

NEWS MEDIA COVERAGE OF GUN VIOLENCE: A Systematic Review



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Authored by Chad Topaz, Ph.D. and Jude Higdon, Ed.D.

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Executive Summary

We provide a targeted review of research on gun violence and the news media in the United States. Starting with an initial search yielding 923 potential sources, we apply the PRISMA protocol to refine our focus to 80 peer-reviewed, empirical studies published since the year 2000. We identify several consensus findings. First, news media coverage of shooting incidents tends to be greater for incidents that: involve numerous victims, particularly when they are women and/or children; occur in schools, religious sites, or government buildings; or are carried out by perpetrators who are young, who are ideologically driven, and/or who show signs of severe mental illness. Second, race plays a significant role in shaping narrative frames, often protecting white individuals, regardless of whether they are victim or perpetrator. Third, media narratives have displayed dynamic evolution over the course of decades, transitioning from framing gun violence as an isolated, episodic issue to addressing it as a broader societal concern. Finally, news coverage of gun violence negatively impacts audience emotions, especially by elevating fear, and is associated with increased gun background checks, suggestive of more gun purchasing. However, the tangible influence of news coverage on inciting further violence remains contested. Limitations of our review include its narrow scope and exclusion of social media, an important aspect of contemporary discourse. We identify a need for more inclusive demographic identity representation in the literature and, finally, we discuss the intricacies of three interrelated elements: the occurrence of different types of gun violence, the level of news media attention they receive, and the extent of academic research investigating these media portrayals.

Introduction

The scope of gun violence in the United States remains shocking if, at this point, not surprising. In 2021, the country recorded its highest total number of gun-related fatalities on record, with the Centers for Disease Control and Prevention (CDC) reporting 48,830 deaths. Of these, suicides accounted for 54%, homicides accounted for 43%, and less frequent types — accidental shootings, law enforcement-involved incidents, or cases with undetermined circumstances — comprised the remainder. The gun death rate reached 14.6 per 100,000 people, with gun suicides at 7.5 per 100,000 and gun homicides at 6.7 per 100,000. It is worthwhile to put these rates in historical context: they are the highest recorded since the early-to-mid 1990s. Adopting a complementary perspective, we can consider the extent to which firearms contribute to deaths as compared to other causes. Guns were involved in 81% of all murders and 55% of all suicides, underscoring their substantial impact (Gramlich, 2023).

Beyond the overall prevalence of gun-related deaths, a look at victim demographics reveals stark disparities. On one hand, white men comprise 71% of firearm suicide victims (Everytown for Gun Safety, 2023a). On the other hand, Black Americans — particularly Black men, who make up around 6% of the U.S. population — represent a disproportionate 52% of all gun homicide victims (Giffords Law Center, 2023). As for the role of age, firearms have become the leading cause of death for American children and teens (Everytown for Gun Safety, 2023a). There is geographic variation as well. In 2021, Mississippi, Louisiana, New Mexico, Alabama, and Wyoming reported the highest rates of gun-related deaths. Massachusetts, Hawaii, New Jersey, New York, and Rhode Island recorded the lowest rates. Mississippi's rate was a full ten times that of Massachusetts (Gramlich, 2023).

Gun violence constitutes a significant public health burden even when it does not result in death. In 2019, approximately 80,000 people sustained nonfatal gun injuries — double the number of gun fatalities (United States Government Accountability Office, 2021). These injuries predominantly stemmed from firearm-related assaults, accounting for over 70% of all medically treated firearm injuries, while unintentional firearm injuries made up nearly 20% (Centers for Disease Control and Prevention, 2023). As for racial and ethnic disparities, they are evident for gun injuries just as they are for fatalities. Black individuals experience the highest rate of nonfatal gun injuries, at 113.8 per 100,000 people, which is more than 10 times the rate for white people. The rate for Latine individuals is double the rate for white people (Everytown for Gun Safety, 2021). A primary contributor to this disproportionate impact is community violence, defined as violence between unrelated individuals who may or may not know each other, generally taking place outside the home. Community violence tends to occur in specific locations, often in communities impacted by structural racism and longstanding disinvestment, and it is networked,

involving relatively small numbers of socially connected individuals (Health Alliance for Violence Intervention, 2023).

On the world stage, the United States compares poorly. In 2019, its gun fatality rate was the largest among high socio-demographic index countries, and its gun suicide rate was the highest of any country (Masters, 2022). One finds disparate impacts here as well. For instance, women in the US are 28 times more likely to be killed with a gun than women in other high-income countries (Everytown for Gun Safety, 2023a).

Beyond lives lost and people injured, the tangible impacts of gun violence in the United States are staggering. Gun violence inflicts an immense economic burden, costing \$557 billion annually, or about 2.6% of the gross domestic product (Everytown for Gun Safety, 2022a). At an individual level, survivors of firearm injuries often face increased alcohol and drug use, higher unemployment, and lower physical and mental health scores, with nearly half exhibiting probable PTSD (Vella et al, 2020). Half of gun violence incidents occur in residential settings, impacting not only the victims but also those in close proximity, including children, whose cognitive development and school performance are notably hindered (Sharkey et al, 2012). In the workplace, healthcare and educational professionals frequently encounter the ramifications of gun violence. Moreover, survivors' needs are complex, encompassing mental health services, legal and financial assistance, and support for medical and funeral expenses (Everytown for Gun Safety, 2022b). In short, gun violence has multilayered effects, ranging from macroeconomic repercussions to profound personal and community distress.

How does American society process gun violence? News media plays a pivotal role. News media include traditional newspaper, television, and radio outlets, as well as online sources such as news websites, apps, and podcasts. Americans access these platforms vigorously. One national poll has shown that the percentage of Americans who consume the news more often than "never" has been over 90% for at least the past seven years, with the proportion who consume it "all of the time," "most of the time," or "some of the time" over 70% during the same time period (Pew Research, 2022). The content and presentation of news significantly influence public perception and opinion. *Agenda-setting theory* posits that the media's focus on certain topics elevates them in public discourse and concern. Topics heavily covered by the media become central to public debates and actions, while those receiving less attention are marginalized in public opinion (McCombs, 2005).

In light of the severe impact of the U.S. gun violence epidemic and the public's robust consumption of news media, it is vital to examine patterns of media coverage of gun violence, including how this coverage shapes individual and societal perspectives and responses. To that end, we present a systematic review of news media coverage of gun violence. To our knowledge, this is the first systematic review conducted on this topic. We address the following three research

questions:

1. Incident focus: Which incidents of gun violence does the news media select to report on, and what factors influence this selection?
2. Narrative approach: How does the news media cover incidents of gun violence in terms of linguistic styles and narrative frames, and what factors influence this coverage?
3. Impact: What effect does the news media's coverage of incidents of gun violence have on individuals and society?

In the literature we review, several consensus findings emerge. First, regarding incident focus, news media coverage of shooting incidents tends to be greater for incidents that: involve numerous victims, particularly when they are women and/or children; occur in schools, religious sites, or government buildings; or are carried out by perpetrators who are young, who are ideologically driven, and/or who show signs of severe mental illness. Second, regarding narrative approach, race plays a significant role in shaping narrative frames, often protecting white individuals, regardless of whether they are victim or perpetrator. Additionally, media narratives have displayed dynamic evolution over the course of decades, transitioning from framing gun violence as an isolated, episodic issue to addressing it as a broader societal concern. Finally, regarding impact, news coverage seems to negatively affect audience emotions, especially by elevating fear. Moreover, news coverage of gun violence is positively associated with number of gun purchase background checks, suggesting more vigorous gun purchasing. However, the tangible influence of news coverage on inciting further violence remains contested.

The rest of this paper is organized as follows. Methodology, details the approach of our pre-registered study, which is based on a review protocol called PRISMA. Beginning with a broad search encompassing 923 potential sources, we systematically narrow our attention to 77 published, peer-reviewed, empirical studies. Research Landscape reports on the scope of these studies, including their foci, methodologies, and quality. Then, we synthesize results related to our three research questions in Incident Focus, Narrative Approach, and Individual and Societal Impact. Our goal is not to summarize every result found in the literature; rather, we identify top-line results as well as common themes, convergent findings, and areas of contradiction. Finally, Conclusion provides a brief recapitulation of results, as well as implications and directions for future work.

Methodology

Our approach is derived from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Moher et al, 2009). PRISMA is a set of guidelines designed to promote transparency and consistency in reporting systematic reviews and meta-analyses. Initially developed for the health and medical sciences — where it plays a critical role in shaping clinical practice and policy — PRISMA has now been adopted by a broader set of research disciplines, endorsed by over 200 academic journals, and cited in over 60,000 studies (Page et al, 2021). For our present work, the most important aspect of PRISMA is the rigorous study selection process that guides which studies to include in our review. By using the PRISMA framework, we aim to ensure the clarity, rigor, and reproducibility of our research. To further augment transparency and replicability, we have pre-registered our review with the Open Science Framework Registries (Topaz, 2023b).

Our review diverges from the traditional data extraction and statistical meta-analysis approaches often employed in the health and medical sciences, the disciplines where systematic reviews are most common. Our goals are to conduct a brief quality assessment of the literature and then, more centrally, summarize and synthesize results relevant to our research questions. Overall, our review acknowledges the diverse landscape of methodologies that have been brought to bear on news media coverage of gun violence, and the less-regimented nature of reviews in interdisciplinary fields such as communications. Regardless, by pre-registering our study and adhering to systematic review best practices, we aim to ensure that our synthesis of literature is comprehensive, methodologically sound, and reflective of current research practices.

The stages of our review are as follows:

- **Identification.** We conducted a search of the Web of Science and Google Scholar databases. These searches used a combination of key terms and Boolean operators to capture the breadth of research pertinent to our inquiry.
- **Screening.** The initial screening considered the titles and abstracts from the two aforementioned databases. We discarded publications not meeting our predefined criteria. The next level of screening scrutinized the full text of the studies remaining from the first screening. This second screening ensured that only studies closely aligned with our research objectives were deemed eligible for inclusion in this review.
- **Extraction.** Our extraction phase did not involve traditional data extraction, as would be done in a meta-analysis. Instead, we summarized data sources — including specific media sources and shooting incidents studied — as well as analytical approaches and key findings, emphasizing the contribution of each study to our research questions.

- Quality appraisal. We evaluated the quality and potential bias of the included studies using an instrument of Hong et al (2018) called the Mixed Methods Appraisal Tool (MMAT).
- Synthesis. We synthesized the evidence thematically, focusing on patterns and themes concerning the news media's portrayal of gun violence and its wider impacts.

Identification

We conducted our searches using the Web of Science and Google Scholar databases, chosen for their expansive coverage of academic literature and access to peer-reviewed research. In Web of Science, we employed a topic search — which scours titles, abstracts, and keywords — to ensure we captured reports that discuss media portrayal and narratives about firearms. The search encompassed terms related to “news or media” and “portrayal or narrative or coverage or discourse” in conjunction with “gun or shoot or firearm.” We opted to search not just the Web of Science core collections, but all resources indexed in the database to ensure breadth. Finally, we restricted search results to publications dating from the year 2000 onwards in order to ensure a contemporary understanding of the issues of interest. Our search yielded 712 reports.

In our Google Scholar search, we implemented a strategy similar to the one we used for Web of Science, applying advanced search functions to include the same terms related to the media portrayal of firearms. We set the date range identically, starting from the year 2000. We excluded sources that are patents or citations and we were cognizant that Google Scholar includes grey literature — theses and dissertations, white papers, technical reports, and so forth — which we screened out during the subsequent phase. The initial search generated an estimated 1.1 million citations sorted by relevance, which is not surprising given the broad net cast by Google searches in general. In line with common practice, and to ensure a manageable review process, we concentrated our efforts on the first 200 citations as provided by Google Scholar.

Presently, we will discuss our screening process. During the second stage of screening, when we read reports in detail, we remained open to finding referenced reports that would likely meet our inclusion criteria. This *ascendancy method* of research helped ensure that no significant sources were missed. Through ascendancy, we supplemented our initial search results with 11 additional sources that appeared to be pertinent to our research question. In total, the initial search efforts from both databases and ascendancy resulted in 923 sources. See Figure 1 for a visual summary of our identification and screening processes.

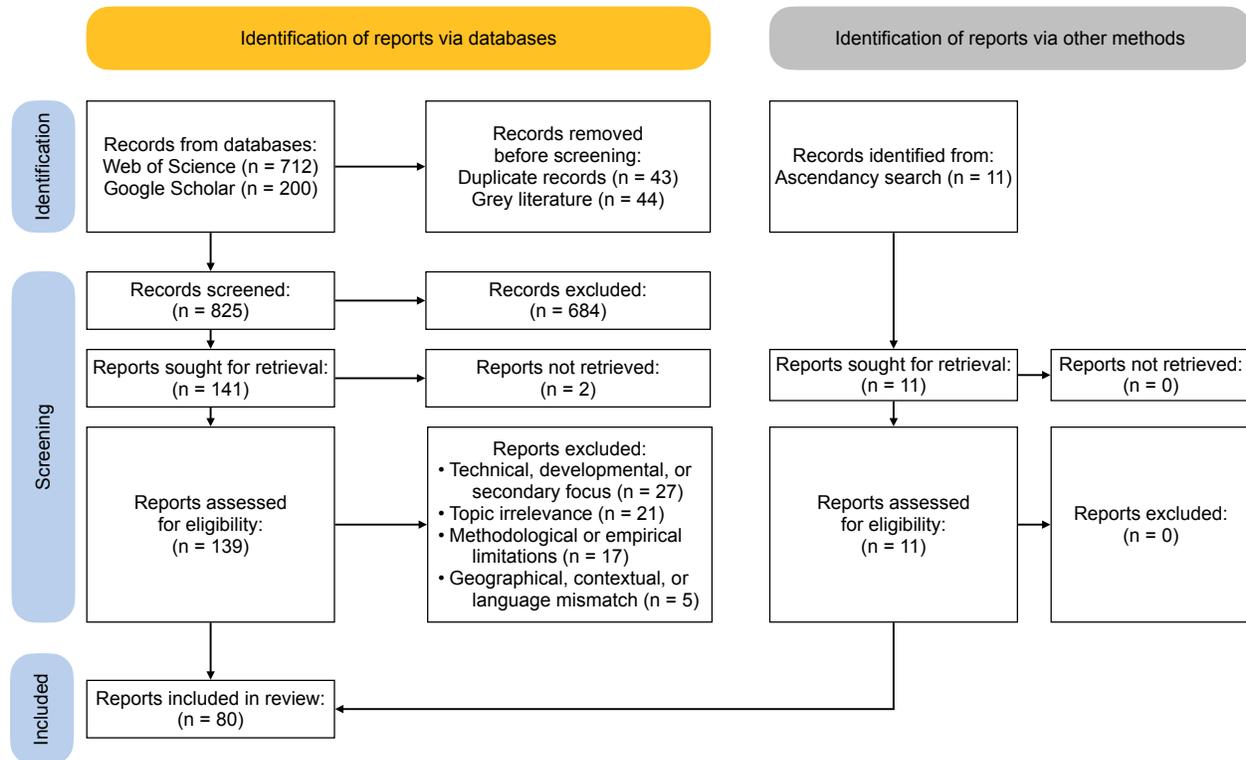


Figure 1: Flow diagram depicting the systematic identification, screening, and inclusion of studies in this review according to PRISMA guidelines. We began by identifying 712 records from Web of Science and 200 from Google Scholar. Among these 912 records, 43 were duplicates and 44 were grey literature, leaving 825 records to be screened via title and abstract. We excluded 684 of these, leaving 141 reports to be retrieved. We obtained all but two, yielding 139 reports to be assessed for eligibility via a full-text read. During this assessment, we identified 11 additional reports via ascendancy search (backwards reference tracing). Overall, we assessed 150 reports and excluded 70 of them. See full text for a description of reasons for exclusion. At the end of screening, 80 reports remained for extraction and synthesis.

Screening

Within the Google Scholar results, we identified and excluded 18 internal duplicates, as well as an additional 25 sources that duplicated sources found in the Web of Science results. Furthermore, we eliminated 44 records that we classified as grey literature. These exclusions were performed by a single researcher because they were based on objective criteria and carried out using algorithmic text searches. This deduplication resulted in the removal of 87 records at the outset. Consequently, we were left with 825 records to screen.

Our screening process was driven by a specific set of criteria to include only peer-reviewed, fairly contemporary studies that provide an empirical analysis of U.S. news media's portrayal of gun violence and/or the impact of that coverage. These studies needed to have a reasonable chance of answering one of our research questions. We aimed to exclude studies lacking empirical methods, focusing outside the realm of news media, pertaining to non-U.S. contexts, having publication date prior to the year 2000, or appearing in venues that are not peer reviewed.

In the first phase of screening, Researcher #1 evaluated the titles and abstracts from database

searches using our pre-established inclusion and exclusion criteria. To streamline validation of Researcher #1's choices, we used the Generative Pre-trained Transformer 4 (ChatGPT-4) (OpenAI, 2023). ChatGPT-4 (hereafter, GPT) is an AI language model that can process and synthesize text in a manner meant to be akin to human cognition. Via GPT's application programming interface, we supplied the titles and abstracts of reports as well as our inclusion/exclusion criteria. The complete text of the prompt we provided to GPT appears in our Open Science Framework repository (Topaz, 2023a). Discrepancies between the assessments of GPT and Researcher #1 were adjudicated by Researcher #2. The outcomes of this screening stage are summarized in Table 1.

Table 1: Initial screening of 825 reports from database searches; see Figure 1. Researcher #1 and the generative AI model ChatGPT-4 made inclusion/exclusion decisions based on specific criteria. There were 677 cases of agreed exclusion, 93 cases of agreed inclusion, and 55 cases of disagreement. Cohen's Kappa was 0.73, indicating "substantial agreement." The 55 cases of disagreement were adjudicated by Researcher #2. In the end, 684 reports were excluded and 141 proceeded to the retrieval stage.

	Res. #1 & GPT Agree	Res. #1 & GPT Disagree	Res. #2 & Res. #1 Agree	Res #2 & GPT Agree	Screening Decision
Agreed Exclusions	677				684
Agreed Inclusions	93				141
GPT Includes, Res. #1 Excludes		27	4	23	
GPT Excludes, Res. #1 Includes		28	25	3	

Among our 825 records, there was a strong concordance between Researcher #1 and GPT with respect to the inclusion and exclusion of papers. Specifically, there were 677 cases where both Researcher #1 and GPT agreed on exclusion and 93 cases of mutual agreement on inclusion. The inter-rater reliability, as measured by Cohen's Kappa, yielded a coefficient of 0.73, which falls within the range of "substantial agreement." This indicates a robust level of consistency between the primary human evaluator and GPT.

There was disagreement for 55 cases, of which 27 cases involved GPT advocating for inclusion contrary to Researcher #1's decision to exclude, and 28 cases where GPT recommended exclusion against Researcher #1's preference to include. To address these discrepancies, Researcher #2 provided an independent judgment. Their decisions favored the initial assessment of Researcher #1 in 29 instances, whereas they aligned with GPT's determinations in 26 cases. This tie breaking procedure ultimately resulted in 684 exclusions and 141 inclusions.

In the process described above, a report could potentially be excluded for multiple reasons. However, it was unnecessary for the researchers or GPT to cite more than one reason, as a single valid reason suffices for exclusion. Consequently, we did not expect alignment in the reasons for exclusion cited by Researcher #1, Researcher #2, and GPT. Therefore, we do not present formal data on the specific reasons for exclusion. Nonetheless, it is noteworthy that among the reports excluded by Researcher #1, a significant 58.5% were disregarded because they did not

primarily focus on gun violence. These reports included studies where guns were merely mentioned in passing or where the term “shoot” appeared in contexts unrelated to gun violence, such as publications about vaccinations, plants, film, and photography, among other topics. Additionally, 23.5% of Researcher #1’s exclusions were due to reports mentioning news media only in passing, and without substantive discussion. Other reasons for exclusion included focusing on violence but not specifically on guns (8.4%), not being centered on the United States (6.8%), being classified as grey literature (1.4%), and being non-empirical work such as a book review or an op-ed (1.4%).

The initial screening reduced the pool down to 141 records from our database search and 11 records from our ascendancy search (left and right side of Figure 1, respectively). We successfully retrieved all but two of these, yielding 150 reports to be fully assessed for eligibility via a close examination of the full text.

Researcher #1 reviewed the full text of each report, making an inclusion or exclusion decision based on this comprehensive assessment. In cases of exclusion, the researcher identified one of the following four primary reasons:

- **Missing, Secondary, or Technical Focus.** Reports where the news media is either not mentioned, plays a minor role, or is merely utilized as a tool for validating databases.
- **Topic Irrelevance.** Reports that do not focus primarily on news media coverage of gun violence, instead addressing other forms of violence, or laws and policies.
- **Methodological or Empirical Limitations.** Reports with immediately apparent fundamental flaws (*e.g.*, presentation of original quantitative results without identifying a data set), reports that do not constitute empirical research, or reports too brief to substantively address the research questions.
- **Geographical Mismatch:** Reports that are not centered on the United States.

Researcher #1 excluded 47% ($n = 70$) of the studies. Among these 70, the reasons for exclusion were: 39% ($n = 27$) for missing, secondary, or technical focus; 30% ($n = 21$) for topic irrelevance; 24% ($n = 17$) for methodological or empirical limitations; and 7% ($n = 5$) for geographical mismatch. After making these exclusions, we retained 80 studies for extraction.

Extraction

First, we coded each study based on its references to news media sources. For news media sources such as newspapers, magazines, websites, and television channels, we recorded the number of sources cited in each research article as well as specific sources (*e.g.*, USA Today) when provided. For studies that conducted extensive news database searches without specific source enumeration,

we labeled the number of sources as being unspecified and considered the value to be over 25. Additionally, we identified and marked any fictional sources used in experimental studies.

Second, and similarly, we coded each study based on its references to shooting incidents. We categorized shooting incidents into specific subcategories for clarity: mass public shootings, police shootings, other real shootings, and fictional shootings. Mass public shootings were defined as events involving one or two shooters inflicting harm on four or more people in public spaces. Police shootings were those perpetrated by law enforcement officers. The category of other real shootings encompassed a variety of incidents that did not fit into the prior categories, including other homicides, community violence, and domestic disputes. Note that a school shooting might be classified as a mass public shooting, or not, depending on the circumstances. Fictional shootings appeared exclusively in experimental studies. For each study, we recorded the number of shooting incidents using a coding scheme parallel to the one described above for media sources. Similarly, we recorded the specific shooting incidents studied (e.g., Tree of Life synagogue shooting) when available.

In the final phase of extraction, we examined methodological frameworks used and any critical aspects of data sources not addressed above. We also focused closely on identifying and noting results that address our research questions.

Quality Appraisal

To assess the quality of the studies in our systematic review, we employed the 2018 version of the Mixed Methods Appraisal Tool (MMAT) (Hong et al, 2018), an iteration of an instrument that was initially created in 2006. The MMAT — developed through a rigorous process involving an extensive literature review, expert consultations, and comprehensive piloting — is designed to ensure high validity and reliability in evaluating research studies. It necessitates the classification of each study into one of five categories: qualitative research, quantitative randomized controlled trials, quantitative non-randomized studies, quantitative descriptive studies, and mixed methods research. Each category has specifically tailored criteria to assess quality dimensions, including the appropriateness of the research design, the rigor of data collection and analysis, and the credibility of the findings. Researchers respond to each criterion with *yes*, *no*, or *can't tell*, enabling a consistent and straightforward assessment across varied research designs.

To streamline the assessment process, we again integrated GPT into our methodology. More specifically, we created a custom instance of GPT to automate the classification and quality assessment of research papers as per MMAT guidelines. This adaptation involved programming GPT with the MMAT's flowchart and a detailed list of quality assessment questions. The model was initially instructed: "Based on the materials for the Mixed Methods Appraisal Tool attached

to these instructions, classify the study and assess its quality for the .pdf that the user uploads.” As expected, this first iteration produced poor results, necessitating further refinement.

To enhance GPT’s accuracy, Researcher #1 manually applied the MMAT to ten randomly chosen studies, thus providing a standard for comparison. The researcher refined the instructions to GPT based on this calibration set and based on discussions with the GPT model, focusing on classification and assessment errors. This process was repeated iteratively until the model’s assessments for the ten papers aligned with those of the Researcher #1. The final set of instructions was approximately 1,100 words long and is available in our Open Science Framework repository (Topaz, 2023a). Following this calibration, we applied the model to the remaining studies.

Synthesis

In line with our extraction approach, our synthesis phase took into account the interdisciplinary nature and diversity of the research being reviewed. In order to provide a high-level look at the literature, we summarized the news media sources, shooting incidents, and study methodologies used. Then, we carried out a narrative synthesis by distilling the extracted findings of the 80 studies in relation to our three research questions, summarizing results, and identifying recurrent themes.

Research Landscape

Figure 2 provides an overview of the 80 studies we review. For details of the coding scheme, refer back to Extraction.

Panel (A) quantifies, for each study, the number of media sources and shooting incidents considered. A full 45% of the studies ($n = 36$) examine a modest number of media sources and shooting incidents, with most of these including substantially fewer than 25 of each; see blue box. We refer to these as *focused studies*. Examples of focused studies include an analysis of Fox News’s coverage of the 2014 shooting of Michael Brown in Ferguson, Missouri (Mills, 2017), and a comparison of *The Los Angeles Times*’s and *The New York Times*’s coverage of two mass shootings: one at the Pulse Nightclub in Orlando in 2016 and another at a music festival in Las Vegas in 2017 (Elmasry and el Nawawy, 2020). Among the 36 focused studies, 113 selections of news outlets were made, with the most commonly appearing being *The New York Times* ($n = 24$), *USA Today* ($n = 10$), *The Washington Post* ($n = 8$), CNN ($n = 7$), *The Wall Street Journal* ($n = 5$), followed by ABC, CBS, NBC, and Fox News (all with $n = 4$). Among this same group of studies, there were 51 selections of shooting incidents made, with the

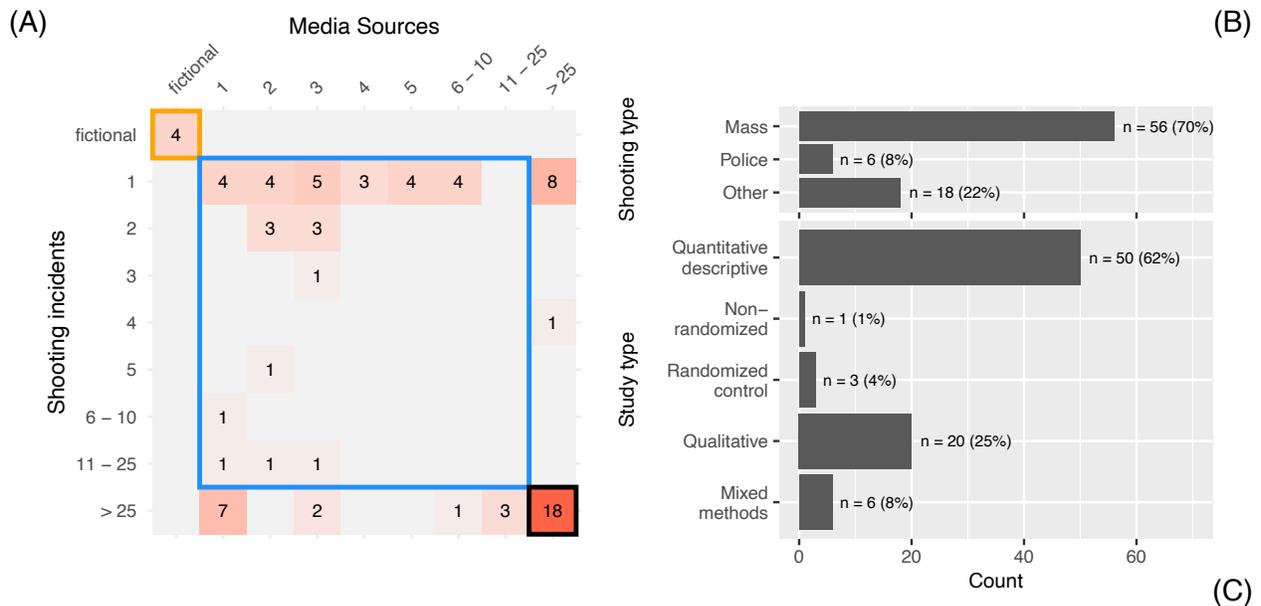


Figure 2: Overview of 80 academic studies of news media coverage of gun violence. (A) Distribution of media sources and shooting incidents investigated. The number within each tile tabulates the quantity of studies, with the red intensity intended to guide the eye. Highlighted by a blue box, 45% of the studies ($n = 36$) analyze 25 or fewer sources and incidents (excluding fictional scenarios). The New York Times is the most frequently studied outlet within this subset. Highlighted by a black box, 33% of the studies ($n = 26$) assess over 25 sources and incidents, typically derived from extensive database searches. Highlighted by an orange box, 5% of the studies ($n = 4$) are experimental studies involving fictional scenarios. (B) Types of shooting incidents scrutinized within the corpus of literature. There is a predominant focus on mass public shootings, examined in 70% of the studies ($n = 56$). (C) Methodological frameworks employed, with a dominant 62% of studies ($n = 50$) utilizing quantitative descriptive methods, and 25% ($n = 20$) using qualitative approaches. Here, we have used the Mixed Methods Appraisal Tool for classifying studies (Hong et al, 2018).

most commonly appearing being the 1999 mass shooting at Columbine High School in Littleton, Colorado ($n = 8$), the 2007 mass shooting at Virginia Tech in Blacksburg, Virginia ($n = 4$), the 2015 mass shooting at Emanuel African Methodist Episcopal Church in Charleston, South Carolina ($n = 4$), and the 2016 mass shooting at Pulse Nightclub in Orlando, Florida ($n = 4$).

Conversely to the aforementioned subgroup of studies, 33% of them ($n = 26$) examine over 25 media sources and shooting incidents; see black box in Panel (A). This category includes studies where the exact number was not specified but was inferred to be substantial, for instance, due to a general search of a news database. We refer to these as *broad studies*. Examples of broad studies include an analysis using natural language processing to examine how mass shootings are framed as terrorism in media coverage spanning 26 years (Dreier et al, 2022), and a survey designed to evaluate children's reactions to news reports of school shootings (Koo, 2023).

Some studies employ experimental methods, involving fictional scenarios, which represent 5% ($n = 4$) of the 80 studies; see orange box in Panel (A). Notable examples of these *experimental studies* include a survey designed to evaluate how the reported race of a shooting incident victim in a news article influences the reader's support for firearms regulation (Berryessa et al, 2023), and a randomized control trial examining the effects of media portrayals of mass shootings on public attitudes toward individuals with serious mental illness (McGinty et al, 2013).

Panel (B) of Figure 2 summarizes the types of shooting incidents considered in the 80 studies. The literature has an overwhelming emphasis on mass public shootings, which are the subject of 70% ($n = 56$) of the studies. Shootings involving police are the focus of 8% ($n = 6$), and the remaining 22% ($n = 18$) discuss shootings of other or unspecified types.

Finally, Panel (C) summarizes the methodological approaches of the 80 studies, classified using the Mixed Methods Appraisal Tool as detailed in Quality Appraisal. A total of 62% ($n = 50$) are quantitative descriptive studies, focusing on documenting and characterizing variables within a population without exploring causal relationships or hypotheses. The next most prevalent methodology is qualitative research, comprising 25% ($n = 20$) of the studies. Qualitative methodologies include ethnography, narrative research, grounded theory, and case studies, often utilizing both inductive and deductive thematic analysis. Combined, these two primary methodologies — quantitative descriptive and qualitative — represent 87% of the reviewed studies. The remaining 13% employ mixed methods, non-randomized studies, and randomized control trials.

The studies in our review offer a current perspective on the subject, with a mean publication year of approximately 2018 and a median of 2019. Twenty of the included studies are from 2022 and 2023, underscoring the recency of this review.

Finally, the results of our quality appraisal are positive; see Table 2. Among the 80 studies we reviewed, we answered yes to all seven quality questions for 85% of them ($n = 68$), to six questions for 14% of them ($n = 11$), and to five questions for the single remaining study. The 12 studies that did not meet all quality criteria still appeared robust, with none having limitations significant enough to warrant exclusion. Consequently, given the overall high quality of the studies, we will not further address quality concerns in the remainder of this review.

Table 2: Mixed Methods Appraisal Tool (MMAT) quality assessment results. The MMAT (Hong et al, 2018) is an instrument consisting of seven questions that assess the quality dimensions of a research study, including the appropriateness of the research design, the rigor of data collection and analysis, and the credibility of the findings. Assessors respond to each criterion with yes, can't tell, or no. Among the 80 studies we reviewed, we answered yes to all seven questions for 85% of them ($n = 68$), to six questions for 14% of them ($n = 11$), and to five questions for the single remaining study.

Yes	Can't Tell	No	# Studies
7	0	0	68
6	1	0	10
6	0	1	1
5	2	0	1

Incident focus

We find that 18% ($n = 14$) of the 80 studies address our first research question:

Which incidents of gun violence does the news media select to report on, and what factors influence this selection?

These studies are Anisin (2021); Asabor et al (2023); Beard et al (2019); Elmasry and el Nawawy (2020); Fox et al (2021a); Hilaire et al (2023); Jashinsky et al (2017); Kaufman et al (2020); Maguire et al (2002); Pelled et al (2021); Schildkraut et al (2018); Silva and Capellan (2019); Silva and Greene-Colozzi (2019); Zhang et al (2023).

We divide our discussion of these studies into two parts: first, those that focus on quantifying the extent of news coverage, and second, those that focus on the influencing factors.

Extent of news coverage

To understand the focus of media coverage on gun violence, there are at least two distinct analytical approaches. The first approach, which we refer to as a *landscape analysis*, entails examining news media coverage broadly and assessing the representation of different types of gun violence. The advantage of this method is its ability to provide insight into news media priorities. A limitation is that this approach does not inherently reveal whether certain types of gun violence are over-represented or under-represented in the news media. To make such an assessment, one would need to consider both the actual frequency of different types of gun violence and one's *a priori* expectation of how newsworthy different types should be.

Jashinsky et al (2017) provide a landscape analysis of gun violence coverage from *The New York Times*, *The Washington Post*, and *The Wall Street Journal*. The findings show that mass shootings are the most common theme, accounting for 59% of articles. Individual homicides follow at 32%, while suicide by firearm (10%) and gun accidents (4%) are less frequent topics.

The second analytical approach narrows the focus to a specific type of gun violence, assessing how comprehensively it is covered in the media. This is called a *media distortion analysis* (Grune-wald et al, 2014) because of its ability to address news media over- or under-representation. A limitation, however, is that this approach does not allow comparison of coverage of different types of gun violence incidents.

Beard et al (2019) conduct a media distortion analysis of mass shootings in Philadelphia and find a significant gap in media attention: 15% (7 out of 46) of the incidents received no coverage and a full 65% (30 out of 46) were covered solely in local or regional news sources. Stated differently, only 20% (9 out of 46) of these mass shooting incidents were reported on in the national news media. While this work and that of Jashinsky et al (2017) mentioned above both study mass shootings, they are not necessarily in conflict because they have different geographic foci, different news media foci, and critically, because they are different types of analyses.

Beyond the two studies discussed above, the works we reviewed have little to say about the

extent of gun violence news coverage. In contrast, they have substantially more to say about factors influencing coverage.

Factors influencing extent of news coverage

The literature mentions numerous factors impacting the extent of news coverage. We arrange these into four broad categories: incident attributes, victim attributes, perpetrator attributes, and other factors.

Incident attributes

These characteristics include the overall number of victims, the setting (geographical location, affluent or less affluent neighborhoods), and the presence of specific targets like schools, government buildings, or places of worship. The literature finds overwhelmingly that the number of victims, whether injured or killed, is positively correlated with the amount of news media coverage (Anisin, 2021; Fox et al, 2021a; Kaufman et al, 2020; Maguire et al, 2002; Pelled et al, 2021; Schildkraut et al, 2018; Silva and Capellan, 2019; Zhang et al, 2023). Regarding location, Kaufman et al (2020) observe substantial geographic variation in the reporting of gun violence incidents in Philadelphia, Rochester, and Cincinnati. The findings of Anisin (2021) and Schildkraut et al (2018) indicate a positive association between proximity to the Northeast region of the U.S. and news coverage of mass shootings, but should be interpreted cautiously due to these studies' exclusive focus on *The New York Times*. Schildkraut et al (2018) also find that mass shootings in wealthier communities tend to receive more coverage. There is a consensus that shootings targeting schools, religious buildings, and government buildings are more likely to be covered (Fox et al, 2021a; Schildkraut et al, 2018; Silva and Capellan, 2019), with the broad study by Fox et al (2021a) of 20 years of Associated Press coverage supporting the generalizability of this finding, at least within the context of mass shootings.

Victim attributes

These characteristics include gender, age, race, and ethnicity. Three studies — two of which are specific to mass shootings — find that female victims receive more news media attention than male ones (Beard et al, 2019; Fox et al, 2021a; Kaufman et al, 2020). The presence of child victims is also positively associated with the likelihood and extent of news media coverage (Beard et al, 2019; Fox et al, 2021a). Regarding race and ethnicity, two broad studies give insight. Fox et al (2021a) show that a higher proportion of white victims correlates with increased news coverage. This finding is consistent with a result from Zhang et al (2023), namely, that a greater proportion of Black victims is negatively associated with the degree of news coverage.

An exception to this trend may exist in cases of police-perpetrated shootings, where incidents involving Black and Hispanic victims might be more likely to receive news coverage (Asabor et al, 2023).

Perpetrator attributes

These characteristics include age, race, and ethnicity, as well as religion, mental health, and motivation for crime. Likely because perpetrators of gun violence are predominantly men, none of the reviewed studies consider gender. As for the remaining characteristics, Silva and Capellan (2019) and Fox et al (2021a) examine mass shootings and concur on three factors that are positively associated with the degree of news coverage: perpetrator youth, ideological motivation, and signs of mental illness. Regarding race and ethnicity, Hilaire et al (2023) examine school shootings (not limited to mass shootings), and find that white shooters, often linked to indiscriminate shootings, garner more media attention than Black shooters, who are more frequently associated with individual or gang-level disputes. Anisin studies mass shootings (2021) and finds that incidents involving Middle Eastern perpetrators receive heightened coverage compared to other races. We found only one study mentioning the impact of perpetrator religion on the degree of news coverage, namely Elmasry and el Nawawy's comparison of the Las Vegas music festival and Pulse Nightclub shootings (2020). The latter incident, perpetrated by a Muslim, received more coverage despite fewer fatalities. Finally, in the context of *New York Times* articles, Silva and Greene-Colozzi (2019) show that mass shooting perpetrators who express a desire for fame do, in fact, receive more coverage.

Other factors

In addition to the three broad categories of incident, victim, and perpetrator attributes, we identify two other factors potentially influencing the extent of media coverage specifically in the case of mass shootings. Pelled et al (2021) consider political bias of news media and find that shootings involving a greater number of Black victims receive less attention from moderate and conservative outlets. Another finding, reported by Anisin (2021), is that mass shootings are more likely to receive extensive coverage in the absence of other major news events. It is important to note, however, that each of these insights is based on a single (respective) study, necessitating caution when generalizing results.

Narrative approach

We find that 65% (n = 52) of the studies address our second research question:

How does the news media cover incidents of gun violence in terms of linguistic styles and narrative frames, and what factors influence this coverage?

These studies are Alaimo (2022); Altheide (2009); Asabor et al (2023); Beard et al (2019); Boulahnane (2019); Bridges et al (2022); Carlson (2016); Carlson and Cobb (2017); Cassidy et al (2018); Chuang (2012); Chuang and Chin Roemer (2014); Chyi and McCombs (2004); Deavours (2020); DeFoster and Swalve (2018); Dreier et al (2022); Duroskey et al (2023); Elmasry and el Nawawy (2020); Emelu (2023); Guggenheim et al (2015); Hagan et al (2002); Hammarlund et al (2020); Hawdon et al (2014); Hodges (2015); Holody and Daniel (2017); Holody and Shaughnessy (2022); Holody et al (2013); Keenan and Greene (2019); Lawrence and Birkland (2004); Leavy and Maloney (2009); McGinty et al (2014); McKeever et al (2022); McWhorter (2022); Meyer (2020); Mills (2017); Mingus and Zopf (2010); Morin (2016); Morse (2023); Mosqueda et al (2023); Mourão et al (2021); Muschert (2009); Muschert and Carr (2006); el Nawawy and Elmasry (2018); Obasogie and Newman (2016); Park et al (2012); Pelled et al (2021); Schildkraut and Muschert (2014); Schildkraut et al (2021); Stone and Socia (2019); Turetsky and Riddle (2018); Valcore and Buckler (2020); Zdjelar and Davies (2021); Zhang et al (2023).

We divide our discussion of these studies into two parts: first, those that focus on identification of narratives and language chosen by the news media, and second, those that focus on factors influencing those narrative choices. To classify a study in the second category, it must include some form of comparison, as the relationship between a particular characteristic and a narrative choice can only be established by observing differences or changes. For instance, Valcore and Buckler (2020) analyze coverage of the Pulse Nightclub shooting, noting the minimal attention given to the anti-LGBTQ aspects in major newspapers. While this observation is significant, this study alone does not provide sufficient basis to link the LGBTQ status of victims to specific narrative choices. One would need a different approach — perhaps a comparative study, or an aggregation of multiple studies — to draw this conclusion.

Narrative frames used

Many of the studies have as their primary goals the identification and enumeration of the narrative frames used in coverage of shooting incidents. In fact, of the 52 studies addressing our second research question, 60% (n = 31) are of this variety, and nearly all study mass shootings (Alaimo, 2022; Altheide, 2009; Beard et al, 2019; Boulahnane, 2019; Carlson, 2016; Cassidy et al, 2018; Chyi and McCombs, 2004; Deavours, 2020; Duroskey et al, 2023; Emelu, 2023; Hagan et al, 2002; Hodges, 2015; Holody and Daniel, 2017; Holody and Shaughnessy, 2022; Holody et al, 2013; Keenan and Greene, 2019; Lawrence and Birkland, 2004; McGinty et al, 2014; McKeever et al,

2022; McWhorter, 2022; Meyer, 2020; Mills, 2017; Morse, 2023; Mosqueda et al, 2023; Mourão et al, 2021; Muschert and Carr, 2006; el Nawawy and Elmasry, 2018; Obasogie and Newman, 2016; Stone and Socia, 2019; Turetsky and Riddle, 2018; Valcore and Buckler, 2020)

Of those 31 studies, 77% (n = 24) study a single shooting incident and examine, in most cases, five or fewer media sources (Alaimo, 2022; Altheide, 2009; Boulahnane, 2019; Cassidy et al, 2018; Chyi and McCombs, 2004; Deavours, 2020; Emelu, 2023; Hagan et al, 2002; Hodges, 2015; Holody and Daniel, 2017; Holody and Shaughnessy, 2022; Holody et al, 2013; Keenan and Greene, 2019; Lawrence and Birkland, 2004; McWhorter, 2022; Meyer, 2020; Mills, 2017; Morse, 2023; Mosqueda et al, 2023; Mourão et al, 2021; el Nawawy and Elmasry, 2018; Stone and Socia, 2019; Turetsky and Riddle, 2018; Valcore and Buckler, 2020). Stated differently, these are focused works. Examples include an examination of narrative frames used by *The New York Times* in coverage of the Columbine shooting (Chyi and McCombs, 2004) and, similarly, a study of narrative frames used by Fox News in its coverage of the shooting of Michael Brown (Mills, 2017). These studies offer important insights. However, the diversity in their choice of shootings and media sources limits their overlap, challenging the extraction of broader conclusions.

Even when studies examine the same incident, their distinct research objectives and methodological approaches complicate the synthesis of overarching takeaways. For example, consider the Columbine shooting, whose narrative frames are the subject of four of the 24 studies mentioned above. Altheide (2009) investigates media's use of a terrorism narrative, while Chyi and McCombs (2004) adopt a two-dimensional framing strategy based on spatial and temporal aspects. Lawrence and Birkland (2004) explore the portrayal of Columbine in terms of societal issues like mental health, drug use, and gun policies, and Mosqueda et al (2023) study the framing of juvenile superpredators in relation to the same event. These four studies provide a rich view of narrative approaches surrounding Columbine. While each study is valuable, the varied methodologies and goals limit the ability to corroborate findings and extract common themes.

While the 24 studies above each focused on a single shooting incident, three other studies compare a small group of incidents. Carlson (2016) examines differences in the news media portrayal of two incidents, both justified as self-defense by their respective shooters: the shooting of four young Black men by "subway vigilante" Bernhard Goetz in 1984 and that of Trayvon Martin by George Zimmerman in 2012. Goetz was portrayed as a folk hero while the narrative around Zimmerman was more complex and contested. Durosky et al (2023) compared the Columbine and Parkland shootings, specifically analyzing the frequency of perpetrator references in news articles and finding there were substantially more in local coverage of Parkland as compared to Columbine. Muschert and Carr (2006) compare frames used in *The New York Times's* coverage of nine different mass shootings. As with the 24 single-shooting studies above, these three yield rich insights but for the purposes of a research synthesis are of limited generalizability.

The remaining four studies in this group of 31 are broader than the others. As a result, they are able to say less about specific shooting incidents and news media sources, but may have more generalizable results. Overall, they incorporate more extensive time frames, a greater variety of incidents, and more media sources, lending substantial weight to the conclusions.

McGinty et al (2014) investigate how the news media attributes the causes of mass shootings involving perpetrators with signs of mental illness. They find a predominant tendency to blame “dangerous people” with serious mental illness over “dangerous weapons.” Beard et al (2019) study mass shootings in Philadelphia, finding that, across a range of news sources, there was reluctance to label the events with that moniker. Obasogie and Newman (2016) examine coverage of police-involved civilian shootings and find substantial bias in fact sourcing, with over 70% of news stories relying on police sources alone. As a result, the narratives tend to exclude victims’ lives and circumstances and, instead, criminalize them by including irrelevant details about their past and by using mugshots to represent them visually. Finally, McKeever et al (2022) use a survey-based approach to assess participants’ perceptions of news narratives. The participants perceive a strong focus on the shooters’ backgrounds, including factors like race, ethnicity, mental health, and consumption of violent media. The study highlights the news media’s tendency to attribute gun violence to individuals rather than to systems and policies.

Factors influencing narrative frames

The literature mentions several factors impacting the narrative frames and choices of language used in news coverage. We arrange these three broad categories: first, nationality, race, ethnicity, and religion; second, time; and finally, miscellaneous other factors.

Nationality, race, ethnicity, and religion

Eleven works we reviewed touch upon how narrative choices are influenced by nationality, race, ethnicity, and/or religion. These are Asabor et al (2023); Bridges et al (2022); Chuang (2012); Dreier et al (2022); Elmasry and el Nawawy (2020); Hammarlund et al (2020); Leavy and Maloney (2009); Mingus and Zopf (2010); Morin (2016); Park et al (2012); Zdjelar and Davies (2021). An overarching conclusion is that narratives serve to protect white individuals, regardless of whether they are perpetrators or victims.

Two studies explore how victims’ racial/ethnic identities influence media coverage. Asabor et al (2023) conduct a broad study of shootings by off-duty police officers and find that the officers’ off-duty status was more frequently reported when victims were Black or Hispanic, compared to less frequent mentions in cases with white victims. This emphasis on the off-duty status in cases with racially minoritized victims arguably serves a dual purpose: it casts these

encounters as unofficial, indirectly shielding law enforcement's image, while subtly insinuating potential misconduct or culpability of the victim. Similarly, Leavy and Maloney (2009) identify a disparity in narrative framing in their analysis of the Columbine and Red Lake Indian Reservation shootings. The news media adopted a tragedy narrative for Columbine, where the victims were predominantly white, portraying it as a national issue with far-reaching implications. Conversely, coverage of the Red Lake shooting, involving an Indigenous community, was more confined to the specifics of the incident. This contrast suggests a racial bias in news media storytelling, with events involving white victims receiving a broader, empathetic narrative, while those with victims of color are presented in a more restricted, incident-focused context.

The nine remaining studies collectively examine the influence of perpetrator race on media narratives, all in mass shooting incidents. These studies can be categorized into three distinct groups based on their thematic focus. One group investigates the differential emphasis on the race of shooter. The second group explores how the narrative frames chosen by the media vary depending on the shooter's race. The final group delves more specifically into the association of race and religion with the use of a terrorism frame in media coverage.

Two studies argue that the news media discusses perpetrator race more for racially minoritized shooters than for white shooters. Park et al (2012) analyze coverage of the Virginia Tech shooting in two major newspapers. They find an emphasis on the shooter's ethnicity, in contrast with coverage of Columbine, where the white shooter's racial background was less highlighted. Similarly, Mingus and Zopf (2010) observe that for four mass shootings, across a variety of news sources, the race of minoritized perpetrators is emphasized, while the race of white shooters is often omitted.

Three studies address the media's choice of narrative frames depending on perpetrator race. Chuang (2012) conducts a focused study of the 2009 mass shooting at an immigration center in Binghamton, New York. An association is made with the Virginia Tech shooting, and the authors note that both shooters are of Asian descent and, irrespective of citizenship status, both are portrayed as foreign, suggesting a bias in associating foreignness with Asian ethnicity. In a broad study of mass shootings, Bridges et al (2022) find that white shooters are often depicted with humanizing language, focusing on their personal history and mental health. This contrasts with the portrayal of racially minoritized shooters, particularly Black individuals, who are more often described with stigmatizing language that emphasizes criminality. However, this result somewhat opposes that of Hammarlund et al (2020), who also conduct a broad study of mass shootings. They conclude that a shooter's minoritized race does not solely predict the use of sensationalized language or the inclusion of negative background information.

Finally, four studies specifically address how race and religion may be associated with the use of a terrorism frame. The broad study of mass shootings of Dreier et al (2022) finds that non-Muslim,

white shooters are described more neutrally, while Muslim shooters are often negatively framed and associated with terrorism. This result is echoed in Elmasry and el Nawawy's comparison of the Orlando and Las Vegas shootings (2020), where the Muslim shooter in Orlando was covered with a terrorism frame, unlike the white Las Vegas shooter. Morin (2016) observes a similar media bias in their focused comparison of the 2009 Fort Hood massacre and the 2013 Washington Navy Yard shooting. The news media associated the Fort Hood shooting, committed by a Muslim individual, with Islam and terrorism, whereas for the Navy Yard shooting, carried out by a white perpetrator, the emphasis was on mental health narratives. Lastly, the focused study of Zdjelar and Davies (2021) identifies a pattern of minimizing right-wing extremist ideology for white shooters, contrasting with the immediate labeling of violence by Muslim individuals as terrorism.

Time

Five studies in our review assess how time influences narrative framing in media coverage of shootings. Hawdon et al (2014), Muschert (2009) and Guggenheim et al (2015), track specific shooting incidents over time, find that narrative frames in mass shootings are not static but evolve and shift. Complementing this approach, three focused studies take time as a cross sectional variable and examine the evolution of media frames across different historical periods. Carlson and Cobb (2017) analyze 160 years of *New York Times* coverage, noting a shift from portraying accidental shootings by children as blameless events in the mid-1800s to framing them as societal responsibility issues by the 1980s. Similarly, DeFoster and Swalve (2018) observes a 20-year transition in mass shooting narratives from individual-level to societal concern frames, a trend also identified by Jashinsky et al (2017) in the context of the Sandy Hook shooting.

Other factors influencing narrative frames

Four remaining studies explore other factors that may influence the news media's narrative frames. Bridges et al (2022) conduct a broad study highlighting the impact of domestic violence and geography on media narratives. Shootings involving domestic violence are often framed as private tragedies with a focus on interpersonal dynamics. Additionally, in regions with strong gun rights advocacy, narratives may emphasize self-defense or Second Amendment rights. Pelled et al (2021) examine the influence of a range of shooting characteristics and the political leanings of media outlets, determining that the framing of incidents as gun rights, gun violence, or gun control issues varies depending on these. Schildkraut et al (2021) present a focused analysis of mass shooting coverage in *The New York Times*, noting significant disparities based on the shooters' motivations. Ideologically motivated shootings, linked to extreme beliefs, are often framed as acts of war, focusing on the shooters more than the victims, and using terms like "massacres"

and “attacks.” In contrast, non-ideologically motivated shootings, such as school or workplace incidents, are typically described as “rampages” or “shootings,” with a stronger focus on victims. Finally, the broad study of Zhang et al (2023) finds that the number of victims in mass shootings, particularly child victims, correlates with progressive media outlets’ tendency to emphasize gun control over gun rights.

Individual and societal impact

We find that 21% (n = 17) of the 80 studies address our third research question:

What effect does the news media’s coverage of incidents of gun violence have on individuals and society?

These studies are Abdalla et al (2021); Beard et al (2023); Berryessa et al (2023); Dukes and Gaither (2017); First et al (2023); Fox et al (2021b); Guo et al (2021, 2023); Jetter and Walker (2022); Jose et al (2021); Koo (2023); Lin et al (2018); McGinty et al (2013); O’Toole and Fondacaro (2017); Reardon et al (2022); Tamborini et al (2020); Zhang et al (2023).

Our review examines the impact in six specific areas: victims themselves; the emotional states of media consumers; the opinions and actions of media consumers; gun policy; gun violence; and the justice system.

Victims

Only one study in our review addresses the impacts of news media coverage on gun violence victims themselves. Beard et al (2023) conducted interviews with several dozen individuals who sustained firearms injuries. Most participants experienced negative or mixed emotions about being the subject of news stories. They felt dehumanized by the episodic format of reporting, faced retraumatization upon encountering news stories about their incidents, and were troubled by inaccuracies in the reports. Some victims also expressed concerns about compromise to their personal safety and/or reputational damage when specific details about them were reported in the news media. Those who were not featured in news reports often expressed a sense of relief.

Emotional states of news media consumers

There is a strong consensus, shared by four studies in our review, that gun violence news negatively impacts the emotional states of media consumers. In Reardon et al (2022), participants frequently expressed fear and sadness when exposed to images and/or text from gun violence news. Two studies that are more targeted, Abdalla et al (2021) and First et al (2023), find that symptoms of

post-traumatic stress are positively associated with exposure to news of the Parkland and Pulse Nightclub shootings, respectively. The same impact has been assessed specifically in children. Koo (2023) investigates this demographic and finds that exposure to news coverage of school shootings is positively associated with feelings of fear and a heightened sense of danger regarding school and society at large.

Opinions and actions of news media consumers

Our review includes three studies that examine the impact of news media consumption on public opinions and behaviors in different contexts.

First, Tamborini et al (2020) explore public reactions to the Las Vegas music festival mass shooting through a survey-based experiment. The results show a difference between the control group and those exposed to news coverage of the incident. Participants who viewed the news demonstrated a heightened endorsement of moral values centered on respect for authority and protecting the community from corruption and decline. This trend might be attributed to a heightened need for security and social unity following such a traumatic event, a hypothesis that is consistent with the emotional reactions outlined in Section Emotional States of News Media Consumers.

Second, McGinty et al (2013) conducted a large scale, survey-based experiment to assess how news media coverage impacts people's opinions of mental illness. Participants were exposed to various news stories featuring a mass shooting by a mentally ill individual. As compared to a control group that read no story, these participants developed more negative attitudes towards people with serious mental illness in general, demonstrating a reduced willingness to work with or live near them.

Finally, while our review's focus is news media and not social media, evidence from two fairly large scale studies shows how the former may impact the latter. Zhang et al (2023) suggests that gun violence coverage in the news media prompts online discussion. Guo et al (2023) investigates the more nuanced role of partisanship and finds that liberals and neutrals may withdraw from online discussions on gun violence when exposed to conservative media narratives. In contrast, conservatives are more likely to engage in social media discussions after encountering liberal media perspectives.

Gun policy

Three studies consider how news media reporting of gun violence impacts views on guns. The large-scale study of Guo et al (2021) demonstrates that mainstream media coverage of gun violence increases the issue's perceived importance among the public. Probing a specific policy

view, Jose et al (2021) study a single shooting incident — the Pulse Nightclub massacre — and finds that people who engaged with an average of at least one hour of daily news coverage following the Pulse nightclub shooting were more inclined to support the enactment of stricter gun control regulations and the implementation of universal background checks. Berryessa et al (2023) go a step further, conducting an experiment to assess how mention of a shooting victim's race in a news article impacts public support for firearm policies. The results show a consistent trend: support for policies on firearm ownership, sales, transfers, and legal use decrease when the victim is identified as Black, compared to when the victim is identified as white.

One study looks at a systems-level — rather than individual — policy response. Luca et al (2020) analyze television news coverage of mass shootings over several decades. They estimate that each hour of mass shooting news coverage correlates with a 13% increase in the introduction of gun-related bills in state legislatures. However, the authors appropriately caution that the extent of media coverage is heavily influenced by the fatality count in these incidents. This correlation precludes attributing the legislative response to media coverage alone.

Gun violence

Liu and Wiebe (2019) and LaPlant et al (2021) both investigate associations between extent of mass shooting news media coverage and gun purchase background checks, over several decades. The former study measures the extent of media coverage through searches of news databases, while the latter focuses on the duration of coverage, specifically measuring the minutes devoted to these incidents on ABC News. Regardless, the two studies concur that extent of news coverage is positively associated with the number of background checks, implying heightened gun purchasing activity.

However, whether these news media coverage of gun violence actually prompts future gun violence is disputed. On one hand, Fox et al (2021b) conduct a broad study of mass shooting events and find that media coverage of them has negligible impact on prompting future mass shootings, at least in the short term. However, a different broad study, by Lin et al (2018), comes to the opposite conclusion, finding that more media coverage of a mass shooting is associated with reduced time until the next such event occurs. In line with that study, Jetter and Walker (2022) finds that mass shootings are significantly more likely to occur following periods of increased media coverage about prior mass shootings. This result is robust across different statistical modeling frameworks and assumptions.

Justice system

The way the news media covers gun violence may have tangible impacts on our justice system. Two studies explore these impacts, each of which relates to personal identity characteristics.

The experiment of O'Toole and Fondacaro (2017) probes news media portrayals of school shootings in cases where the perpetrator is young. The results show that media portrayals that dehumanize the perpetrators lead to increased support for harsher punishments. The authors suggest a more humanizing approach in media coverage, emphasizing personal stories of young offenders. This strategy could shift public opinion towards favoring rehabilitative over punitive measures in juvenile justice, which are generally accepted as more effective and supportive.

Whereas the study above focuses on age, Dukes and Gaither (2017) consider how sharing of racial details in the news may impact the administration of justice. In an experiment, participants read a fictional news article about a fatal altercation where the races of the involved individuals were each described as either Black or white. Participants were then tasked with evaluating blame and determining sentencing for the shooter. They showed a pronounced bias in favor of shooters portrayed as white, especially when the victim was portrayed as Black. This racial portrayal significantly influenced sentencing attitudes, leading to harsher recommendations for shooters depicted as Black, particularly in cases where the victim was positively characterized.

Conclusion

We have conducted a systematic review of academic research on news media coverage of gun violence. Guided by the PRISMA protocol, our preregistered study was narrow by design and had strict inclusion criteria. Beginning with a broad search that returned 923 potential sources, we identified 80 peer-reviewed empirical studies, all focused on the United States and all published since 2000. These studies specifically analyzed news media's portrayal of gun violence incidents. For inclusion in our review, both news media and gun violence needed to be central, and not merely peripheral, themes. We deliberately excluded studies centered on coverage of firearms politics and policies, as well as those investigating forms of media other than news. Furthermore, our emphasis was on research primarily addressing firearms-related violence, as opposed to violence and/or crime in general. Each of the 80 studies addressed one or more of our three research questions.

Summary of findings

Our first research question was "Incident focus: Which incidents of gun violence does the news media select to report on, and what factors influence this selection?" Understanding the extent of

news coverage on an absolute scale is challenging. While researchers can quantify the frequency with which a selection of media outlets report on gun violence, both generally and for specific incidents, interpreting the results is difficult because the interpretation should depend on the actual prevalence of gun violence — for which data is incomplete — and on our subjective judgment of what should be newsworthy. However, making relative assessments of media coverage is more straightforward. Here, the literature is most extensive for mass shootings, and there appears to be consensus that the degree of news media coverage is heightened for incidents that: involve a higher number of victims; have female and child victims; occur in schools, religious sites, or government buildings; and involve perpetrators who are young, who are ideologically motivated, and/or who show signs of mental illness.

Our second research question was “Narrative approach: How does the news media cover incidents of gun violence in terms of linguistic styles and narrative frames, and what factors influence this coverage?” Here, the literature has two strong consensus findings. First, race influences narrative frames substantially, usually in ways that protect white individuals, regardless of whether they are the perpetrators or victims of shootings. Second, dominant narratives are not fixed. They can evolve over the course of specific shooting incidents. Moreover, the media’s narratives have, on the whole, shifted over years and decades, increasingly portraying shooting events as societal issues rather than individual or episodic problems.

Our third research question was “Individual and societal impact: What effect does the news media’s coverage of incidents of gun violence have on individuals and society?” This question is central to our review’s purpose. In our findings, while many of the studies offer insightful results, they often represent isolated investigations into specific issues, lacking broader research support. However, two key findings stand out. Firstly, there is a robust consensus that news coverage of gun violence adversely affects the emotional well-being of its audience, primarily by heightening fear. Secondly, news coverage of gun violence is positively associated with number of gun purchase background checks, suggesting more vigorous gun purchasing. However, whether news coverage tangibly incites further violence remains a topic of debate, with studies presenting conflicting evidence.

Limitations of our review

Our review has certain limitations that should be acknowledged. As mentioned earlier, our focus was deliberately narrowed to a specific segment of the literature. Consequently, there may be relevant studies on news media coverage of gun violence that we did not include. Furthermore, an important limitation of our study is the intentional exclusion of social media as a subject of investigation. Considering the significant role of social media in contemporary American discourse,

research examining the narratives around gun violence on these platforms is crucial and its absence is a notable, albeit purposeful, gap.

Limitations of the literature

There is a significant opportunity to refine how personal identity characteristics, which influence news coverage of gun violence, are addressed. Current discussions around gender are predominantly framed in binary terms of biological sex, indicating a need for a more inclusive articulation of gender and gender identity. Furthermore, the literature seldom mentions LGBTQ identities and does not address disability status, suggesting areas for broader exploration. Lastly, identity factors are often examined in isolation. Incorporating intersectional perspectives that consider the interplay of multiple identity axes would greatly enrich future research.

Future research should focus on expanding the limited literature regarding the extent of gun violence coverage, a topic we highlighted in *Extent of News Coverage*. This effort would ideally involve comparing the breadth of media coverage to the actual prevalence of gun violence. The current scarcity of such comparative studies — exacerbated by the lack of easily accessible, comprehensive, public data regarding gun violence — significantly hinders our ability to study the interplay between the media and gun violence. This challenge is particularly relevant given the potential feedback loop in existing research, which often relies on databases like the Gun Violence Archive, the *Mother Jones* mass shootings database, and the Northeastern University Mass Killings Database, assembled partly or entirely from media reports. Consequently, using these databases to study media coverage could result in circular analysis. For a more effective examination of media focus on gun violence incidents, independent sources of gun violence data, separate from media reports, are necessary.

Gun violence, news media, and research

In our systematic review of news media coverage of gun violence, we have touched on three distinct but interconnected layers: the actual prevalence of gun violence, the news media's coverage of this violence, and the body of academic research focused on this media coverage. The degree to which these levels align with each other merits consideration.

Gun violence manifests in various forms, including suicides, mass shootings, police-perpetrated shootings, and individual gun homicides. As noted in the Introduction, there were 48,830 gun-related deaths in 2021 (Gramlich, 2023), with only 1.4% attributable to mass shootings (Everytown for Gun Safety, 2023b). This figure stands in stark contrast to media representation; a study we reviewed showed that mass shootings comprised 59% of gun violence coverage in *The New York Times* (Jashinsky et al, 2017). Additionally, 70% of the academic studies we reviewed

focused on mass shootings. While academic researchers have no control over the occurrence of gun violence or the extent of its media coverage, they do have some autonomy to direct their research focus. We wonder: what would the landscape of academic scholarship on news media coverage of gun violence look like if it consciously shifted away from mass shootings, and what impacts might such a shift have?

Secondly, our review has highlighted how media coverage significantly influences public perception and policy discourse. The predominance of mass shooting narratives in media and academic research overlooks broader and more prevalent issues such as community gun violence and gun suicides. Coverage of community gun violence, with attention to the systemic conditions that contribute to it, could potentially drive investment in public health strategies that focus on providing high risk individuals with economic and social support to reduce their risk of exposure to gun violence. In addition, more comprehensive coverage of gun suicides, approached with sensitivity and respect for privacy, could potentially drive meaningful policy changes. These might include measures like restricted firearm access or the implementation of voluntary “do not sell” registries for those experiencing mental health crises.

In considering the alignment of real gun violence, news media coverage, and academic scholarship, race must be considered. Gun suicide victims are predominantly white, while most gun homicide victims are Black, though the gun suicide rate among Black teens recently surpassed that for white teens (Johns Hopkins Bloomberg School of Public Health, 2023). The current news media focus largely misses the opportunity to humanize the victims of non-mass shooting fatalities, especially in racially minoritized communities. Addressing this gap could pave the way for media narratives that more effectively contribute to violence reduction strategies and policy reforms.

In conclusion, news media representation and academic research appear not to be aligned with the actual prevalence of gun violence. Better alignment might enable a more accurate, humane, and policy-relevant discourse on gun violence — one that steers society towards more safety.

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Data Availability

This study is a systematic review and produced no original research data. However, a spreadsheet of the studies we review as well as prompts we used for ChatGPT-4 are available in our Open Sciences Framework repository Topaz (2023a).

Competing Interests

This study received funding from the Health Alliance for Violence Intervention, a nonprofit organization. While the funder contributed to establishing the overarching aim of this work—a review of research on news media coverage of gun violence—they did not participate in formulating specific research questions, nor were they involved in any phase of the review process, including its execution, interpretation, or reporting.

Ethical Approval

This article does not contain any studies with human participants performed by any of the authors.

Informed Consent

This article does not contain any studies with human participants performed by any of the authors.