Illnesses over Time Periods

Weapons

Method of Acquisition

In order to achieve a more complete understanding of the offenders behind public mass shootings, a descriptive analysis was conducted on their weapon choices and if the weapons were obtained legally. Overwhelmingly, the statistics propose that the majority of the weapons were legally obtained. Specifically, in 48 of the 60 cases (80%) where the weapon legality was known, the offender of that event had obtained their weapon legally. By looking at some of the results more closely, 5 of the 12 cases (42%) where a weapon was obtained illegally involved offenders 13 to 18 years old where it is often mandated by law that they cannot legally own a firearm. Therefore, the findings indicate that an individual who commits a public mass shooting typically already legally owns a firearm which supports prior research on typologies that mass murders have access to guns (Fox and Levin 2012, Holmes and Holmes 1992).

Weapon Type

When analyzing the types of weapons which each age group tends to use, there are small indications of trends. Shown in Table 12, by a very small margin of 3 cases to 2 cases, offenders 13 to 18 years old were more likely to use a combination of an assault weapon, semiautomatic handgun, and shotgun. Meanwhile, the slight majority of offenders 19 to 29 years old used an assault weapon (9 instances where an assault weapon was used as opposed to 8 cases where it was not). Additionally, 19 to 29 year old offenders will commonly use a semiautomatic handgun as was evidenced in 11 of the 17 instances (65%) involving this age group. In the past 31 years, adult offenders of mass shootings have not used an assault weapon often. Offenders in this age range used an

assault weapon in only 9 of the total 29 instances (31%). The most commonly used weapon for offenders age 30 to 44 years old is the semiautomatic handgun (86% of the total events).

When comparing the use of assault weapons and large capacity magazines in general homicides with public mass shootings, there are some significant differences. Regarding general crime, assault weapons are used in a small percentage of gun crimes. Prior to the assault weapons ban of 1994, Koper (2004) indicated that assault weapons accounted for an average of 2% up to a high of 8% of all gun crimes. For large capacity magazines, Koper (2004) found that they were used in roughly 14% to 26% of gun crimes during the same time period. When following up after the ban expired in 2004, Koper (2004) determined that both use of assault weapons and large capacity magazines were remaining constant or actually declining in percentage to overall gun crime. Using these statistics to compare their applicability in mass shootings, assault weapons are used significantly more in public mass shootings. In total, assault weapons were involved in mass shootings almost 42% of the time as opposed to the high of 8% of general gun crimes. For large capacity magazines, the difference is even greater. Where all weapon characteristics were known (see discussion below), 86% of the mass shootings involved large capacity magazines as opposed to roughly one-quarter of all general gun crimes. Overall, these findings seem to indicate that assault weapons and large capacity magazines' characteristics lend more assistance to mass shooters as opposed to general offenders.

Age Range	Obtained Legally	Assault Weapon	Large Capacity Magazine	Semiautomatic Handgun	Shotgun	Revolver
Grade School Age (13-18)	0 (0%)	3 (60%)	3 (75%)	3 (60%)	3 (60%)	2 (40%)
College/Young Adult (19-29)	14 (88%)	9 (53%)	8 (89%)	11 (65%)	5 (29%)	2 (12%)
Adult (30-44)	25 (89%)	9 (45%)	16 (94%)	25 (86%)	4 (14%)	8 (28%)
Middle Age (45-55)	6 (75%)	3 (38%)	3 (60%)	6 (75%)	3 (38%)	3 (38%)
Elderly (56+)	3 (100%)	2 (67%)	1 (100%)	1 (33%)	2 (67%)	2 (67%)

Table 12. Offender Age Range and Weapons in Possession

N of Cases (Valid % Per Weapon Type). Offenders often possessed more than one type of weapon.

Another important analysis which can assist in figuring out a common trend involved in mass shooting incidents is to test the role of certain weapons being used in specific locations as well as which locations might be prone to more lethal shootings. First, Table 13 shows the breakdown of weapons used at the six different venue locations. The findings indicate that semiautomatic handguns are again the most frequently chosen weapon consistently across all of the venues. However, it is interesting to note that assault weapons are the second most frequently chosen weapon in every venue. In a mass shooting scenario, it is a typical occurrence that the shooter has more than one firearm in his or her possession with many of those cases involving some type of handgun for easier concealment and most likely a larger secondary firearm. These statistics appear to indicate that offenders have usually chosen some combination of semiautomatic handgun, assault weapon, and large capacity magazine as opposed to a revolver, basic shotgun combination, for example.

Table 13. Weapons Used at Different Venues

Venue	Assault Weapon	Large Capacity Magazine	Semiautomatic Handgun	Revolver	Shotgun
School	7 (58%)	7 (78%)	9 (75%)	2 (17%)	6 (50%)
Workplace	10 (43%)	11 (100%)	19 (83%)	8 (35%)	4 (17%)
Religious Facility	0 (0%)	2 (100%)	3 (100%)	0 (0%)	0 (0%)
Store/Restaurant	5 (38%)	6 (75%)	7 (54%)	5 (38%)	5 (38%)
Public Attraction	1 (50%)	2 (100%)	2 (100%)	0 (0%)	1 (50%)
Other	3 (33%)	3 (75%)	6 (67%)	2 (22%)	1 (11%)

Offenders often possessed more than one type of weapon.

Next, an analysis is necessary to determine if certain venues seem to be prone to more lethal shootings. The importance of this approach is it can serve to provide an indication as to what venues were most significantly affected, in terms of body counts, from mass shootings. Table 14 shows the results of this descriptive analysis. The first significant finding is that there is a lot of variability both between different venues as well as within the same venue in terms of fatalities, injured, and total victims. Out of all settings, school is overall the most lethal with around 10 fatalities and 24 total victims per incident. At a small sample of only two cases, public attractions are also considerably high in victim counts. Both schools and public attractions such as movie theaters might have particularly high fatalities and victim totals due to there being a large number of people in a common location with not a lot of protection or easy exit points away from the oncoming shooter. Meanwhile, workplace shootings are around the middle in fatality instances, but have the lowest overall numbered injured and victim totals. Typically, in workplace shootings the shooter has an objective of targeting specific people, making sure that the targets are killed while the rest are seen as collateral damage or left unharmed. This reasoning could be a factor as to why workplace fatalities are usually higher than the number of solely injured victims. Overall, the findings indicate that each case can be a different scenario as there have been school shootings with low body counts while a workplace shooting can have 30 injured and 43 total victims. There have been some general trends which have been noted, but as each venue has particularly wide range of victim counts, it signifies that there have been a vast variety of scenarios.

Table 14. Fatalities, Injured, and Victims by Venue

Fatalities						
	School (N=12)	Workplace (N=23)	Religious Facility (N=3)	Store/Restaurant (N=13)	Public Attraction (N=2)	Other (N=9)
Mean	10.83	7.30	7.33	8.69	9	6.89
Median	6	7	7	6	9	6
SD	9.722	2.738	0.577	6.537	4.243	2.848
Min/Max	4/33	4/15	7/8	4/24	6/12	5/14
Injured						
Mean	13.17	4.65	4.67	7.31	29.50	6.78
Median	10	3	4	4	29.50	3
SD	10.426	6.859	2.082	7.005	40.305	8.363
Min/Max	1/29	0/30	3/7	0/20	1/58	0/23
Victims						
Mean	24	11.96	12	16	38.50	13.67
Median	21	8	11	12	38.50	11
SD	14.635	8.472	2.646	12.610	44.548	8.185
Min/Max	7/56	5/43	10/15	5/44	7/70	5/28

Weapons – Assault Weapons and Large Capacity Magazines

One of the fundamental questions for this study involves the weaponry used in public mass shootings, specifically the role of assault weapons and large capacity magazines. An initial descriptive analysis was used to capture the general application of some of the weaponry. Table 15 displays descriptive statistics of the weapons which the offenders had in their possession during the public mass shootings of the last 31 years.

Table 15. Weapons in Possession Descriptive Statistics

	Frequency - N	Valid Percentage
Semiautomatic Handgun	46	74%
Revolver	17	27%

Shotgun	17	27%
Assault Weapon	26	42%
Large Capacity Magazine	31	*86%
	Mean	Range
Weapons in Possession	2.33	9 (Min 1, Max 10)

*Missing N=26

Overall, the majority of the incidents involved weapons which were obtained legally by the individual who performed the shooting. Specifically, 80% or 49 of the total 61 cases where legality is known involved weapons which were legally obtained. In the shooters' possession during the shooting, the total number of weapons ranged from 1 to 10 firearms with around 2 firearms as the average. However, in the most common situation (37%), the shooter only had 1 firearm in their possession. Only around 15% or 10 of the instances involved offenders who had more than 3 firearms in their possession at the time of the incident. In regards to the type of firearm involved, the most common choice was a semiautomatic handgun with it being in the shooters' possession during 46 of the 62 instances (74%). However, the next most common firearm was an assault weapon. Assault weapons were in the offenders' possession in 26 of the 62 situations (42%). A shotgun and a revolver were only involved 17% of the time each. These findings do not support results from previous research (Duwe 2000, 2007) which approximated the use of assault weapons to fewer than 5% of the total amount of incidents. An even more significant finding is that high-capacity magazines were involved in exactly 50% or 31 of the 62 total cases. When negating the cases where large capacity magazine possession was unknown, the percentage is 86% or 31 of 36 cases. In

total, more than half of all mass shooters in the past 31 years possessed high-capacity magazines, assault weapons, or both.

The next step is to determine if the use of assault weapons or large capacity magazines in mass shootings has changed over time. Shown in Table 16, when the instances are divided into four periods of time, the use of assault weapons has remained relatively constant over time with an average of around one instance per year. In fact, when compared to the total number of mass shootings in each time period, the use of assault weapons has actually decreased over the last 7 years. From 2005 to 2012, an assault weapon has been involved in 7 mass shootings, but that number equates to only 26% of the total incidents in that time frame. With applying the same analysis in regard to the use of large capacity magazines, the results are opposite. Total incidents involving large capacity magazines have increased from a total of 3 cases during 1982 to 1988 and now to a total of 13 cases during 2005 to 2012. Generally, the analysis indicates about one of every two mass shooting incidents have involved large capacity magazines consistently over the last three decades. When compared to the number of total incidents where a determination was made on large capacity magazines during the separate time periods, the percentages are significantly higher, from 75 to 100%. Overall, when a determination could be made for the use of a large capacity magazine, it was present in the vast majority of incidents even across the different time periods.

Table 16. N of Shootings involving Assault Weapons and Large Capacity Magazines in Offender's Possession

Time Period	N of Assault Weapon Incidents	Percentage of AW incidents per Total N of Time Period	N of Large Capacity Magazines	Valid Percentage of LCM incidents per Total N of Time Period
1982-1988	3	50%	3	75%
1989-1996	9	60%	7	88%
1997-2004	7	50%	8	100%
2005-2012	7	26%	13	81%

With these findings indicating that throughout 31 years, assault weapons and large capacity magazines have been used in at least one out of every two public mass shootings, the lethality of this form of high powered weaponry needs to be addressed. In order to accomplish this task, a series of independent samples t-tests were conducted comparing the number of fatalities, injured, and total victims of each incident where an assault weapon or large capacity magazine was involved to those not involving such weaponry. Table 17 shows the results of this analysis. In the first t-test analysis comparing lethality rates for shootings involving assault weapons and those which do not, the number of fatalities are almost identical between the two groups. When an assault weapon is not in the possession of the offender, an average of 8.31 people are killed per incident while an average of 8.23 people are killed per incident when an assault weapon is in the possession of the shooter. As expected, the difference between the two groups is not statistically significant. When comparing the number of injured per shooting incident, the difference between an offender having an assault weapon and not having one is more pronounced. When an assault weapon is not in the possession of the shooter, an average

of 5.75 people are injured per incident. On the other hand, when an assault weapon is in the possession of the shooter, an average of 11.04 people are injured per incident. This difference is significant at the $p < .05$ level. Meanwhile, the average number of victims per shooting incident when an assault weapon is involved is 19.27 people, whereby the average number of victims without an assault weapon is 14.06 people. While the difference in average number of victims is around 5 people per shooting incident, the t statistic is not statistically significant.

Table 17. Independent T-test of Fatalities, Injured, Total Victim Counts for Assault Weapons

	Assault Weapon in Offender's Possession?	N of Shooting Incidents	Mean per Shooting Incident	Standard Deviation	t statistic
Fatalities	No	36	8.31	5.686	0.051
	Yes	26	8.23	5.631	
Injured	No	36	5.75	7.666	-2.044*
	Yes	26	11.04	12.663	
Victims	No	36	14.06	11.897	-1.552
	Yes	26	19.27	14.509	

* Significant at $p < .05$

While the findings on the effects of assault weapons are mixed, the results for large capacity magazines are more indicative. In the t -test analysis comparing the number of fatalities, injured, and victims with whether large capacity magazines are a part of the shooter's arsenal, all three measures are higher in the incidents where a large capacity magazine is present. The results are shown in Table 18 which includes the incidents where possession of a large capacity magazine is unknown. For fatalities, the average

number of people killed per incident involving a large capacity magazine is 10.19 people while the average killed per incident is 6.35 people without an extended magazine. In terms of injured, there is an average of only 3.55 people per shooting event without a high capacity magazine while an average of 12.39 people are injured per each shooting with the additional capacity magazine. Likewise, the difference between the two groups in average number of victims per incident is 12.68. All of the t-statistics for this analysis are statistically significant at the $p < .01$ level. Additionally, Table 19 includes only the cases where possession of a large capacity magazine is known. There are only slight differences between the two comparisons. When the unknowns are removed, the difference between average injured and total victims are both increased as compared to Table 18. Meanwhile, the mean difference as well as the t-statistic in fatalities between the two groups is decreased slightly while no longer being statistically significant.

Table 18. Independent T-test of Fatalities, Injured, Total Victim Counts for Large Capacity Magazines (Contains Unknowns)

	Large Capacity Magazine in Offender's Possession?	N of Shooting Incidents	Mean per Shooting Incident	Standard Deviation	t statistic
Fatalities	Unknown/No	31	6.35	2.199	-2.843*
	Yes	31	10.19	7.190	
Injured	Unknown/No	31	3.55	3.118	-3.711*
	Yes	31	12.39	12.891	
Victims	Unknown/No	31	9.90	4.182	-4.286*
	Yes	31	22.58	15.929	

* Significant at $p < .01$

Table 19. Independent T-test of Fatalities, Injured, Total Victim Counts for Large Capacity Magazines (Definitively Known)

	Large Capacity Magazine in Offender's Possession?	N of Shooting Incidents	Mean per Shooting Incident	Standard Deviation	t statistic
Fatalities	No	5	7.00	1.000	-0.980
	Yes	31	10.19	7.190	
Injured	No	5	2.80	1.095	-4.051*
	Yes	31	12.39	12.891	
Victims	No	5	9.80	1.643	-4.327*
	Yes	31	22.58	15.929	

* Significant at $p < .01$

Overall, assault weapons statistically appear to be more damaging with regards to widening the scope of a public mass shooting. While having an assault weapon in their possession does not provide a shooter with a higher number of fatalities, it offers them the chance to shoot and injure more people thus providing more victims. The close similarity in average number of fatalities with expanding number of injured is most likely due to the nature of the weapon. As discovered in an earlier analysis, the most common choice of weapon for mass shooters is a semiautomatic handgun. With a semiautomatic handgun, the shooter will be closer to the target because of the weapon's range. When at close range, the fatality rate of the weapon will be higher while the rate of injury will be lower since the larger percentage of those people shot will die from their injuries. This inference can be captured in the first t-test analysis where the incidents not involving an assault weapon had a slightly higher fatality average along with a significantly lower injured average. In terms of large capacity magazines, the increased ease and availability

of excess ammunition could enable a shooter to rapidly discharge more ammunition in a smaller time frame thus multiplying all three measures of victims. Similarly, this perception is highlighted in the analysis as average fatalities, injured, and total victims are all significantly increased in the instances involving large capacity magazines. Table 20 shows the results when both an assault weapon and a large capacity magazine are in the offender's possession. The results remain the same as the other analyses with there being a significant difference in the number of injured and total victims when the combination of an assault weapon and large capacity magazine is involved as compared to the incidents involving neither.

Table 20. Independent T-test of Fatalities, Injured, and Total Victim Count for Assault Weapons and LCM

	AW and LCM in Offender's Possession?	N of Shooting Incidents	Mean per Shooting Incident	Standard Deviation	t statistic
Fatalities	Neither	5	7.00	1.000	-1.854
	Yes	12	11.00	7.311	
Injured	Neither	5	2.80	1.095	-2.632*
	Yes	12	15.50	16.627	
Victims	Neither	5	9.80	1.643	-3.141*
	Yes	12	26.50	18.243	

DISCUSSION

Summary of Findings

The main thrust of the study is to evaluate public mass shootings, a topic that has relatively been under-researched considering the effects of any single incident.

Specifically, the study answered questions on the trends of mass shootings with reference to other data on mass shootings, general homicides, and stranger homicides. In addition, the current study also observed common characteristics of incidents and offenders with a special importance placed on weapons. Questions relating to the use of assault weapons and large capacity magazines as well as the subsequent ramifications of their use were also answered.

Based on the analyses performed in the present study, several significant findings were evident in the results. When analyzing the trends of public mass shootings, it was discovered that these incidents follow a unique trend as compared to homicide trends and other mass shooting data. Overall, public mass shootings have slowly increased in incidence from 1982 until 2012 while other homicide trends were steadily decreasing or following a consistent level. While this increase was statistically small, an OLS regression indicated a significant result. However, when the time frame was separated into quarter time periods, the increased rate was more pronounced. The rate accumulated to about an additional incident each year. This regression analysis also indicated a significant result, although just moderately significant at $p < 0.10$. From 2005 to 2012,

there was no obvious increase in number of incidents while both a chi-square analysis and regression analysis indicated that the recent years of 2009 to 2012 were not statistically different from 2005 to 2008. When assessing trends in offense characteristics, the significant findings were that offenders are becoming slightly younger, mental illness is becoming an increasing factor, and venues for mass shootings are moving away from the more common workplace shootings of the 1980s.

Another subset of the study focused on weapons with specific attention to the role of assault weapons and large capacity magazines in public mass shootings. Descriptive analyses indicated that overall, the majority of weapons involved in mass shootings are obtained legally. In addition, a low estimate where all weapon characteristics were identified specified that assault weapons or large capacity magazines were used in more than half of all cases. An independent samples t-test on assault weapons and large capacity magazines showed the impact that high powered weaponry has when involved in mass public shootings. Assault weapons were found to enable significant increases in the number of injured victims while incidents involving large capacity magazines accumulated significantly higher fatalities, injuries, and total victims. When both assault weapons and large capacity magazines were involved, there were statistically significant increases in fatalities, injuries, and total victims as opposed to when neither weapon was involved.

Theoretical and Policy Interpretations

The findings of this study have some interesting theoretical and practical implications. While trends for other violent crimes and mass murders have witnessed a

constant or declining status, public mass shootings have slightly increased in following a unique trend. Previous research on mass shootings has been limited thus reducing the possible explanations for this unique experience. As discussed in the literature review, theories for general homicides have often been applied, but with differing results because mass shootings involve a variety of circumstances. Still, the present study has found a slight statistical increase in occurrence of public mass shootings indicating that something must be happening over time to cause such changes. The results almost appear to contrast the historical theories of explaining homicides and general crimes. To summarize what previous research has shown, homicides have historically been conducted by young African American males with violent incidents in their pasts. However, the findings illustrate a different picture for mass shooters. Public mass shooters are more often single, older white males who tend to have little to no criminal histories. Therefore, the findings raise questions as to why offenders for mass shootings tend to contrast previous research on other crimes and why are these events increasing while overall crime has decreased. Out of all findings discussed, maybe the most significant result is the realization that mass shootings are a completely different genre of crime where there is little criminological theory to account for its occurrences.

While many criminological theories do not apply (as noted above), there are still others which could explain some of the differences in offenders as well as the differing rates of occurrences. For example, the frustration-aggression hypothesis (Dollard et al 1939), life course theory (Sampson and Laub 1993), and the very similar school of control theories (Hirschi 1969) could be applied to the study's findings. With the majority

of the offenders being single, older white males and their violent outbursts seemingly coming out of nowhere, there is a higher likelihood that a single event detached the individual from their normal status in life leading to frustrations and resulting aggressions. These individuals have had no previous violent activities because their lives had been connected to something of importance in a prior time. This connection could be a job, relationship, family, hobby, etc. In almost all of the workplace shootings, the offender had previously been reprimanded or fired by his former employer leading to a breakdown in their current status of everyday living. The emotional and sociological ramifications for losing something of value to a person such as their employment might have ultimately led to an inability to control their actions. Meanwhile, the lack of control is pressed further onto the youth generation which could be an explanation for an increase of school shootings involving more youthful offenders. In many of the young offender cases, however, there is not always a single event of frustration, but rather a period of frustration. These frustrations typically involve repeated bullying or prolonged feeling of loneliness from others in school. While it is not a single predisposed event, the theories still would presume that there is a lack of control in the individual's life. The lack of control stems from their inability to associate themselves with any other legitimate member of society or society itself. It comes to a point of frustration where it ultimately turns into an "us versus them" persona. This disconnection from any of society's standards leaves the individual with an easy choice to outwardly express their frustrations through violence since there is no obligation towards others.

Duwe (2007) proposed that the rate of mass murders were enhanced by the role of the media. On the basic level, the theory adds to Coleman's (2004) copycat effect where crimes that receive a lot of attention form clusters. It is the offender's desire for media attention and notoriety which serve as a strong motivating factor. This proposition might hold some value based on the results of the present study. Although the media was a factor in the 1980s and 1990s, the expansion of technology increased not only the wealth of information available to the public, but also the speed and accessibility of obtaining such information. Any serious event is no longer restrained to the locality in which it has occurred. However, along with the excess availability of global information, there is also an added filter where only the most sensational and newsworthy events receive the largest audience. This point is based solely on logic of human nature. For example, a person in Los Angeles might not be in tuned with the latest homicide that has occurred in Connecticut since general homicides are a more common event and without additional searching, only the local news will cover such a homicide. However, that same person in Los Angeles has undoubtedly been informed about the Sandy Hook Elementary School public shooting. It is this sensationalizing process that could be a possible explanation for the recent spike in public mass shootings.

Additionally, it could be an explanation for the recent trend of younger mass shooters and shifting away of venues from workplaces to more public atmospheres such as schools and shopping centers. The young generation has been raised on the latest technologies of the 21st century and with it has come the increased access to information. For example, James Holmes of the Aurora movie theater shooting might have received

the motivation from a violent movie, but media covering of the original incident led to at least three men in three different parts of the county to threaten a copycat event. The most serious incident involved a Maine resident who was found to have an arsenal of weapons news clippings of the Aurora killings when he was stopped for speeding while on his way to shoot a former employer (Bay News 2012).

Media might also have an effect on the location of mass public shootings because the initial publicity surrounding the original event. “Going postal” was a common phrase in the 1980s and 1990s due to the series of incidents involving United States Postal Service workers shooting their fellow coworkers in the workplace. A clustering of similar shootings occurred frequently after the initial event. The same experience is evident in the results of the present study. School shootings were not a common occurrence prior to the late 1990s, but a clustering of similar events has happened since the initial instance. Likewise, store and restaurant shootings have witnessed an increase possibly due to well publicized cases such as the one involving Representative Giffords. While the spread of publicity involving mass public shootings is not the only explanation for copycat events, it is difficult to escape the reasoning that copycat killings are partly inspired by the publicity surrounding the original. The improvements made to the dispersion of media could have attributed to the increased trend. Forthcoming research needs to address more specifically how the media can impact the incident rate for public mass shootings.

Another angle displayed in the study’s results involves the increase of mental illness as a factor in offenders. Over the last several decades, a growing percentage of mass shooters were identified to have mental deficiencies. It is still unclear exactly the

role that mental illness plays in offenders' motivations or capacities to commit violent acts. Therefore, future research is necessary to address the relationship between mental illness and public mass shootings. Without research to guide in any explanations of the sort, all that can be mentioned are rationalizations. One possible explanation could be that mental illness separates an individual from society and the offender from any of their immediate actions. For example, there is a natural human inhibition against killing that can be reduced by adopting a persona or having a mental block to ignore any such belief. In the mental deficit cases, it is the idea of an alternate mental state which provides a vehicle through which the violent action is committed. This depersonalization of the individual can help account for uncharacteristically violent actions that are mass public shootings. While it is possible that many of the mass shooters have alternative motivations for their actions which must also be addressed, it is also possible that an individual's mental condition can serve as either a barrier or enabler towards violent activities. The present study indicates that mental illness cannot be ignored in the role of mass public shootings. It provides evidence for future research and the need for improvement of the current mental health system in America. If mental illnesses can be diagnosed accurately and care can be provided to those in need, it is possible that the rate of public shootings will be halted.

The Role of Weaponry in Public Mass Shootings and its Implications for Policy

Throughout the past three decades, the general homicide rate has generally experienced a downward trend. During the same time frame, public mass shootings have statistically occurred at a faster pace involving a greater use of advanced weaponry such

as assault weapons and large capacity magazines. The findings shed light to the growing availability and ease of obtaining weapons in the U.S. as well as establishing statistical proof to the increased lethality of assault weapons and large capacity magazines. These two issues are at the forefront of the gun control debate.

Mass shootings typically invoke new debates on the use of gun control as an effective method in preventing future attacks. At the fundamental level, the discussion involves the components of criminal opportunity theories (Cohen and Felson 1979, Clarke and Felson 1993). The availability of more high powered weaponry provides motivated offenders with greater ease of committing acts of violence thus leading to increased mass shootings. Additionally, the expanded availability of weapons influences the routine activities and crime opportunity structure for social situations. By adding weapons into any situation, it increases the feasibility for a more violent action to occur. In the instance of the present study, the use of assault weapons and large capacity magazines ultimately increases the victim count for these homicides. If this same thought process is expanded to include other weapons, it is an obvious conclusion that firearms are more lethal than knives and knives are more lethal than bare hands, just as an example. Therefore, the availability of weapons in the U.S. ultimately increases the likelihood that would be single or double homicides if done by a knife now become mass murder if done by a firearm. Overall, weapons provide the offender with a greater ease to accomplish their goal and in the case of mass shooters the goal is typically to create the most amount of havoc possible. Based on the routine activity and rational choice perspective, it is only feasible that more mass shootings involve assault weapons and

large capacity magazines since they provide the greatest opportunity to increase overall victim counts. In placing a motivated offender with numerous vulnerable victims in a public setting, the addition of a high powered weapon equates to more victims and therefore more public mass shootings.

The findings of the present study have indicated the increased damages caused by higher velocity weapons in addition to the fact that a majority of mass shootings have been committed with legal firearms. These two findings alone highlight the framework of any discussions on gun control. However, there are also additional circumstances and dilemmas surrounding the limitation of firearms. Throughout the past few decades, numerous legislative proposals have sought to reduce the availability of firearms in the hands of the public and research has additionally evaluated such proposals raising several questions. Are firearm restrictions permissible under the Constitution? Can gun control be an effective form of crime control? Can crime rates be significantly reduced by stricter regulation of firearms ownership or commerce? Would fewer disputes end up in lethal results if firearms were less accessible? Or would more restrictive gun control policies have an unintended effect of impairing citizens' right to self-defense?

The most recent legislation, the Assault Weapons Ban of 2013, has been tested in the current study in the sense that assault weapons and large capacity magazines were operationally defined through the proposed ban's definitions. Overall, the public mass shootings studied in this work involved a total of 20 assault weapons and 42 high capacity magazines. By ruling out those combinations which an assault weapon and high capacity magazine were involved together, a total of 48 out of the 143 weapons in the

shooters' possessions would have been outlawed by the Assault Weapons Ban of 2013. Also, as discovered in the study, the vast majority of the weapons used in public mass shootings are obtained legally. The importance of those facts is that if the assault weapons and large capacity magazines were banned, the majority of would be shooters would not have them in their possession while performing their violent acts. Therefore, a large percentage of those 48 weapon combinations would not have been a factor in any mass shooting.

However, the question remains what is the benefit of eliminating or hardening the easy access of assault weapons and large capacity magazines from potential mass shooters? In fact, a low estimate of 95 of the 143 weapons would not be impacted at all by any proposed assault weapon ban which creates the belief that mass shootings would still occur with or without any further weapon legislations. This estimate includes the instances where the weapon type and presence of a large capacity magazine was unknown. Additionally, a similar ban had already been enacted and consequently ended after the ten year period had expired. Therefore, is there any belief that a new ban might be successful? In order to discuss the answer to this question, it is important to note the successes and failures of the preceding assault weapons ban.

Following a period of mass shootings in the early 1990s, federal legislature enacted the Violent Crime Control and Law Enforcement Act of 1994 which included provisions relating to assault weapons and large capacity magazines. The provisions imposed a ten year ban on the manufacture, transfer, and possession of semiautomatic firearms which had been classified as assault weapons. Rather than prohibiting the use of

all semiautomatic firearms, it placed restrictions on semiautomatics having features regarded more for military or criminal usefulness such as pistol grips, silencer attachments, and the ability to accept large clips of ammunition magazines. A majority of these weapons had already been banned since 1989 so the more significant element of the ban was the two or more military style features test and the elimination of large capacity magazines which were defined as ammunition feeding devices capable of holding more than ten rounds of ammunition

While the ban was perceived to be at least a step in the right direction to preventing future mass shooting incidents, it included several exemptions that severely weakened its effectiveness. First, all assault weapons and large capacity magazines manufactured before the effective date of the ban were grandfathered in meaning that as long as they were purchased prior to the ban they were legal to own and transfer. Several surveys had attempted to estimate the number of privately owned assault weapons in the U.S. finding that there were an estimated one million around 1990 (American Medical Association Council on Scientific Affairs 1992), while domestic assault weapon makers produced about half a million assault weapons between 1989 through 1993 (Koper 2004). Therefore, it can be estimated that there were already more than 1.5 million assault weapons in circulation across the country by the 1994 ban. Meanwhile, it was estimated that U.S. gun owners possessed around 25 million guns equipped with large capacity magazines (Cook and Ludwig 1996). Additionally, as of 1995, the estimated number of large capacity magazines available was at least 25 million (Gun Tests 1995), and an extra

4.8 million were legally imported under the grandfathering exception from 1994 through 2000 (Koper 2004).

In the follow up evaluation of the assault weapon ban, Koper (2004) found some small indications that the assault weapon ban was at least minimally effective. Koper (2004) indicated that the use of assault weapons declined in crimes because of the ban by around one-third or more with the reduction due mostly to assault pistols and the fact that assault weapons were becoming increasingly rare. Meanwhile, there was no clear decline in the use of large capacity magazines due to the belief of having an immense stock of grandfathered large capacity magazines as well as those entering the country through importation (Koper 2004). Some of the positive impacts of reducing the availability of assault weaponry as defined by this litigation could have been offset by legal guns which have use of large capacity magazines. Additionally, there was no evidence of any decline in gun injuries or deaths due to the provisions of the ban (Koper 2004). The findings indicated that there might have been some positive effects of the ban, but that these effects occur gradually due to the grandfathering provisions in the law. Still, it leaves the possibility that a new ban might reduce shootings modestly while taking several years to achieve desired effects depending on its grandfathering provisions. It may not be a cure-all for gun crime, but it could prevent further spread of damaging weaponry and may assist in the reduction of more serious gun crimes.

Some of the same failures addressed in the evaluation of the previous ban will affect the most recently proposed legislation. The grandfathering provisions of both bans severely limit any successful indicators since there is already a vast supply of assault

weapons and large capacity magazines on the market. Negating this provision, however, an assault weapons ban could impact the victim counts of deadly mass shootings where the offender's intent is to harm as many people as possible. The results of this study indicate that assault weapons significantly increase the amount of injured victims per each shooting. In addition, the involvement of large capacity magazines significantly increases the number of fatalities, injured, and total victims. Since the majority of weapons were obtained by mass shooters legally, it is possible that banning the future legal obtainment of high powered weaponry such as assault weapons and large capacity magazines would decrease their use in these crimes. Offenders who are motivated to commit a public mass shooting might choose a lesser weapon thus decreasing the quantity and rate of fire at which they are able to shoot ammunition at their targets. The present study has found that non assault weapon and large capacity magazine cases have reduced victim counts. Therefore, it is presumable that overall victim counts will also decrease for public mass shootings. None of the methods or results of this study have attempted to determine a perfect solution for mass shootings, but the findings do assist in uncovering that incidents have been increasing slightly in recent years and body counts are growing along with use of more high powered weaponry.

Study Weaknesses and Limitations

As with any study, there were multiple weaknesses that could be addressed in future endeavors. A majority of these limitations involve the data chosen for the study. With a lack of scientific research performed on mass murder in general, finding authentic secondary data was difficult. Typically, mass murder and public mass shootings are

highly covered by media sources which increase the amount of general information on the topic while also decreasing the reliability of any data. The Mother Jones data set used in this study received all information from media sources and while multiple validations were performed to ensure the validity of the data, there is still the potential for errors. These errors could be found in a number of places especially when referring to the variables included in the study. For example, mental illness is a broad term with numerous applications. The separate investigation by Mother Jones operationally defined instances of mental illness based on media reports that indicated a shooter having some mental condition. Likewise, the investigation focused on media sources for weapons discovered in the offenders' possessions in order to classify them based on the proposed assault weapon ban's definitions. While the likelihood of error forming in the more publicized mass shooting incidents is considerably small considering the amount of information made public, the lesser known as well as the older shootings have larger potential for errors.

Another issue with the data involves the specific criteria of the included shooting incidents. In order for a shooting incident to be included in the data set, there were certain characteristics which needed to be present in the situation. The selectiveness of this data was advantageous for the present study's purpose of analyzing the more damaging public mass shootings, but eliminating countless other mass murder or serious shooting incidents limits the generalizations which can be drawn from the results. In essence, the study's findings might only apply to the shooting incidents included in the data while not applying to public mass shootings as a general classification. For example, when

analyzing the weapons used in mass shootings, the analysis relies on cases that involved a lone shooter murdering four or more people in a short time window at a public place. In order to match all of those circumstances, high powered weaponry most likely was used in the shooting incident. Is it because high powered weapons are used frequently in public mass shootings or is it because high powered weapons were more likely to create such a result as opposed to the non-selected cases? Again, further research needs to be done to address this issue.

An additional problem deals with the nature of the study. The present study is explorative and therefore lacks some analytics. A majority of the results were found on descriptive analyses due to the nature of the data and should just be considered statistics, trends, and correlations. While the present study did not seek out to decipher any causal relationship between any of the variables, it is still an inherent weakness of the study. Also, the sample size is considerably small so any trends are equivalent in size to the sample. The occurrence of public mass shootings is rare in itself which exacerbates the problem of studying the number of cases necessary to conduct more thorough analyses. However, the study fills the gap of scientific research on public mass shootings and discovers findings which are not only helpful in creating future research, but also in establishing policies to diminish a growing problem.

Future Research of Public Mass Shootings

With a lack of scientific research on the topic, there is a great opportunity for more expansive research. Based on the findings of the present study, future research can touch a number of important issues. First, the results indicated a slight overall increase in

the occurrence of public mass shootings over the last three decades with a more drastic increase occurring over the last eight years. Further research needs to be conducted to validate the increase, test possible causes for the increase, and discover if the trend is likely to continue in opposition to general homicide levels.

Second, the study found some differences in offender and offense characteristics over time. The variables within these characteristics need to be analyzed to determine causal relationships. For example, the study indicated a rise of younger offenders in the past 15 years while also finding an increase in school and store/restaurant shootings. It might be possible that there are variables connecting the trends together as well as some indicating reasons behind workplace shootings declining. With the present study highlighting changes over time, it creates numerous opportunities to analyze relationships in order to address the changes.

Additionally, there is an opportunity to study how the operationalization of mass murder and mass shootings can affect statistics of occurrence over time. For example, it is possible and very likely that the present study produced a different assessment of trends from other works because of the initial defining of mass shootings. There have been previous discussions on number of victims, locations, and time. However, no uniform definition has ever been consistently applied across studies. If it is possible to approach mass murders or mass shootings in the same manner, there will be more feasibility in the replication of studies and the field of mass homicide research will grow as a whole.

Also, one of the most significant findings for the study was the use of assault weapons and large capacity magazines in addition to the lethality of these dangerous weapons. In more than half of all instances, the offender had in their possession an assault weapon or large capacity magazine. Additionally, almost a third of all of the offenders' weapons would be ruled illegal with the recently proposed legislation. These statistics could be even larger since data could not be found on large capacity magazines in over 40% of the cases. Overall, the large presence of high powered weaponry in public mass shooting incidents is significantly measureable. However, the findings for lethality of these weapons might be more important for future research. Based on this study's findings, assault weapons impact shooting incidents by providing an offender a greater chance to shoot and injure more victims at the scene. Meanwhile, large capacity magazines provide an offender the possibility to shoot, injure, and kill more overall victims. Future research needs to analyze the lethality of these weapons in terms of general homicide and more simply the nature of the weapon. If it is discovered that these weapons truly create larger victim counts than a substitute weapon then the potential for increased legislation is exponential and the findings of this study could serve a purpose in preventing future harm.

APPENDIX A

Public Mass Shootings in U.S. (1982-2012)

<u>Case</u>	<u>Location</u>	<u>Date</u>
Welding shop shooting	Miami, Florida	8/20/1982
Dallas nightclub shooting	Dallas, Texas	6/29/1984
San Ysidro McDonald's massacre	San Ysidro, California	7/18/1984
United States Postal Service shooting	Edmond, Oklahoma	8/20/1986
Shopping centers spree killings	Palm Bay, Florida	4/23/1987
ESL shooting	Sunnyvale, California	2/16/1988
Stockton schoolyard shooting	Stockton, California	1/17/1989
Standard Gravure shooting	Louisville, Kentucky	9/14/1989
GMAC massacre	Jacksonville, Florida	6/18/1990
Luby's massacre	Killeen, Texas	10/16/1991
University of Iowa shooting	Iowa City, Iowa	11/1/1991
Royal Oak postal shootings	Royal Oak, Michigan	11/14/1991
Lindhurst High School shooting	Olivehurst, California	5/1/1992
Watkins Glen killings	Watkins Glen, New York	10/15/1992
101 California Street shootings	San Francisco, California	7/1/1993
Luigi's shooting	Fayetteville, North Carolina	8/6/1993
Long Island Rail Road massacre	Garden City, New York	12/7/1993
Chuck E. Cheese's killings	Aurora, Colorado	12/14/1993
Air Force base shooting	Fairchild Air Force Base, Washington	6/20/1994
Walter Rossler Company massacre	Corpus Christi, Texas	4/3/1995
Fort Lauderdale revenge shooting	Fort Lauderdale, Florida	2/9/1996
R.E. Phelon Company shooting	Aiken, South Carolina	9/15/1997
Caltrans maintenance yard shooting	Orange, California	12/18/1997
Connecticut Lottery shooting	Newington, Connecticut	3/6/1998
Westside Middle School killings	Jonesboro, Arkansas	3/24/1998
Thurston High School shooting	Springfield, Oregon	5/21/1998
Columbine High School massacre	Littleton, Colorado	4/20/1999
Atlanta day trading spree killings	Atlanta, Georgia	7/29/1999
Wedgwood Baptist Church shooting	Fort Worth, Texas	9/15/1999

Xerox killings	Honolulu, Hawaii	11/2/1999
Hotel shooting	Tampa, Florida	12/30/1999
Wakefield massacre	Wakefield, Massachusetts	12/26/2000
Navistar shooting	Melrose Park, Illinois	2/5/2001
Lockheed Martin shooting	Meridian, Mississippi	7/8/2003
Damageplan show shooting	Columbus, Ohio	12/8/2004
Living Church of God shooting	Brookfield, Wisconsin	3/12/2005
Red Lake massacre	Red Lake, Minnesota	3/21/2005
Goleta postal shootings	Goleta, California	1/30/2006
Capitol Hill massacre	Seattle, Washington	3/25/2006
Amish school shooting	Lancaster County, Pennsylvania	10/2/2006
Trolley Square shooting	Salt Lake City, Utah	2/12/2007
Virginia Tech massacre	Blacksburg, Virginia	4/16/2007
Crandon shooting	Crandon, Wisconsin	10/7/2007
Westroads Mall shooting	Omaha, Nebraska	12/5/2007
Kirkwood City Council shooting	Kirkwood, Missouri	2/7/2008
Northern Illinois University shooting	DeKalb, Illinois	2/14/2008
Atlantis Plastics shooting	Henderson, Kentucky	6/25/2008
Carthage nursing home shooting	Carthage, North Carolina	3/29/2009
Binghamton shootings	Binghamton, New York	4/3/2009
Fort Hood massacre	Fort Hood, Texas	11/5/2009
Coffee shop police killings	Parkland, Washington	11/29/2009
Hartford Beer Distributor shooting	Manchester, Connecticut	8/3/2010
Tucson shooting	Tucson, Arizona	1/8/2011
IHOP shooting	Carson City, Nevada	9/6/2011
Seal Beach shooting	Seal Beach, California	10/14/2011
Su Jung Health Sauna shooting	Norcross, Georgia	2/22/2012
Oikos University killings	Oakland, California	4/2/2012
Seattle cafe shooting	Seattle, Washington	5/20/2012
Aurora theater shooting	Aurora, Colorado	7/20/2012
Sikh temple shooting	Oak Creek, Wisconsin	8/5/2012
Accent Signage Systems shooting	Minneapolis, Minnesota	9/27/2012
Newtown school shooting	Newtown, Connecticut	12/14/2012

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