



# The media's coverage of mass public shootings in America: fifty years of newsworthiness

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## ABSTRACT

This study uses a media distortion analysis to examine the *New York Times* coverage of mass public shooting incidents occurring in the United States from 1966 to 2016. A comparison between media coverage and actual incidents is used to identify the characteristics influencing the newsworthiness of mass public shootings. This work expands the breadth and depth of media and mass public shooting research, strengthening the validity of previous findings, and identifying new characteristics influencing newsworthiness. Findings indicate significant predictors of newsworthiness include higher casualties and injuries, as well as perpetrators that are young, Middle Eastern, and ideologically motivated. School shootings are more likely to receive any coverage, and all non-workplace shootings receive salient levels of coverage. An incident is also more likely to receive any coverage if a combination of weapons is used. These findings have important implications for public knowledge and perceptions of mass public shootings.

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## Introduction

Mass public shootings are unnerving to the general public because they are violent acts that target a large number of seemingly random victims in public locations (Lankford, 2016; Newman, Fox, Roth, Mehta, & Harding, 2004). This gives the perception a mass public shooting could happen to anyone, anywhere, anytime. As a result, the public is drawn to information surrounding mass public shootings as it relates to their own lives. The media provides the main source of public information about mass public shootings, thereby shaping public understanding and subsequent measures for prevention (Schildkraut & Elsass, 2016). A key to understanding news organisations' presentation of mass public shootings is through a media distortion analysis: using existing evidence as a starting point and then comparing media coverage of the social problem (Chermak & Gruenewald, 2006; Gruenewald, Pizarro, & Chermak, 2009). This is then used to examine the incident characteristics influencing newsworthiness, determined by issues of selection (whether an incident receives any coverage) and prominence (whether an incident receives salient amounts of coverage) (Chermak & Gruenewald, 2006).

A few studies have examined the characteristics influencing the newsworthiness of specific forms of homicide including mass murder (Duwe, 2000), terrorism (Chermak & Gruenewald, 2006) and, most recently, mass shootings (Schildkraut, Elsass, & Meredith, 2017). Schildkraut et al. (2017) examine the newsworthiness of mass shootings in the aftermath of Columbine and provide an important foundation for examining the media coverage of mass public shootings.

Despite this, they overlook important characteristics introduced by Duwe (2000) and Chermak and Gruenewald (2006) and previous mass shooting research (McGinty, Webster, & Barry, 2013; Schildkraut & Muschert, 2013; Metzl & MacLeish, 2015; Osborne & Capellan, 2017) that could potentially influence disproportionate coverage of the phenomenon. Additionally, their sample only considers the first month of coverage and does not factor in the media coverage during lengthy trials for shooters that survive, or the referencing of incidents when considering mass public shootings at large. Finally, their timeline (2000–2012) fails to consider the half-century history of excessive coverage dedicated to the phenomenon. Consequently, the research examining the media coverage of mass public shootings demands further investigation.

The current study uses a media distortion analysis to expand the breadth and depth of previous research examining the media coverage of homicide and mass public shootings. This research uses a comprehensive sample of mass public shooting incidents occurring in the United States from 1966 to 2016 and *New York Times* articles pertaining to each incident. A comparative analysis between media coverage and actual incidents is used to identify the perpetrator and incident characteristics influencing the coverage and salience of coverage of the phenomenon. This in-depth analysis determines the attributes influencing 50 years of mass public shooting newsworthiness.

## Literature review

### *Newsworthiness of homicide*

News media is the primary source of public information about crime (Chermak, 1994; Surette, 1998). Cohen (1963) suggests that while it is difficult to identify a correlation between the media and what people think, it is easier to find a relationship between the media and what people think about (p. 13). This suggests the salience of crime stories can influence public understanding of the nature and prominence of crime. Surette (1998) defines newsworthiness as “the criteria by which news producers choose which of all known events are to be presented to the public as news events” (p. 60). The majority of news stories are dedicated to crime news (Surette, 1998), and the salience of crime news is determined by (1) the dynamic newsmaking process (Gruenewald, Parkin, & Chermak, 2014), (2) the need to efficiently organise and deliver news to audiences (Fishman, 1980), and (3) the rare nature and seriousness of the offense (Chermak & Chapman, 2007; Duwe, 2000).

First, news outlets are dependent upon criminal justice sources, conveying what is important about crime in a way that furthers the organisation’s need (Chermak, 1994). The limited access to direct information means news outlets often take cues from fellow newsmakers when considering which crimes stories are the most interesting to audiences (Ericson, Baranek, & Chan, 1989). This is why crime news follows a “herd mentality” when determining which incidents receive coverage and how much coverage they receive (Maguire, Weatherby, & Mathers, 2002). Second, understanding audiences’ preconceived notions of crime is important for selling news (Chermak, 1994). This contributes to cultural typifications of “normal crime” characteristics for typical offenders and victims, producing simplified crime scripts rooted in racial and gender stereotypes (Gruenewald et al., 2014). Finally, to satiate the publics’ fascination with violence and sell crime news, crime reporting follows the generally accepted media axiom, “If it bleeds, it leads” (Lawrence & Mueller, 2003). For example, homicide is more newsworthy than property crimes, despite property crimes occurring much more often (Chermak, 1995). Despite this overrepresentation of homicide in the media, many incidents receive little to no coverage (Chermak, 1994; Chermak & Chapman, 2007). As a result, research has sought to identify the homicide demographic and incident characteristics influencing whether an incident receives any media coverage and/or salient levels of coverage. This is used to determine the newsworthiness of homicide.

Media and crime research examining demographic characteristics influencing disproportionate levels of coverage has focused on the age, gender, and race of crime and homicide perpetrators. When examining the perpetrators' age, Boulahanis and Heltsley (2004) find juvenile offenders receive more coverage, while Chermak (1998) finds older perpetrators are more newsworthy. Since the majority of crimes are committed by individuals between the ages of 17 and 24, highlighting older and younger perpetrators distorts the reality of the nature of crime and criminality (Chermak, 1995). Similarly, Chermak (1998) finds female offenders are more likely to be covered, despite males being far more likely to commit crimes. When considering race, Gruenewald et al. (2009) find homicide occurrences involving Hispanic offenders and White, Black, and Hispanic victims were considered significantly more newsworthy than the most common Black-on-Black homicide.

When considering incident characteristics, the most common predictor of newsworthiness is a large number of victim casualties and injuries (Chermak, 1998; Duwe, 2000; Chermak & Gruenewald, 2006; Gruenewald et al., 2009). Additionally, Duwe (2000) finds victims who have no relationship with the offender (strangers) are more likely to receive coverage. Gruenewald et al. (2009) find incidents involving firearms are more likely to be covered than incidents involving other weapon types. Duwe (2000) finds incidents involving assault weapons specifically will receive greater levels of coverage. Duwe (2000) also finds workplace violence receives greater levels of coverage. Taken together, previous research suggests mass murder receives more coverage than other forms of homicide and the most publicised mass killings are those involving a gunman indiscriminately shooting strangers in a public setting. This highlights the excessive coverage devoted to mass public shootings in relation to other forms of crime and homicide.

### ***Newsworthiness of mass public shootings in America***

On 1 August 1966, the Texas Sniper introduced mass public shootings into the cultural lexicon (Duwe, 2004; Schildkraut & Elsass, 2016). A former Marine sharpshooter climbed the clock tower at the University of Texas and proceeded to open fire on students. Over 96 minutes they killed 14 people and injured 32 others before being killed by law enforcement. While this was not the first instance of a mass public shooting, it is noted as a turning point for coverage of the phenomenon (Duwe, 2004). The Texas Sniper story received national coverage, with the *New York Times* publishing 17 articles in the first month, including three front page articles, and multiple articles on the same day – all of which was considered rare at the time (Schildkraut & Elsass, 2016, p. 34). A cover story in *Life* magazine suggested just how rare the incident seemed, noting that during the massacre the perpetrator's actions were “so outrageous, so hard to grasp, that people could not believe it” (Life, 1966, p. 28). This attack figured prominently in public discussion about the rise of crime and violence in the United States, and upset the perception of safety in public places (Jenkins, 1994). Fifty years after this infamous incident, mass public shootings have become engrained in America's collective psyche, and this is largely the result of the excessive media attention devoted to the phenomenon (Schildkraut & Elsass, 2016).

The mass media and mass public shooters are involved in a symbiotic relationship. The news media favours sensational and violent forms of homicide to satiate the public's fascination with violence (Duwe, 2004; Jewkes, 2004). Alternatively, mass public shootings by definition require a public stage before an audience (Krouse & Richardson, 2015; Newman et al., 2004). The news media widens the breadth of the audience and even augments the goals of certain types of perpetrators. For example, “fame-seeking” mass public shooters strive for media attention to fulfil their desire for infamy (Lankford, 2016), and ideological mass shooters depend on mass media coverage to disseminate their ideas and give status to their cause (Krouse & Richardson, 2015; Nacos, 2007; Osborne & Capellan, 2017). This dynamic relationship between mass media and mass public shootings has yielded a growing field of inquiry.

In the aftermath of Columbine, research examining the media presentation of mass public shootings has predominantly focused on school shootings (Chyi & McCombs, 2004; Muschert & Carr, 2006; Muschert, 2009; Hawdon, Oksanen, & Rasanen, 2012; Park, Holody, & Zhang, 2012; Schildkraut & Muschert, 2014). These studies examine the first month of newspaper coverage following a single incident and offer comparisons in coverage of a few incidents. They then consider the salience of particular frames or issues within selected incidents. For example, studies examine the spatial and temporal frames of Columbine (Chyi & McCombs, 2004) and school shootings (Muschert & Carr, 2006; Schildkraut & Muschert, 2014), as well as the framing of race in the Virginia Tech massacre (Park et al., 2012). They find the framing of issues routinely begin with the details of the specific incident, and then shift into the larger societal impact (Chyi & McCombs, 2004; Muschert & Carr, 2006; Muschert, 2009; Schildkraut & Muschert, 2014). The framing of societal issues highlights the institution of prevention strategies including gun policies and mental health approaches (McGinty et al., 2013; Schildkraut & Muschert, 2013; Metzl & MacLeish, 2015). Finally, despite the focus of these studies being on the specific framing of incidents, instead of the overall salience of coverage devoted to the phenomenon, findings suggest Columbine received the greatest levels of coverage in comparison to other school shootings (Muschert & Carr, 2006; Schildkraut & Muschert, 2014).

Schildkraut et al. (2017) expanded the scope of analysis by considering the media coverage of other types of mass public shootings. They utilised more advanced analytic techniques to examine the newsworthiness of the phenomenon at large. Their media distortion analysis of post-Columbine *New York Times* coverage of 90 mass shootings between 2000 and 2012 produced valuable findings in consideration of the characteristics influencing disparities in coverage. They find the characteristics influencing the salience of coverage include higher victim counts and perpetrators who were Asian and other minority racial or ethnic groups (including Indian, Middle Eastern, Native American or bi-racial). Additionally, there is limited support for the findings that an attack where the shooter survives is more newsworthy. While location is a less dominant predictor of salience, non-school locations (e.g. workplace, restaurant, mall, house) did receive less coverage. Interestingly, their study did not find that the rare female perpetrator received greater levels of coverage. This may be attributed to these events being considered a “crisis of masculinity” (Kellner, 2008), and the portrayal of women as victims of male violence rather than being offenders (Boulahanis & Heltsley, 2004).

### **Current study**

The current study utilises Schildkraut et al.’s (2017) work as a model for examining the characteristics influencing the newsworthiness of mass public shootings.<sup>1</sup> This work examines the *New York Times* coverage of mass public shooting incidents occurring within the United States from 1966 to 2016. A media distortion analysis is used to determine the perpetrator and incident characteristics influencing issues of selection and prominence. Gruenewald et al. (2009) coined the term “media distortion analysis”: in reference to the examination of the mediated distortion of crime and homicide in relation to the reality of the problem. A media distortion analysis is distinctly different from research that has used a standard quantitative content analysis to summarise media coverage of mass public shootings when examining the framing of the phenomenon (Chyi & McCombs, 2004; Muschert & Carr, 2006; Schildkraut & Muschert, 2014). In a media distortion analysis, researchers use existing evidence as a starting point, and then compare the media coverage to determine the media distortion of the problem. This work provides a comparison of the reality of the social problem (mass public shooting incidents) and the news-mediated reality (*New York Times*) to identify the most important criteria for news outlets in deciding the newsworthiness of mass public shootings.

This work provides an important contribution to previous research examining the newsworthiness of homicide (Chermak & Gruenewald, 2006; Duwe, 2000) and mass shootings

(Schildkraut et al., 2017) by (1) enhancing the breadth and depth of data used in previous studies of mass public shootings; (2) strengthening the validity of previously identified characteristics known to influence homicide and mass public shooting coverage; and (3) considering previously unexplored characteristics influencing mass public shooting coverage. This study expands the breadth and depth of previous research by providing a 50-year analysis that uses sample data accounts of coverage beyond the first month. The Texas Sniper shooting is noted as a turning point in media coverage of mass public shootings (Duwe, 2004; Schildkraut & Elsass, 2016). Beginning this study sample with this incident contributes a fully comprehensive examination of the phenomenon. Additionally, a larger sample size helps to eliminate the influence of outlier incidents in influencing significant differences in coverage. Findings also indicate attacks where the shooter survives may receive more coverage (Schildkraut et al., 2017), and coverage will often shift over time from the specific incident to the social problem at large (Chyi & McCombs, 2004; Muschert & Carr, 2006; Muschert, 2009; Schildkraut & Muschert, 2014). As a result, it is important to consider the entire media timeline of each incident and not just the first month of coverage. This study includes a number of characteristics known to influence newsworthiness that have not been previously explored in a media distortion analysis of mass public shootings. These include the perpetrators *mental health status* (McGinty et al., 2013; Schildkraut & Muschert, 2013; Metzl & MacLeish, 2015), *relationship with the victim* (Duwe, 2000), *type of firearms used* (Duwe, 2000; Gruenewald et al., 2009), and *ideological motivation* (Nacos, 2007; Osborne & Capellan, 2017). By not accounting for these factors, previous research may have contributed to “omitted variable bias,” which leads to the overestimation or underestimation of predictors that correlate with the missing covariates.

## Research question and hypotheses

This study seeks to answer the question: What mass public shooting characteristics determine the coverage and prominence of coverage in the news media? Drawing from previous research examining the demographic and incident characteristics influencing coverage of crime, homicide, and mass public shootings, it is hypothesised:

(H1) High victim casualties and injuries will increase newsworthiness.

(H2) Younger perpetrators will increase newsworthiness.

Drawing from the Schildkraut et al. (2017) study of mass shootings it is hypothesised:

(H3) Perpetrators that survive will increase newsworthiness.

(H4) Asian perpetrators will increase newsworthiness.

(H5) Middle Eastern perpetrators will increase newsworthiness.

(H6) School shootings will increase newsworthiness.

Finally, this study includes previously unexplored characteristics in a media distortion analysis of mass public shootings. Given previous research examining the phenomenon, it is hypothesised:

(H7) Perpetrators that only shoot strangers will increase newsworthiness.

(H8) Perpetrators with mental illness will increase newsworthiness.

(H9) Incidents using a combination of weapons will increase newsworthiness.

(H10) Ideologically motivated perpetrators will increase newsworthiness.

## Methodology

### *Defining a mass public shooting*

This study defines a mass public shooting as an incident of targeted violence where an offender has killed or attempted to kill four or more victims on a public stage. In line with current research (Capellan, 2015; Krouse & Richardson, 2015; Osborne & Capellan, 2017; Schildkraut et al., 2017), three more elements were added to this definition: (1) it could involve more than one offender at multiple related locations within a 24-hour time period; (2) the main weapon had to be a firearm; and (3) the shooting was not related to state-sponsored or profit-driven criminal activity (e.g. drug trafficking or gang shootings). Defining the mass shooting phenomenon is a source of contentious scholarly debate beyond the scope of this work.<sup>2</sup> Nonetheless, it is important to note that this definition of mass public shootings offers a more expansive conceptualisation by including: (1) incidents that did not meet the FBI's mass killing death-toll criterion of three or more deaths and (2) ideologically motivated (terrorist or extremist violence) incidents.

First, although the number of victims is important, the intention of mass shootings is to kill as many people as possible (Mullen, 2004; Osborne & Capellan, 2017). A death-toll criterion ignores random and systematic factors (e.g. firearm malfunction, EMT responses) that may impact whether or not a perpetrator seeking to become a mass public shooter actually becomes one (Schildkraut & Elsass, 2016). It is important to include anyone attempting to become a mass public shooter, and not just those who succeed. This work relied on the observable implications of the attack itself to collect evidence on whether the offender attempted to kill four or more individuals. In the vast majority of cases, the number of injured victims would provide enough evidence to determine the intent of offender. It is reasonable to assume that someone that killed two and injured three individuals had the intent to kill at least five persons. In a small proportion of cases, however, the number of total victims (fatalities and injured) would not add up to four, despite clearly attempting to kill four or more individuals. For these cases, establishing intent was more challenging, and it was important to systematically consider a number of additional observables to determine intent. For instance, did the offender bring additional weapons and ammunition? Did the offender target more than four people? How many bullets were fired? Consideration was also given to prior statements, confessions, and witness accounts to estimate the intent of the offender. Using these observable implications, this work was able to minimise the chances of including an attack that does not meet the conceptualised definition. For example, in 2010, a perpetrator attacked a Texas Police building using an assault rifle, a shotgun, a semiautomatic handgun, several ammunition magazine, and IEDs. He fired over 100 bullets, but only managed to injure one person. While this offender did not injure four victims, the number of weapons and shots fired would indicate that he attempted to kill more than four victims.

Second, definitions of mass shootings have traditionally excluded terrorist-group sponsored killings (Levin & Madfis, 2009) but have included ideologically motivated mass killers in their definitions (Bowers, Holmes, & Rhom, 2010; Capellan, 2015; Duwe, 2004; Fox & Levin, 1998; Kelly, 2012; Lankford, 2015; Osborne & Capellan, 2017). The difference between the two is the latter develops tactics and methods that are absent of direct outside support, command, or direction from terrorist networks (Capellan, 2015). Therefore, they are not terrorist-group-sponsored killings. Instead, they are sympathetic to extremist ideologies and are motivated to carry out an attack in support of their ideological motivation. For example, the recent Orlando



Nightclub shooting perpetrator was motivated by radical Islamic views. However, his actions were not carried out with any specific support (e.g. funding, weapons) from an ideological organisation (e.g. ISIS, Al-Qaeda) and he was subsequently included in this data.

### ***Incident data***

Similar to previous studies on the subject (Capellan, 2015; Lankford, 2015, 2016; Osborne & Capellan, 2017), this study used an open-source data collection strategy to identify and collect information on mass public shootings that occurred in the United States from 1966 to 2016. To identify all relevant cases, specific search terms (e.g. mass shooting, random shooting, and deranged shooting) were employed in eight different search engines (Lexis-Nexis, Proquest, Yahoo, Google, Copernic, News Library, Westlaw, and Google Scholar). This was cross-referenced with 52 lists of mass shootings and databases provided by peer-review journals, news organisations, school-sponsored reports, blogs, and online encyclopaedias. Although the cross-validation process does not guarantee the universe of cases was captured, it maximises the identification of relevant cases.

The same search engines were used to obtain detailed information on the offenders and incidents. Open-source materials, such as media accounts, legal documents, blogs, videos, and government documents, were used to create files on each incident. For conflicting information, the research protocol instructed to give more weight to news stories published weeks after the shooting occurred, and more weight to more reputable sources of information, such as government, court documents, and national news organisations. This information was then used to piece together the most complete picture possible of the attack. Table 1 provides the operationalisation of perpetrator and incident variables utilising this information.

While many of the variables are self-explanatory, it is important to note that mental illness was coded according to salient mental problems that are known to be experienced including one or more of the following: schizophrenia, depression, anxiety disorders, addictive behaviour, bipolar disorder, obsessive compulsive disorder, and posttraumatic stress disorder. In line with the Extremist Crime Database, extremism refers to those who commit crime in furtherance of their

**Table 1.** Operationalization of variables.

Variable	Description	Operationalization
Gender	Gender of offender	0 = female, 1 = male
Age	Offender's age at the time of the shooting	
Race	Offender's race/ethnicity	0 = White, 1 = Black, 2 = Latino, 3 = Asian, 4 = Middle Eastern
History of mental illness	Offender's history of mental illness	0 = no history, 1 = history of mental illness
Relationship with victims	Offender's relationship with victims	0 = no relationship, 1 = personal/professional/intimate relationship
Ideologically motivated	Mass shooting was ideologically motivated	0 = non-ideological, 1 = ideologically motivated
Type of weapons	Types of firearms employed by offender	0 = handgun, 1 = shotgun, 2 = rifle, 3 = combination of firearms
Location	Type of location where the shooting occurred	0 = business, 1 = government, 2 = school, 3 = religious institution, and 4 = open-space
Conclusion	Conclusion of the mass public shooting	0 = offender was arrested, 1 = offender was killed, 2 = offender committed suicide
Death toll	Number of fatalities (not including the perpetrator)	
Injured victims	Number of injured victims	
Region	Region of the country where the mass shooting occurred	0 = Northeast, 1 = Midwest, 2 = South, 3 = West
Year of shooting	Year in which the mass public shooting occurred	

ideological beliefs (Freilich, Chermak, Belli, Gruenewald, & Parkin, 2014). This study includes mass public shootings committed by offenders who adhered to far-right radicalism (racial, religious, among others), Islamic or Jihad-inspired radicalism, and Black Nationalist ideologies. Finally, when considering race/ethnicity, Schildkraut et al. (2017) found Asian offenders were more likely to receive coverage than Whites. Asian is a broad coding that encompasses very different ethnic groups. Nonetheless, this study modelled the Schildkraut et al. (2017) description of Asian and Middle Eastern perpetrators. Middle Eastern refers to those offenders who either were emigrated from a Middle Eastern country, or had parents that came from a Middle Eastern country.

### News data

Similar to previous research of this nature (Chyi & McCombs, 2004; Muschert & Carr, 2006; Schildkraut & Muschert, 2014; Schildkraut et al., 2017), this study uses the *New York Times* to gauge media coverage of the phenomenon. The *New York Times* was selected because its coverage is regarded as a reliable indicator of issue salience and as representative of national coverage at large (Chermak & Gruenewald, 2006; Schildkraut et al., 2017; Winter & Eyal, 1981). Data was collected using Proquest's *New York Times Historical Database*. The names, keywords, and notable characteristics from each of the mass public shooting incidents previously identified were used to search for articles. The search began with the word "shooting" in articles appearing within the first week of the incident. This was followed by all years using individual keyword searches. This would start with a search of the incident location and/or the commonly referenced title for the event (e.g. Columbine, Sandy Hook), then perpetrator names (e.g. Eric Harris and Dylan Klebold, Adam Lanza), and then victims' names (e.g. Representative Gabrielle Giffords). Only articles included in the print version of the *New York Times* were included in this study.

As noted, this study expands previous mass public shooting research by including all coverage of an incident, not just the first week or month. Previous studies have failed to consider the coverage dedicated to perpetrators that survive to witness their tragedy unfold in the courtroom. They have also failed to consider high-profile incidents that are mentioned as a reference point for the discussion of broader issues, including policies and the phenomenon at large. To account for this longer time period and the divergence in article focus, the collected articles were divided into specific and general articles (Chermak & Gruenewald, 2006). Chermak and Gruenewald (2006) describe specific articles as the "who, what, when, and why of the incident throughout all stages of the justice process" (p. 441). Specific articles include all coverage that described and focused specifically on the mass public shooting incident, perpetrator (including their past history and the court process they endure), and victims. Alternatively, general articles refer to the mention of an incident within the context of larger discourse.

### Analytic strategy

The results are broken down into two sections. The first section provides a descriptive account of incidents and news coverage devoted to mass public shootings: specifically examining the extent and type of news coverage, bivariate relationships between characteristics of mass public shootings and their news coverage, as well as temporal variations in news coverage. Summary statistics, figures, and cross-tabulation tables are employed to conduct this descriptive examination. The second section examines the determinants of two related, but different outcomes: (1) which incidents are selected for presentation in the news and (2) the extent of coverage given to selected mass public shootings. Given the dichotomous nature of the first dependent variable (i.e. yes, no), multivariate logistic regression is employed to estimate the model. For the second question, robust regression is employed, dampening the influence of extreme observations through an iteratively reweighted least squares procedure that weights every observation by the size of its residuals



(Rousseuw & Leroy, 2005).<sup>3</sup> The effects of the variables of interest across seven measures of story salience are modelled: total number of articles, number of specific articles, number of general articles, total number of words, number of specific words, number of general words, and a latent construct based on covariance of these variables. This latent variable was constructed using exploratory factor analysis to understand the covariance structure among these six factors. The results showed all six items loaded onto one factor with an eigenvalue of 5.7. This factor explained 95% of the shared variance.

## Findings

The data collection strategy identified 314 mass public shootings in the United States from 1966 to 2016. Table 2 presents the basic characteristics of these incidents. Most offenders are White (60.6%) males (96.5%) with an average age of 35. A significant proportion of these offenders have either confirmed, or suggested mental illness (43.7%) and 13.5% of these offenders were motivated to commit the shooting by ideological extremism. The most popular firearm is the handgun (54.7%), followed by offenders who employed a combination of different types of firearms (22.6%). Most mass public shootings take places in businesses (e.g. malls, coffee shops, work-places), followed by schools (26.7%), and government agencies (e.g. police stations, court houses, postal offices). A small proportion of these incidents take place in open spaces (e.g. streets, plazas). Most attacks conclude with the perpetrator being arrested (45.9%), and the rest either commit

**Table 2.** Basic characteristics of mass public shootings, 1966–2016.

	<i>N</i>	Percent/average
Male	307	96.5%
Age	318	35 (Avg.)
<i>Race</i>		
White	193	60.6%
Black	67	21.0%
Latino	25	7.8%
Asian	12	3.7%
Middle Eastern	11	3.4%
Confirmed/suggested mental illness	138	43.7%
<i>Relationship</i>		
Strangers	124	38.9%
Relationship with victims	194	61.0%
Ideologically motivated	43	13.5%
<i>Type of weapon(s)</i>		
Handgun	174	54.7%
Shotgun	26	8.1%
Rifle	37	11.6%
Combination	72	22.6%
<i>Location</i>		
Business	116	36.4%
Government	41	12.8%
School	85	26.7%
Religious institution	12	3.7%
Open space	38	7.8%
<i>Conclusion</i>		
Arrested	145	45.9%
Killed	53	16.6%
Suicide	119	37.4%
Death toll	318	3.3 (Avg.)
Injured victims	318	4.2 (Avg.)
<i>Region</i>		
Midwest	56	17.6%
Northeast	35	11.0%
South	129	40.5%
West	98	30.8%

suicide (37.4%) or are killed (16.6%) by police or potential victims during the course the attack. The average mass public shooting results in 3.3 fatalities and 4.2 injured victims. There is a regional effect, with most incidents taking place in the South (40%), followed by the West, Midwest, and Northeast, respectively.

The data collection strategy resulted in a total of 3510 *New York Times* articles, amounting to over 3.5 million words. Approximately 72% of mass public shootings (232 of 314) received coverage. As shown in Table 3, specific articles accounted for 44% of the total articles, offering descriptive details of the incident, offender, and victims. The remainder of the articles (56%) were classified as general stories, since the shootings were referenced in the context of a broader discussion about gun availability, mental health issues, national security, and other policy or societal debates.

As the standard deviations in Table 3 highlight, there is a great deal of variability in the amount of coverage mass public shootings received during this time. For instance, 75% of all shootings received less than 4 articles and less than 4028 words. The disparities between the mean and 75th percentile suggest the means presented in Table 3 are driven by extreme cases. The top 15 most news producing mass public shootings, presented in Table 4, illustrate the great disparities in news coverage. These 15 incidents account for 68% of the total number of articles, 50% of specific articles, 82% of general articles, 71% of total words, 54% of specific words, and 81% of general words written about these massacres. These figures stand in stark contrast with 28% of incidents that do not get national coverage, or the 50% of mass public shootings that get fewer than four stories. Less than one-half of a percent of these incidents drive the information and consequently our understanding of these incidents.

The only case prior to the 1990s in top 15 is the Texas Sniper shooting that introduced the phenomenon. This highlights the rise in media and public fascination with mass public shootings.

**Table 3.** Summary statistics of news coverage for mass public shootings.

Coverage type	Mean	S.D.	Min	Max	Total
Articles	11.1	42	0	503	3,510
<i>Specific</i>	4.9	13	0	127	1,556
<i>General</i>	6.2	30	0	376	1,954
Words	11,239.8	44,206	0	503,269	3,529,318
<i>Specific</i>	4,121.1	12,081	0	113,612	1,294,053
<i>General</i>	7,118.6	33,491.4	0	389,657	2,235,265

**Table 4.** Fifteen most news producing mass public shootings.

Incident	Year	Total articles	Specific articles	General articles	Total words	Specific words	General words
Columbine High School Shooting	1999	503	127	376	503,269	113,612	389,657
Sandy Hook Elementary School Shooting	2012	248	45	203	253,036	44,985	208,051
Colorado Theater Shooting	2012	212	78	134	210,877	61,391	149,486
Tucson Shooting	2011	207	96	111	209,060	92,696	116,364
San Bernardino Shooting	2015	206	16	190	240,723	22,323	218,400
Virginia Tech Shooting	2007	198	83	115	192,959	62,890	130,069
Orlando Night Club Shooting	2016	175	41	134	208,595	50,681	157,914
Charleston Church Shooting	2015	161	50	111	203,336	52,883	150,453
Fort Hood Shooting	2009	159	73	86	162,288	53,418	108,870
Long Island Rail Road Shooting	1993	106	87	19	98,957	69,380	29,577
Westside Middle School Shooting	1998	77	21	56	83,363	25,566	57,797
CIA Headquarter Shooting	1993	46	20	26	41,576	12,893	28,683
Brooklyn Bridge Shooting	1994	40	33	7	31,741	26,309	5,432
Washington Navy Yard Shooting	2013	35	13	22	41,789	14,842	26,947
Texas Tower Shooting	1966	32	9	23	41,364	83,00	33,064

It is one of five school shooting incidents in the top 15. Columbine received the most coverage and Sandy Hook received the second most coverage. Together they make up over 20% of the words devoted to covering mass public shootings. Interestingly, 8 of the 15 cases were ideologically motivated, suggesting a particular fascination with extremist violence.

Table 5 presents a cross tabulation table of media coverage and the extent of coverage by the characteristics of mass public shootings. These tabulations suggest offenders who are male are not only more likely to get covered by the news, but also get more specific and general coverage. This is somewhat surprising since female offenders are so rare – making up approximately 3% of all

**Table 5.** Media coverage by characteristics of mass public shootings.

	Percent covered	Mean no. Articles	Mean no. Specific articles	Mean no. General articles	Mean no. Words	Mean no. Specific words	Mean no. General words
Female	63.3	4.5	2.6	1.9	3613.8	2131.4	1482.4
Male	73.2	11.3	5	6.3	11,464.9	4179.9	7284.9
<i>Age</i>							
20 or less	81.8	16.2	5.6	10.6	16,128.5	4618.8	11,509.6
21–40	75.1	15	6.6	8.3	15,831.5	5,805.8	10,025.9
41–59	66.6	3.63	2.48	1.14	3,276.8	1,934.3	1342.5
Over 60	57.8	3.4	2.4	1	2380.2	1524.3	855.8
<i>Race</i>							
White	74.3	11.4	4.9	6.5	11,408.5	4116.8	7291.6
Black	73.1	4.8	3.4	1.3	4638.1	2837.7	1800.4
Latino	60	1.9	1.1	0.7	1809.9	854.0	955.9
Asian	75	19.5	9.5	10	19,105.0	7139.9	11,965.1
Middle Eastern	90	70.3	21.9	48.4	75,834.2	20,070.4	55,763.8
No known mental illness	72.8	5.5	2.8	2.8	5716.1	2282.5	3433.5
Mental illness	72.4	18.4	7.8	10.5	18,376.2	6496.5	11,879.6
Strangers	81.1	15.5	7.2	8.3	15,866.4	6324.2	9542.1
Relationship with victims	67.5	8.4	3.5	4.8	8300	2721.3	5578.7
Non-ideologically motivated	70.2	7.9	3.5	4.3	7680.9	2777.3	4903.5
Ideologically-motivated	90.5	34.5	14.8	19.7	36,850.1	13,676.3	18,482.0
<i>Type of weapon(s)</i>							
Handgun	68.9	9.3	4.6	4.6	9197.7	3792.0	5405.7
Shotgun	57.6	2.6	1.6	1	2558.8	1267.1	1291.6
Rifle	72.9	7.1	3.8	3.3	7042.3	2982	4060.3
Combination	89.8	22.3	7.8	14.4	23,088.1	6967.4	16,120.7
<i>Location</i>							
Business	61.7	5.6	2.7	2.8	5481.3	2172.4	3308.8
Government	75.7	16	6.1	9.9	16,594.5	5088.2	11,506.3
School	80	16.1	5.9	10.2	15,795	4713.7	11,081.2
Religious institution	91.6	20.7	8.08	12.6	24,156.2	7836.8	16,319.4
Open space	84.2	13.8	8.6	5.2	13,861.8	7581.3	6280.5
<i>Conclusion</i>							
Arrested	69.8	10.5	5.5	4.6	9911.4	4284.7	5626.6
Killed	76.9	12	3.8	8.1	13,740.3	3819.7	9920.57
Suicide	74.7	12.1	4.8	7.2	11,774.9	4052.4	7722.4
<i>Death toll</i>							
3 or less	61.9	3.2	2.2	1	2909.2	1573.4	1335.7
Over 4	95.2	27.3	10.5	16.8	28,319.5	9346.5	18,972.9
<i>Injured victims</i>							
3 or less	65.6	4.6	2.3	2.2	4484.4	1842.4	2642.3
Over 4	84.9	22.8	9.5	13.3	23,256.08	8,174.6	15,081.4
<i>Region</i>							
Midwest	76.7	3.2	2.5	0.76	2664.7	1649.7	1015
Northeast	88.5	16	8.4	7.6	14,885.2	6995.0	7890.2
South	70.5	10.8	4.8	5.9	10,795.7	3979.7	6815.9
West	67.3	15.2	5.4	9.7	15,550	4709.7	10,840.2

mass public shooters. The descriptive statistics also show a negative relationship between age of offender and news coverage. In other words, older offenders are consistently less likely to get news coverage, and when they do, they seem to receive lower levels of specific and general coverage than their younger counterparts. In terms of race, offenders of Middle Eastern decent receive substantially a higher mean number of specific and general coverage. These results do not show differences in percent coverage and mean number of articles between offenders with and without mental illness, nor offenders who attack strangers compared to those offenders that have personal or professional relationships with their victims. The cross tabulation table also suggests there is a relationship between news coverage and ideological extremism. Mass public shootings that were motivated by ideological extremism, on average, are more likely to be presented by the news, and receive a substantially higher number of articles than non-ideological mass public shootings.

The cross tabulations in Table 5 also suggest the shooting location may have an effect on coverage and extent of coverage. The numbers suggest schools, government, religious institutions, and open spaces get higher level of coverage compared to businesses. Interestingly, there is not much difference in the probability and extent of coverage between massacres where the offender was arrested, killed, or committed suicide. However, incidents with higher number of fatalities and injured victims garner substantially more media coverage. There also seems to be a spatial bias, with mass public shootings that occur closer to the headquarters of the *New York Times* (i.e. Northeast) receiving more specific and general coverage than the incidents that occurred in the South, Midwest, and West. It is important to note these patterns are at best suggestive, as they are descriptive in nature and may be driven by multiple factors.

Figure 1 presents the number of mass public shootings, percent of incidents covered, and average number of articles and words written about these massacres during the analysis time. Consistent with previous research (Capellan, 2015), mass public shooting incidents have been on the rise since the mid-1960s, growing exponentially at the turn of the twenty-first century.

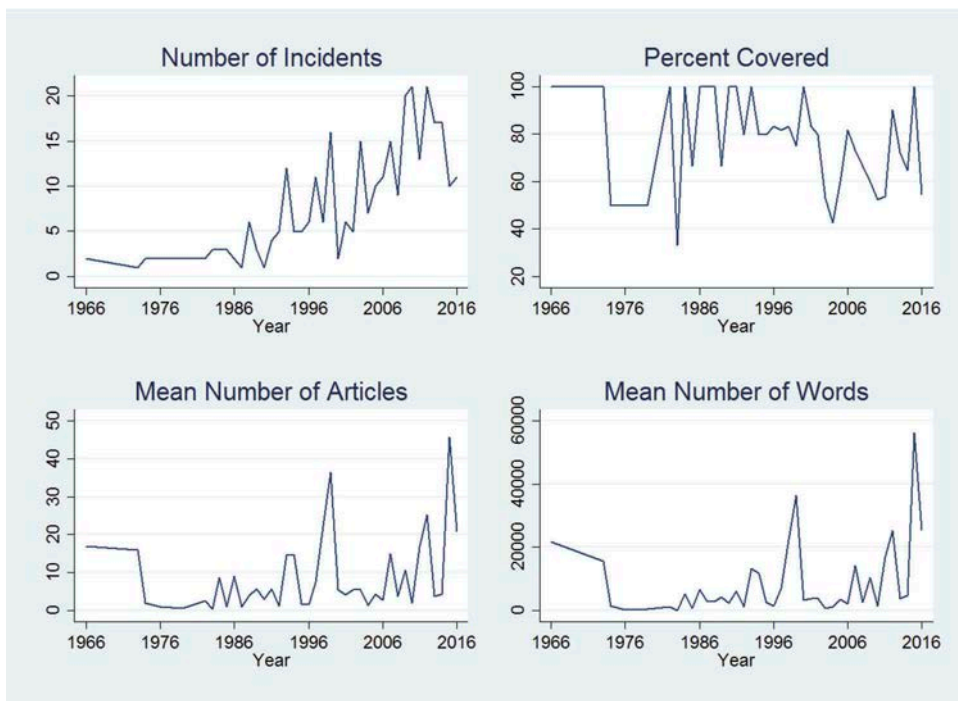


Figure 1. Average of articles and words per year.

Interestingly, news coverage of mass public shootings has not grown commensurate to the size the threat. Figure 1 shows the percent of incidents covered by the *New York Times* is erratic and it may be in a downward trajectory since the year 2000. Paradoxically, while news organisations seem to be less likely to cover mass public shootings, Figure 1 shows they, on average, are writing more articles and words per incident. These patterns suggest a situation where news organisations may be desensitised to the typical mass public shootings, and hence less likely to cover them, yet affording greater levels of coverage to extreme cases. The increase in news salience may be a result of extreme cases that have occurred in the last 10 years.

### Determinants of news coverage

A multivariate logistic regression was used to examine the determinants of whether a mass public shooting is covered by the news. Table 6 presents the results of the logistic analysis and the odds ratios are calculated to simplify interpretation. The odds ratio for any given variable represents the likelihood of being selected for presentation in the news. An odds ratio greater than one represents an increase in the likelihood of coverage, and an odds ratio lower than one represents a decrease in the likelihood of being covered by the news.

**Table 6.** Multivariate logistic regression results.

	Coefficient (B)	Std. error	Odds ratio
Male	1.02	0.90	2.81
Age	−0.02 *	0.01	0.98
Race			
White <sup>a</sup>	−	−	−
Black	0.32	0.44	1.38
Latino	−0.02	0.61	0.98
Asian	0.16	0.98	1.16
Middle Eastern	−0.08	1.31	0.90
Mental illness	−0.54	0.37	0.59
Relationship with victims	−0.51	0.37	0.60
Ideologically motivated	1.44	3.11	4.23
Type of weapon(s)			
Handgun <sup>a</sup>	−	−	−
Shotgun	0.05	0.55	1.02
Rifle	0.23	0.59	1.50
Combination	1.03 *	0.53	2.87
Location			
Business <sup>a</sup>	−	−	−
Government	0.80	0.60	2.13
School	1.23 *	0.49	3.55
Religious institution	1.92	1.31	2.87
Open space	0.59	0.69	1.63
Conclusion			
Arrested <sup>a</sup>	−	−	−
Killed	−0.13	0.53	0.91
Suicide	−0.10	0.41	0.86
Death toll	0.92 ***	0.15	2.44
Injured victims	0.21 **	0.09	1.25
Region			
Northeast <sup>a</sup>	−	−	−
Midwest	−1.08	0.75	0.31
South	−1.18	0.68	0.33
West	−1.64 **	0.70	0.19
Year	0.001		
Constant	0.40	0.02	0.99
Pseudo- <i>r</i> <sup>2</sup>	0.36		
Chi-square	118.80 ***		
N	301		

\**p* < .05, \*\**p* < .01, \*\*\**p* < .001. <sup>a</sup>Variable attributes are compared against this attribute.

The multivariate logistic regression results indicate only a handful of variables influence the likelihood of being selected for coverage. Net of other individual and event characteristics, the offender's age is a significant predictor of news coverage. As suggested by the cross tabulations in [Table 5](#), a one-year increase in the offenders' age is associated, on average, with a 2% decrease in the odds of being selected for coverage. The firearms employed by offenders also significantly predict news coverage. All else being equal, offenders who employ a combination of firearms are 187% as likely to be presented in the news than those who committed the attacks with handguns. Mass public shootings that occurred in school settings were also significantly more likely to be selected for coverage. School massacres were 255% as likely to be selected for coverage as incidents that occurred in businesses settings. Consistent with previous research, the number of fatalities and injured victims are an important predictor of news coverage. This is particularly the case for the number of fatalities. The odds of a mass public shooting being covered by the news increases by 144% for every additional fatality. Similarly, for every additional injured victim, the odds of getting news coverage increases by 25%. The analysis also provides better insights into a spatial bias of media coverage. The results show that only mass public shootings that occurred in the West were significantly less likely to be covered by the news. Net of individual and event characteristics, the odds of being covered by the news decreased by 81% compared to events that occurred in the Northeast.

### ***Determinants of news salience***

In addition to the odds of being presented in the news, the determinants of the extent of coverage given to incidents are examined. [Table 7](#) presents the robust regression results.<sup>4</sup> Overall, the results are fairly consistent with the descriptive and logistic analyses. Findings suggest, all else being equal, incidents with higher number of fatalities and injured victims get significantly more news coverage (5/5 models). Similarly, net of offender and event characteristics, mass public shooting attacks motivated by ideological extremism are presented more prominently by news organisations (5/5 models). Interestingly, net of ideological motivation and everything else, offenders of Middle Eastern decent get significantly more news coverage than White offenders (5/5 models). Findings indicate mixed support for the age of offender, suggesting older offenders get significantly less news coverage than their younger counterparts (3/5 models).

The results suggest the location of the attack significantly influences the extent of news coverage. Mass public shootings that occur in government institutions (4/5 models), schools (3/5 models), religious places (4/5 models), and open spaces (3/5 models) get significantly higher coverage compared to massacres that occurred in business settings. The spatial bias in news coverage also remains a very robust finding. All else being equal, mass public shootings that occur in the West (5/5 models) and the South (4/5 models) get significantly less news coverage than those that occur in the Northeast. The idea that mass public shootings are getting more coverage over time found mix support. Only two models found recent attacks get significantly more coverage.

### **Discussion**

This study contributes to the growing body of research on media and mass public shootings and encapsulates the entirety of the social problem in a way that has not been previously explored. This research definitively finds what previous studies have suggested (Muschert & Carr, 2006; Schildkraut & Muschert, 2014): Columbine is the most newsworthy mass public shooting in the 50 years since the Texas Sniper generated extensive coverage of the phenomenon. Overall, the majority of mass public shooting incidents receive little or no coverage, and less than 1% of incidents drive public knowledge. Fifteen incidents account for 71% of the over 3.5 million words



**Table 7.** Robust regression results.

	Total no. articles	Total no. specific articles	Total no. words	Total no. specific words	Latent variable
	Model 1	Model 2	Model 3	Model 4	Model 5
Male	0.76	1.41 **	831.33	266.73	0.02
Age	-0.02 *	-0.02 **	-18.90 **	-5.15	-0.0005
Race					
White <sup>a</sup>	—	—	—	—	—
Black	-0.16	0.23	-228.31	-221.04	-0.003
Latino	-0.09	0.17	-62.96	-35.45	-0.0006
Asian	0.55	0.64	570.28	139.44	0.0173
Middle Eastern	0.47 ***	1.11 *	30,175.52 ***	6597.42 ***	0.5780 ***
Mental illness	0.05	0.17	165.60	35.25	0.004
Relationship with victims	-0.19	0.31	-116.20	-210.48	-0.003
Ideologically motivated	0.75 **	1.49 ***	1649.78 ***	404.51 *	0.029 ***
Type of weapon(s)					
Handgun <sup>a</sup>	—	—	—	—	—
Shotgun	0.58	0.45	449.36	260.25	0.013
Rifle	0.39	0.07	225.16	86.86	0.011
Combination	0.37	0.15	347.64	104.47	0.014 *
Location					
Business <sup>a</sup>	—	—	—	—	—
Government	0.45	1.16 ***	1079.72 ***	478.50 **	0.020 **
School	0.35	0.76 **	467.99	377.97 *	0.011 *
Religious ins.	1.46 **	1.34 **	1200.23 *	552.93	0.036 **
Open space	0.59	1.01 ***	754.99 *	384.00	0.017 *
Conclusion					
Arrested <sup>a</sup>	—	—	—	—	—
Killed	-0.35	-0.14	-316.10	-199.43	-0.009
Suicide	0.11	0.11	228.99	217.24	0.003
Death toll	0.48 ***	0.59 ***	543.45 ***	333.48 ***	0.012 ***
Injured victims	0.03 *	0.16 ***	78.80 ***	91.72 ***	0.001 ***
Region					
Northeast <sup>a</sup>	—	—	—	—	—
Midwest	-0.42	-0.46	-414.96	-247.27	-0.006
South	-0.99 ***	-0.77 **	-840.06 **	-596.60 *	-0.019 *
West	-0.84 **	-0.79 **	-472.52	-435.06 *	0.015 *
Year	0.01	0.03 **	23.58 **	7.80	0.000
Constant	-60.78 ***	-60.78 ***	-47,684. ***	-15,695. ***	-1.090 ***
<i>n</i>	291	291	291	291	291

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

published in the *New York Times*. These high-profile cases are more likely to influence public understanding of mass public shootings and generate social and policy change.

Specifically, it was hypothesised that characteristics influencing converge and prominence of coverage will be attributed to (1) higher casualties and injuries; (2) younger perpetrators; (3) perpetrators that survive; (4) Asian perpetrators; (5) Middle Eastern perpetrators; (6) school shootings; (7) perpetrator-victim strangers; (8) mentally ill perpetrators; (9) a combination of weapons; and (10) ideologically motivated perpetrators. A discussion of the mixed findings identified across these hypotheses illustrates the media distortion of mass public shootings and subsequent public perceptions of the phenomenon.

This research is consistent with the general body of research examining crime, homicide, and mass public shootings finding the severity of incidents influences levels of coverage. Mass public shootings with higher victim casualties and injuries are more likely to receive coverage and salient levels of coverage. The issue with this is risk of victimisation is often conveyed in the news media through victim counts that omit national data which could ground incidents in a broader context (Schildkraut, 2016). Highlighting incidents with the greatest number of victims may be

contributing to previous findings of disproportionate fear and anxiety surrounding potential victimisation (Fox & DeLateur, 2014; Muschert, 2007).

Similar to previous research in crime and homicide, findings indicate younger perpetrators receive more coverage and salient levels of articles, specific articles, and words. This is an interesting finding within the context of mass public shootings when considering Schildkraut et al. (2017) did not find any significant difference in coverage based on age. This again illustrates the media distortion of mass public shootings when considering the finding that the average perpetrator is 35 years old. The excessive coverage devoted to younger perpetrators suggests to the public that this is a youth-oriented problem, when the reality is perpetrator age range is diverse. This contributes to the perception of school shooting problem. For example, the coverage devoted to Columbine resulted in a fear of alienated youth (Frymer, 2009) and the juvenile superpredator (Muschert, 2007), when the reality is the bullied youth paradigm is largely a misconception, and the perception of the alienated youth as a potential mass shooter further stigmatises already marginalised juveniles (Fox & DeLateur, 2014; Schildkraut & Elsass, 2016).

Although it was not hypothesised, it is important to note, this study was consistent with the Schildkraut et al.'s (2017) finding that female offenders are not more likely to receive any coverage or salient levels of coverage. Despite the rarity of incidents, this is presumably because female offenders do not fit with normalised constructions of crime and criminality. This finding is also tentative, because the number of women is so small that it does not allow for enough variability to make a definitive statement about that relationship. The descriptive statistics show that men, on average, receive more coverage, but once everything is accounted for in the multivariate model, those differences disappear in all but one model. There is simply not enough variation in the women to make a definitive statement, and as such, it should be interpreted as a non-finding.

Schildkraut et al. (2017) identified some support for increased newsworthiness based on shooters surviving. This study included coverage lasting beyond the first month, anticipating this would strengthen the validity of results. Surprisingly, this research did not find any significant difference in coverage between perpetrators that were killed or committed suicide compared to those that survived (i.e. arrested). One possibility for this disparity is the operationalisation in this study is more nuanced, as it accounts for different types of scenarios (0 = arrested, 1 = killed, 2 = suicide). Given that the Schildkraut et al.'s (2017) findings were not strong, dividing their variable "dead" into killed and suicide may have further reduced the strength of the results. A second possibility is that how a mass public shooting ends (i.e. whether offenders live or die) does not significantly affect news coverage once all relevant factors are accounted for. This study employs a number of relevant variables that were not specified in the Schildkraut et al. (2017) models. To better understand the cause of this disparity, all regression models were specified using the Schildkraut et al.'s (2017) shooter conclusion operationalisation (0 = survived, 1 = died). Net of everything else, the results showed no significant differences in the likelihood and extent of coverage between offenders who live and survive the attack.

Results from this analysis also did not support the hypothesis based on Schildkraut et al.'s (2017) finding that Asian perpetrators increase newsworthiness. Schildkraut et al. (2017) suggest this finding is predominantly based on the excessive coverage devoted to the Virginia Tech shooting. The larger data set used in this research expanded the sample size of Asian perpetrators from 5 to 12. This likely dampened the results of their finding given another high profile shooting perpetrated by an Asian did not occur before 2000 or after 2012. This illustrates how much one high-profile incident can influence the results of a media distortion analysis and reinforces the need for studies utilising larger sample sizes.

This research also separated the Middle Eastern perpetrators from the "other" racial or ethnic category (including Indian, Middle Eastern, Native American, or bi-racial) used by Schildkraut et al. (2017) who found this influences newsworthiness. This research finds Middle Eastern perpetrators are one of the most salient predictors of newsworthiness. This suggests Middle Eastern perpetrators were driving the findings in Schildkraut et al.'s (2017) "other" category.

This finding highlights the media distortion of the phenomenon given the small number of Middle Eastern perpetrators (12) in relation to the much larger number of White perpetrators (193). Although previous research in homicide demographic characteristics finds Black and Hispanic perpetrators are disproportionately covered, this is the first study to specifically find Middle Eastern perpetrators are overrepresented as perpetrators in homicide. Their significance is presumably the result of contemporary cultural typifications of normalised crime in relation to mass public shootings. Middle Eastern perpetrators fit with other racial minorities that receive negative portrayals associated with stereotypes about the nature of crime and mass public shootings. This is then compounded with the forthcoming discussion concerning ideological motivation.

Next it was hypothesised school shootings would increase newsworthiness. Findings indicate a school shooting did influence the decision to give an incident any coverage. However, the salience of coverage is distributed amongst schools, government buildings, religious institutions, and open spaces. While this finding provides mixed results for the newsworthiness of school shootings, it again highlights the media distortion of the phenomenon. This study finds workplace shootings are the most common incident type but they are the least likely to receive salient amounts of coverage. As a result, public fears may be misguided and subsequent policies may be focusing attention on the wrong areas for security measures. For example, while schools and government buildings have routinely utilised metal detectors (with mixed support for effectiveness), similar strategies have not been utilised in the majority of workplace settings.

This study also considered previously unexplored characteristics in a media distortion analysis of mass public shootings. Duwe (2000) found incidents involving perpetrators with no relationship to the victims will receive more coverage. Interestingly, this study finds the perpetrator–victim relationship had no significant influence on newsworthiness. Additionally, this study finds the majority of perpetrators had a relationship with at least some of their victims. This suggests mass public shooting victims are not as random as previously assumed. As a result, more prevention methods should focus on identifying the warning signs of potential perpetrators. For instance, since workplace shooting incidents are the most common, Human Resource offices should dedicate further training to employees in this area. Additionally, media outlets should frame more prevention strategies in this context, instead of the highly contentious large-scale policy approaches often covered including gun control and mental health.

Media framing and mass public shooting research has suggested coverage often turns to mental health problems in society at large. However, this study did not find perpetrators with mental illness significantly influenced newsworthiness. This non-finding makes sense when considering news organisations do not have information readily available on the offender's mental health status the moment the attack occurs. On the salience of coverage, this finding runs contrary to the emphasis placed on mental health issues in the aftermath of these massacres and the descriptive statistics displayed in Table 5, which shows offenders with mental illness received a higher mean number of specific and general articles. The multivariate results, however, account for individual- and event-level characteristics known to influence coverage. It is not that the mental health status of these offenders are not prominently discussed in news reports, rather, it is that the extent of coverage is primarily a function of other previously discussed characteristics (e.g. victim counts, age, race, etc.). Once these characteristics are controlled, mental illness no longer exerts significant influence on the news coverage.

Media framing and mass public shooting research has also suggested that coverage most commonly references guns when considering causal social factors. This study indicates limited support for the type of weapon influencing coverage, finding a combination of weapons is more likely to result in an incident receiving any coverage. While previous research has found gun violence is more newsworthy than incidents using other types of weapons, this research finds a variety of guns is more newsworthy when only guns are considered. This suggests that as the prevalence of mass shootings becomes commonplace in the American mindset, news outlets are

drawn towards the most sensational cases involving individuals armed with a number of firearms as a means for incurring the largest number of injuries.

Finally, perhaps the most valuable finding from this analysis is that ideologically motivated perpetrators are one of the greatest predictors of newsworthiness. Eight of the top 15 cases were ideologically motivated. This emphasises the public fascination with terrorism in the aftermath of 9/11 and the growing concern about lone-wolf terrorism. The finding that Middle Eastern perpetrators are more newsworthy also suggests the overrepresentation of jihad-inspired mass public shootings in media coverage of the phenomenon. Although the intensity of media coverage matches the growth in instances of ideologically motivated mass public shootings, the overwhelming majority of lone-wolf attacks are perpetrated by far-right extremists (Capellan, 2015). These findings suggest potential public bias in the conceptualisation of terrorism that could result in stigmatisation and Islamophobia.

## Limitations and future research

This in-depth media distortion analysis provides the most comprehensive examination of media coverage of mass public shootings to date. This study accounted for previous limitations in research by including a 50-year sample of incidents and all coverage of each incident. This minimised the influence of outliers and considered the influence of court coverage and general references to incidents impacting society at large. Despite this, it is important to acknowledge certain limitations inherent to this type of research design, and to provide guidance for future research investigating the phenomenon.

First, this study is limited by the decision to focus on a single national newspaper. Findings suggest spatial bias, with mass public shootings occurring closer to the headquarters of the *New York Times* (i.e. Northeast) receiving more coverage than incidents across the country. It is possible these incidents were more prominently covered in more localised news outlets and this could result in different policy responses at the local level. However, this does not impact the national understanding and response to the phenomenon, which is what this research is concerned with. Nonetheless, future research should consider utilising this analysis strategy using different national and local news coverage, to ensure the reliability of the current study, and provide comparisons of results. For example, this work finds perpetrators that survive did not impact the newsworthiness. However, more localised news outlets may be more concerned with the details of a lengthy trial process.

Second, mass public shooting research is largely dependent on open-source data, and this contributes to a variety of data collection issues. For example, while the data collection strategy aimed to include all mass public shootings that met the definitional criteria, it is impossible to know for certain if incidents were not captured. Open-source data collection strategies tend to be biased against older events (time-period effect), and events that receive less publicity (publicity effect). In addition to this, open-source data collection strategies are susceptible to reliability problems given conflicting reports about the same incident. Future research should evaluate and detail strategies for capturing mass public shootings, similar to methods detailed in terrorism (Freilich et al., 2014) and school shooting research (Elsass, Schildkraut, & Stafford, 2016).

In particular, one key strategy for identifying incidents and coverage in search engines is using the name of the shooter. Recently, the “Don’t Name Them” movement and the “No Notoriety” campaign have suggested the exclusion of perpetrators names in media coverage of the phenomenon to avoid contributing to fame-seeking copy-cat crimes (Lankford, 2016). If media outlets have reduced the usage of names, future studies need to consider alternative keywords that can be used to identify incidents and coverage in open-source databases. Additionally, future research should examine the divergences in using the perpetrator name in media coverage by their characteristics. For example, this work finds younger and ideological perpetrators receive more coverage. It would be interesting to compare the usage of younger and ideological perpetrator names in media coverage, as another means for assessing the glorification of certain types of mass shooters.

Third, this study aimed to expand upon previous research by including all coverage of every incident, not just the first week or month. Not having a temporal constraint on the follow-up period in the search for articles could potentially bias the results against more recent incidents. For example, the Texas Sniper incident had 50 years to receive coverage. Despite this, it was the only incident in the top 15 that occurred before the 1990s. However, findings suggest that coverage per event is increasing over time, not decreasing. If these methods were biased against more recent articles, then they would be decreasing. Additionally, this research utilised different measures of coverage including specific and general words and articles. Using different measures of variability helps to ensure unbiased results. Nonetheless, future research may want to consider analytic strategies for preventing bias against more recent incidents.

## Conclusion

A media distortion analysis compares the reality of a social problem against the mediated reality to determine the media distortion of a phenomenon. The current study finds the most common mass public shooting characteristics include perpetrators that are middle-aged, white, and non-ideological, as well as incidents that have relatively low victim rates occur most commonly in the workplace and only involve handguns. Despite this, the media highlights mass public shootings involving perpetrators that are younger, Middle Eastern, and ideological, as well as incidents involving higher victim rates, in non-workplace settings, with a combination of weapons. As a result, this work finds the media is distorting the reality of mass public shootings.

These findings have important implications for public perceptions and policy approaches to the phenomenon. Sensational media coverage may be contributing to a moral panic surrounding mass public shootings. Burns and Crawford (1999) found isolated school shootings (primarily Columbine) that were especially violent received extensive coverage that contributed to a disproportionate public fear of victimisation in a school setting (i.e. a moral panic). Burns and Crawford's (1999) findings are reinforced in this research with results identifying the extensive coverage devoted to Columbine and school-related characteristics (e.g. younger, higher victim-rates, non-workplace, combination of weapons). Importantly, this research also finds another trend in sensationalised mass public shooting characteristics that could be influencing a new type of moral panic surrounding the phenomenon. The extensive coverage devoted to Middle-Eastern and ideologically motivated perpetrators may be contributing to a disproportionate fear of jihad-inspired mass public shootings.

The implications of this potential moral panic may be impacting policy responses to the phenomenon. For example, Burns and Crawford (1999) found the media-generated moral panic surrounding school shootings contributed to excessively punitive actions directed towards juveniles. Findings from this study suggest disproportionate media coverage of jihad-inspired mass public shootings is, at least in part, influencing the exorbitant amount of funding dedicated to policies for preventing terrorism in the United States. The impact of this disproportionate characteristic coverage on legislative action is twofold. First, it may be directing resources towards policies that are unnecessary, excessive, ineffective, or even counterproductive in terms of mitigating the risk. Second, the resulting "symbolic legislation" (Kleck, 2009) that targets these highly publicised rare incidents is subsequently failing to address the larger mass public shooting problem: perpetrated by predominantly white, middle-aged offenders, using handguns in a workplace settings.

## Notes

1. This research used a similar data collection strategy as Schildkraut et al. (2017), but did not use the same data set.
2. See Schildkraut and Elsass (2016) for an in-depth discussion of the debate over defining mass shootings.
3. Given the nature of the dependent variables (i.e. ratio level), ordinary least squares regression would normally be sufficient for the analysis. However, the distribution of the dependent variable (news salience) is severely

skewed, which can threaten the validity of the estimates by dramatically changing the magnitude of regression coefficients.

4. The iterations for models with the number of general articles and words would not converge and therefore were omitted from the results. This problem is the result of the large share of general articles/words written about extreme cases. This large proportion affects weight assignments and the coverage's of Huber iterations.

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