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A Review of Mass Stabbing Attacks Between 2004 and 2017

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Targeted violence research has primarily focused on mass attacks involving firearms or explosives. This descriptive study investigated an international sample of 138 mass stabbing attacks that were identified through open-source internet searches and occurred across a 13-year period. The majority of mass stabbing attacks were perpetrated by a single, male offender using a knife. Half of the attacks occurred in China. A third of attacks (34%) were primarily motivated by the perpetrator's reported mental illness. About half of the victims had some type of relationship with the attacker and a quarter of the victims were children or adolescents. Secondary analyses showed a relationship between attack location and motive, such that attacks reported to be primarily motivated by mental illness were disproportionately more likely to occur at schools. The majority of mass stabbing attacks resulted in some type of judicial proceedings against the perpetrator. These results will assist threat assessment professionals in assessing potential mass stabbing incidents and intervening prior to an incident of targeted violence.

Public Significance Statement

This study investigates an area of mass attacks that has not been sufficiently researched and provides operational data for professionals to mitigate such attacks. Descriptive analyses highlight the most prevalent motive of international mass stabbings related to the perpetrator's reported mental illness. There is also a relationship between attack location and motive, as attacks reportedly motivated by mental illness or retaliation for a perceived wrong were disproportionately more likely to occur at schools.

Keywords: mass stabbing attacks, threat assessment, violence prevention

The quiet of a peaceful, suburban school morning in Kawasaki, Japan was shattered when a 51-year-old man approached a school bus stop with a sashimi knife in each hand and began stabbing children, while screaming "I'm gonna kill you!" (Yamaguchi & Hong, 2019). Within moments, he had stabbed 17 female school children between the ages of 6 and 12, and two adults. One child and one adult did not survive their wounds. The attacker slashed his own neck and died. Three additional knives were found in a bag at a nearby store, which he had left there before the attack. May 28, 2019, incident shocked Japan, which sees relatively few mass stabbing attacks and even fewer firearm-based ones; with strong gun control laws, the country of 127 million rarely sees more than 10 gun deaths in a year (Fisher, 2012). This is but one recent example of the brutal mass stabbing attacks that occur all over the world, across a variety of venues and ostensibly driven by a variety of motivations.

"Active shooter" attacks have justifiably captured national and international attention as being among the most dangerous forms of planned violence, in that an offender armed with a gun

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can create large numbers of mass casualties in mere moments. In 2017 alone, 30 active shooter attacks led to 138 deaths and 593 wounded, including 58 fatalities at the Route 91 Harvest Festival in Las Vegas (Ortiz, 2019).

Although sometimes less lethal, no less dramatic are mass stabbing attacks, which have received substantially less attention in the literature. In fact, the authors were unable to identify research dedicated to the behavioral aspects of mass stabbings. One article examined injury pattern variances between stabbing attacks of different motivations, such as the distinctions observed between terrorism-related and interpersonal conflict-related attacks (Rozenfeld et al., 2018). Its authors described their purpose:

> Terror attacks with sharp instruments have multiplied recently, with many victims of these incidents presented to hospitals with penetrating injuries. Because most practical experience of surgeons with intentional stabbing injuries comes from treating victims of interpersonal violence, potential gaps in knowledge may exist if injuries from [terrorism-related stabbings] significantly differ from interpersonal stabbings (Rozenfeld et al., 2018, p. 965).

Rozenfeld et al.'s (2018) intended audience was the health-care system rather than professionals in threat management or executive protection, but this study nevertheless revealed interesting discoveries for threat managers. The authors reported that terrorism stabbing victims were older, more likely to be female, and ethnically homogenous. Most incidents motivated by interpersonal conflict happened on weekdays and at night, whereas the terrorist incidents peaked midweek during morning and afternoon hours. Victims of terrorist-perpetrated stabbings were more likely to receive wounds to the head, face, and neck, and for those wounds to be severe. Targets of interpersonal conflict-motivated attacks sustained greater numbers of abdominal injuries, though those injuries tended to not be as severe as the abdominal injuries seen in the terrorism group. The authors did not comment on mental illness in either offender or victim.

In terms of general injury and fatality statistics maintained by the U.S. government, often the instrumentalities used in intentional acts of harm are not usually delineated by weapon type (Bureau of Labor Statistics, United States Department of Labor, 2017), although stabbings, however, were known to account for 8.1% of workplace homicides from 2005 to 2009 (Harrell, 2011). All stabbing or cutting instrument wounds have been calculated to cost the U.S. economy approximately $51 billion annually (cost breakdown not defined; Krug et al., 2002), with over half of such costs representing intentional stabbing or cutting acts (Miller & Cohen, 1997). More recent statistics maintained by the U.S. Centers for Disease Control calculated combined medical and lost work costs in 2010 of (a) stabbing incidents (with homicidal intent) resulting in death at $2.6 billion, (b) stabbing incidents (with assaultive intent) resulting in hospitalization at $1.9 billion, and (c) stabbing incidents (with assaultive intent) resulting in a "treat and release" protocol at an unknown cost (Cost of Injury Reports, 2021). Though the cost data are imperfect, this type of intended, for example, targeted violence does clearly account for a substantial amount of planned violence and has significant economic implications as well as human ones. As such, it is deserving of analysis to determine whether observations of value for threat assessment practitioners can be made.

Threat assessment and management professionals have the difficult job of identifying those who may genuinely pose a threat of future violence, assessing how great the concern is for such violence coming to fruition, and managing the would be offenders away from the point of engaging in violent attacks. Although violence cannot be predicted, such professionals can attempt to identify scenarios in which conditions may be favorable for a violent outcome, and take preventative measures to reduce that concern in a dynamic and evolving situation. In order to do so, they must learn from the knowledge gained in part from the study of completed attacks and attackers. Certain behaviors often exhibited by past attackers may, when observed in prospective cases, alert threat managers to pay greater attention to them as possible warning signs. For example, having learned that mass shooting attackers frequently engage in leakage of their intentions beforehand (Behavioral Analysis Unit, 2017; O'Toole, 1999), it would be interesting to know whether stabbing attack perpetrators also tend to leak.

Identifying prior research regarding concrete motivation for comparison to this study proved challenging. The Federal Bureau of Investigation's (FBI) Active Shooter Incidents in the U.S. between 2000 and 2013 did not address motive (Blair & Schweit, 2014), nor have subsequent reports in the FBI series. Although Stone (2015) discussed various motivations by mass murderers,

such as "jilted love and spousal rejection," that article did not provide coding statistics for the entirety of the sample. Another review of adolescent mass murderers categorized 27 offenders by five types: family annihilator, classroom avenger, and criminal opportunist, as well as bifurcated and miscellaneous (Hempel et al., 1999; Meloy et al., 2001). Within each of these categories, multiple concrete motives may exist, however. For example, a family annihilator may indeed be depressed, paranoid, or intoxicated at the time of the murders (Dietz, 1986), but if such states were not the driving force behind the decision to kill, but merely attendant factors, then it would not meet the definition of motive adopted by Meloy et al. (2001). A 2018 study on injury patterns in stabbing attacks (no requirement for mass victimization) distinguished between terrorism and interpersonal dispute attacks, but did not subdivide the interpersonal category into discrete motives (Rozenfeld et al., 2018).

Meloy et al. (2004) compared 30 adult and 34 adolescent mass murderers from North America. The study investigated attacks committed over the course of 50 years and involved the use of firearms, cutting implements, and/or blunt instruments. Regarding psychiatric histories, half of the adult offenders and approximately one-quarter of the adolescent offenders had psychiatric histories. The adults usually met the criteria for paranoid schizophrenia, delusional disorder, or major depression. Among the adolescents, only two of the 34 (6%) were psychotic at the time of their attacks, compared to 40% of the adults, plus an additional 27% of adults who exhibited some behaviors suggestive of psychosis; only a third of the adults demonstrated no signs of psychosis at the time of their attacks. Nearly two-thirds of adolescents who attacked at school had depressive symptoms at that time. It is also worth noting that narcissistic, antisocial, paranoid, and schizoid personality traits were observed in a majority of the adult attackers; among adolescents, the researchers noted that "odd, reclusive and dramatic acting-out patterns of behavior, perhaps a prelude to adult personality disorder, were suggested by history in a majority of subjects (Meloy et al., 2004, p. 279)."

Notorious stabbing attacks have, of course, been the subject of study as individual exemplars of genre-specific violence such as school attacks, like for example, Alex Hribal's 2014 stabbing attack at Franklin Regional High School in Murrysville, Pennsylvania; or workplace violence, such as Mohamed Barry's 2016 machete attack at Nazareth Restaurant in Columbus, Ohio. To our knowledge, however, this is the first systematic review dedicated to mass stabbing attacks as a discreet subset of targeted violence. Do mass stabbers exhibit similar preattack indicators as those engaging in firearm-based attacks? Are they more likely to attack people they know? These and other behaviorally oriented questions are relevant to both researchers and threat assessment practitioners.

The Present Study

The majority of targeted violence research concentrates on potential mass shootings (Fein & Vossekuil, 1999; Meloy et al., 2014). However, incidents of mass stabbings have resulted in high casualties and gained international awareness (Gunia, 2019). Yet, research has been limited regarding mass stabbing attacks. The present study used a large sample of international mass stabbing attacks identified by internet research to examine the prevalence and nature of such incidents of violence.

There is no single, widely accepted definition of a mass attack in terms of casualties across authorities in law enforcement or education. Meloy et al. (2004) defined mass murder as the intentional killing of three or more victims in a single incident. The FBI's Behavioral Analysis Unit has defined mass murder as four or more (Behavioral Analysis Unit, 2008), but does not so-define mass shooting. The Gun Violence Archive defines a mass shooting as one which involves four or more victims shot, not including the shooter (Gun Violence Archive, 2022b). The U.S. Congress defined a mass killing as involving three or more victims (Investigative Assistance for Violent Crimes Act of 2012), as does the Stanford University Mass Shootings in America Project (Stanford University, n.d.). In the present study, the term "mass" stabbing was defined as four or more victims being stabbed as defined herein in a continuous attack, which is consistent with a general trend toward requiring four or more victims (Berkowitz & Alcantara, 2020; Blair & Schweit, 2014; Everytown For Gun Safety, 2018).

For this study, a "stabbing" was defined as the intentional and violently forceful piercing or cutting of body tissue, by means of a pointed or edged instrument. Stabbings could be fatal or

nonfatal. A qualifying instrument was any such tool or implement, regardless of size or the use for which it was designed, by which an offender accomplished the stabbing as defined above. Incidents involving bludgeoned victims were excluded unless a minimum of four victims was also stabbed as previously defined. For example, in one incident, the offender struck one of several victims with a blunt aspect of a stabbing instrument only, and therefore that particular victim could not be counted toward a total of four. Although this victim was part of a larger attack that did involve stabbing instruments, the offender demonstrated an intent to harm the victim by a method other than stabbing.

The presence of multiple offenders did not alter any judgments about whether a case was suitable for inclusion. Incidents involving multiple attack sites also were included in the research as a single incident when the attacks were close in time to one another, clearly evidencing a continuing attack. For example, several offenders continued their attack after targeting their main victim(s), while traveling to their next intended target(s), or while attempting to flee. Care was, therefore, taken to include continuous attacks but not spree stabbings, such as when hours or more passed between attacks and the offender was in a steady state of nonviolence during the interval(s). Finally, attacks were eligible for inclusion irrespective of whether targets were preselected or entirely chosen at the moment.

Method

Sample

The study examined incidents of mass stabbings occurring between April 2004 and 2017. The total descriptive sample consisted of 138 cases of mass stabbing attacks by 181 attackers across this 13-year period. The mass stabbing attacks included in the present study occurred in only 22 of the 195 countries across the world. Researchers selected incidents that were sufficiently publicized in English-language sources to allow for thorough coding.

Procedure

Data were obtained from open-source internet searches regarding incidents of mass stabbings. Researchers conducted an extensive search of public news databases, search engines (i.e., Google, LexisNexis), and professional publications (Jenkins et al., 2019) to identify incidents that met inclusion criteria for the present study. Examples of search terms included variations on: stab, cut, puncture, slice, knife, ax, hatchet, sword, needle, scissors, tool, screwdriver, shank, weapon, blade, attack, kill, murder, assault, hurt, wound, victim, perpetrator, and offender.

Coding Procedure

Two researchers independently examined the characteristic and outcome data for the mass stabbing attacks collected through the aforementioned data sources. There was little variability between data sources—especially for countries that lacked publicly available statistics on mass attacks (Hilal et al., 2014)—but disagreements that did occur between the two researchers were reviewed and resolved through discussion. To further ensure coding reliability, a third researcher verified that each incident of mass stabbing met the inclusion criteria and approved the coded variables of each incident. Researchers were cautious to only draw conclusions for coded variables if those conclusions were supported by the majority (more than half) of internet sources.

Measures

Researchers utilized a coding protocol that incorporated characteristics and outcome variables regarding the perpetrator, victims, and incidents of mass stabbing. The data sources provided adequate information to code for variables that included qualitative observations of the offender's behavior prior to and during the attack, as well as potential motivations. The data sources also included observations from third parties, such as classmates, teachers, family members, or friends. A brief narrative and any potentially important details that did not fit within a coded variable were included in a description of the incident for later reference.

Perpetrator Characteristics

Researchers coded basic demographic information, such as gender, race, age, and occupational status, as well as other perpetrator characteristics, such as reported mental health

history, for all perpetrators included in the present study. Behavioral markers or warning behaviors that suggest accelerating the risk of violence were also coded. Consistent with previous research, this study examined a sampling of the perpetrators' preattack behaviors, such as leakage of violent intentions, preoccupation with violence, and other disturbing behaviors that were able to be identified in open-source research, and/or risk factors such as history of violence or criminal history, increased isolation, suicidality, physical agitation, and auditory/visual hallucinations (Meloy & O'Toole, 2011; Monahan & Steadman, 1994; Meloy et al., 2012). Any terrorist affiliations or ideological components to an attack were also noted. Lastly, an ideologically driven "lone actor" was categorized if an attacker appeared to act with a desire to force political, religious, or social change through violence, but did not affiliate with a specific terrorist group.

Victim Characteristics

Open sources provided few details specific to the victims of mass attacks. Research coders indicated the victim(s) age category (i.e., child, adolescent, adult, unknown) and relationship to the perpetrator (i.e., strangers, acquaintances, friends, family, spouses/intimate partners).

Case Characteristics

Researchers noted the location of each mass stabbing attack, such as a residence, school, street, transportation station, other public space (e.g., shopping mall, market, restaurant), or religious institution. In addition, researchers coded the involvement of weapons for each case, such as the number and type of weapons used; whether or not the perpetrator obtained the weapon(s) for the attack, brought the weapon(s) to the attack location, and/or used an opportunistic weapon(s).

In addition, researchers identified 13 categories of potential motivations for a perpetrator to commit an incident of mass stabbing. The motivations included: (a) intimate (or ex-intimate) partner violence (IPV), (b) obsession with target unrelated to IPV, (c) retaliation for specific action(s), (d) academic or workplace failure (dismissal included), (e) an expressed "need to kill," (f) mental illness, (g) draw attention to an issue, (h) terrorism preoccupation or affiliation, (i) financial or property dispute, (j) unemployment, (k) general perception of injustice, (l) intoxication, and (m) unknown. The authors coded a primary motivation per incident of mass stabbing based on an objective reading of each news report.

"Intimate (or ex-intimate) partner violence" was coded as a motive when an attack was perpetrated due primarily to conflict between (ex) intimate partners. "Obsession with target" was coded when an attack was perpetrated due to general fixation with an individual, such as in a non-IPV stalking scenario. "Retaliation for specific action(s)" was coded when an attack appeared to be motivated directly in relation to a previous event experienced by the perpetrator, such as retaliation for bullying. "Academic or workplace failure" was coded when an attack was preceded by/attributed to a work incident, such as workplace dismissal. "Need to kill" was coded when a perpetrator reported an otherwise inexplicable need to harm others as their primary motivation for attack.

Mental illness, generally, refers to any diagnosable mental disorder that significantly affects an individual's mood, thinking, and behavior and causes impairment in several areas of life (i.e., occupational, social, educational; American Psychiatric Association, n.d.). News articles that reported, as a driving factor behind an attack, any type of mental illness, including psychotic, mood, or personality disorders, were included within this motivational category.

"Draw attention to an issue" was coded if the attack was motivated by a desire to shed light on a particular social problem as perceived by the perpetrator, such as ethnic tension, but was not endorsed by or ostensibly conducted on behalf of a terrorist group. "Terrorism preoccupation/affiliation" was coded when an attack appeared to be primarily motivated by the perpetrator's desire to inflict terror or carry out the perceived agenda of a specific terrorist organization, whether formally affiliated or not. "Financial or property dispute" was coded when an attack appeared primarily related to tensions involving money or property, such as a perpetrator attacking a sibling after being denied money. "Unemployment" was coded when an attack appeared primarily related to employment stressors such as being unable to find a job. "General perception of injustice" was coded when an attack appeared motivated by generalized dissatisfaction, such as rage at society as a whole. "Intoxication" was

coded when an attack appeared to be primarily motivated by the perpetrator's active state of being intoxicated by drugs or alcohol; this is distinguished from a mere disinhibitory effect of intoxication where an unrelated motive is clearly evident.

Incidents of crimes primarily motivated by financial gain were excluded. Examples of such incidents include robbery or murder-for-hire schemes. Also excluded were incidents arising from general social disorder such as rioting, spontaneous altercations between individuals and involving adversarial parties acting as aggressors against each other, gang- and drug-related violence, and incidents with insufficient information to determine whether they met the inclusion criteria. It should be noted that researchers did not attempt to detect, or code, predation and preplanning versus impulsive acts, like affective violence.

Outcomes

Researchers coded incident outcomes, including judicial processes and/or death of the perpetrator, as well as the number of casualties (i.e., fatal and nonfatal).

Analytic Strategy

Researchers established interrater reliability for the 138 incidents of mass stabbings to ensure accurate information was reported from the internet sources. Cohen's kappa values were used to measure the agreement between coders across all variables. Descriptive statistics were calculated for all variables. Comparisons were then conducted across certain variables to explore potential differences of characteristics and outcomes for known mass stabbing incidents. Researchers also completed secondary analyses comparing certain variables to better equip threat assessment professionals when managing threats of mass stabbing attacks.

Results

Research coders achieved 89% agreement across all coded variables ($n = 24$). Kappa measures the agreement between raters above the level of agreement that could be expected by chance. A kappa value of 0 indicates no agreement greater than what would be expected by chance and a value of 1.00 indicates complete agreement. In the present study, interrater agreement coefficients across coded variables ranged from moderate to almost perfect agreement between the two researchers. The level of agreement between research coders regarding the presence of leakage in each case was moderate ($\kappa = 0.45$, $p = < .001$) and the lowest level of agreement across all variables. Coders had substantial agreement ($\kappa = 0.62$, $p = < .001$) regarding the perpetrator's stage of weapon use and almost perfect agreement ($\kappa = 0.92$, $p = < .001$) regarding the means by which the perpetrator died. When examining instances of discrepancies, researchers' coding varied when internet sources reported differing or conflicting information. For example, the outcome of incident (e.g., outcome of trial) differed depending on the date of the published article.

Prevalence

A total of 138 cases of mass stabbings were identified within a 13-year-old period, averaging 10.62 cases per year. The mass stabbing attacks were perpetrated by a total of 181 attackers across 22 countries (Table 1). Of the 22 countries, almost half (62 cases; 45%) of the cases occurred in China, a quarter (33 cases; 24%) occurred in the United States, followed by the United Kingdom (8 cases; 6%). In 13 of the 22 countries (59%), the authors identified only one mass stabbing attack during the 13-year period.

Perpetrator Characteristics

The racial/ethnic breakdown of perpetrators (Table 2) consisted of white ($n = 11$; 8%), black ($n = 14$; 10%), Asian ($n = 67$; 49%), Middle Eastern ($n = 10$; 7%), other[1] ($n = 5$; 4%), and unknown races ($n = 31$; 23%). The vast majority of incidents in the sample were perpetrated by males ($n = 124$; 90%). A small fraction of incidents was perpetrated by multiple offenders ($n = 14$; 10%). Most were also adults ($n = 115$; 83%) aged 18 or above. The occupational status was unknown for 55% ($n = 76$) of the sample; 19% ($n = 26$) of the perpetrators were employed, 17% ($n = 23$) were students, and 9% ($n = 13$) were unemployed. Approximately 8% ($n = 11$) of the cases involved perpetrators with a

[1] The other race/ethnicity category included perpetrators noted as mixed race or other.

Table 1
Prevalence of Mass Stabbing Attacks

Mass stabbing attacks	Total sample $N = 138$ (100%)	
Countries		
Australia	1	(0.7%)
Bangladesh	1	(0.7%)
Belgium	1	(0.7%)
Canada	4	(2.9%)
China	62	(44.9%)
Ecuador	1	(0.7%)
Finland	1	(0.7%)
France	1	(0.7%)
Germany	4	(2.9%)
India	1	(0.7%)
Ireland	2	(1.4%)
Israel	6	(4.3%)
Japan	4	(2.9%)
Kingdom of Eswatini	1	(0.7%)
Philippines	2	(1.4%)
South Africa	1	(0.7%)
Spain	1	(0.7%)
Sweden	1	(0.7%)
Thailand	1	(0.7%)
United Kingdom of Great Britain	8	(5.8%)
United States of America	33	(23.9%)
Vietnam	1	(0.7%)

history of alcohol or substance abuse and 17% ($n = 23$) of cases involved perpetrators with a criminal history. Not quite half of the cases ($n = 64$; 46%) consisted of perpetrators with a reported mental health history. The majority of the offender(s)' mental health histories were unknown ($n = 70$; 51%). Of the reported diagnoses identified in the internet searches, approximately 39% ($n = 25$) were unspecified, 45% ($n = 29$) were psychosis, and 11% ($n = 7$) were depression. Similarly, 36% ($n = 23$) of perpetrators were described as experiencing auditory/visual hallucinations and 16% ($n = 10$) as suicidal.

Concerning preattack behaviors, where data were known regarding leakage ($n = 18$; 15%), 83% ($n = 15$) of those perpetrators leaked their violent intentions, either directly to the target ($n = 3$; 20%) or indirectly to a third party ($n = 12$; 80%). Approximately 20% ($n = 28$) of the perpetrators were described as being preoccupied with homicidal ideation or a fascination with violent media or other similar attacks. Only 4% ($n = 6$) of the perpetrators were recorded as demonstrating an increase in isolation and 4% ($n = 6$) were noted as having known affiliations with terrorist organizations; 7% ($n = 9$) were described as lone actors.

Victim Characteristics

News articles primarily noted the total number of victims per mass stabbing attack and, otherwise, provided limited information about the victims. A third of the cases ($n = 45$, 33%; Table 3) included exclusively adult victims aged 18 or above, while 17% of cases ($n = 24$) had only juvenile victims. A substantial number of cases ($n = 59$; 43%) involved both adults and minors. In almost half of the cases ($n = 97$; 48%) the perpetrators and victims were characterized as strangers, followed by acquaintances ($n = 53$; 26%), family other than spouses/intimate partners ($n = 30$; 15%), spouses/intimate partners ($n = 18$; 9%), and friends ($n = 4$; 2%).[2]

Case Characteristics

More than a quarter of the cases ($n = 36$, 26%; Table 4) involved multiple attack locations. The breakdown of attack locations included schools ($n = 44$; 24%); residences ($n = 42$; 23%); streets ($n = 42$; 23%); other public spaces ($n = 42$; 23%) like a shopping mall, market, or restaurant; transportation stations ($n = 12$; 7%); or religious institutions ($n = 4$; 2%).[3] The majority of attacks ($n = 95$; 69%) involved only one sharp-edged weapon and the most common type of sharp-edged weapon ($n = 91$; 66%) was a knife. The majority of perpetrators ($n = 96$; 70%) brought the weapon to the attack location; only 16 cases (10%) involved the perpetrator using an opportunistic weapon for the attack. The following are two case examples of opportunistic weapon use:

> In the first case, a 34-year-old female with a criminal record and reported history of mental illness entered a store in the United States. She injured four individuals with knives in the store until she was apprehended by an off-duty law enforcement officer. Immediately following the incident, she was arrested, charged, and found incompetent to stand trial.

[2] The total exceeds the sample size ($N = 138$), because multiple relationships were noted in several mass stabbing attacks.

[3] The total exceeds the sample size ($N = 138$), because multiple attack locations were noted in several mass stabbing attacks.

Table 2
Descriptive Statistics of Perpetrator Characteristics

Mass stabbing attacks	Total sample $N = 138$ (100%)	
Gender		
Male	124	(89.9%)
Female	9	(6.5%)
Both	2	(1.4%)
Unknown	3	(2.2%)
Multiple offenders		
Yes	14	(10%)
No	124	(90%)
Race/Ethnicity		
White	11	(8.0%)
Black	14	(10.1%)
Asian	67	(48.6%)
Middle Eastern	10	(7.2%)
Other	5	(3.6%)
Unknown	31	(22.5%)
Age category		
Child	2	(1.4%)
Adolescent	17	(12.3%)
Adult	115	(83.3%)
Unknown	4	(2.9%)
Occupation		
Employed	26	(18.8%)
Student	23	(16.7%)
Unemployed	13	(9.4%)
Unknown	76	(55.1%)
Substance abuse history		
Yes	11	(8.0%)
Unknown	127	(92.0)
Criminal history		
Yes	23	(16.7%)
No	15	(10.9)
Unknown	100	(72.5%)
Mental health history		
Yes	64	(46.4%)
No	4	(2.9%)
Unknown	70	(50.7%)

The second case occurred when a 40-year-old male with a reported history of mental illness ran into a restaurant in China. He seized a knife from inside the restaurant and stabbed a total of six individuals in the restaurant and on the street. The perpetrator injured himself as law enforcement attempted to subdue him; he was treated at a hospital and later arrested for the mass stabbing attack.

The most common primary motivations for the mass stabbing attacks consisted of mental illness ($n = 47$; 34%), IPV ($n = 18$; 13%), and unknown ($n = 21$; 15%).[4] Mental illness was coded as a motive when reporting indicated that symptoms of the illness were the primary driving force behind the decision to attack, for example, a delusional belief of imminent danger. The following three case examples illustrate each of these motivational categories:

The first case is an example of a mental illness as the reported primary motive for the attack. A 27-year-old male, who had a history of mental illness and substance abuse, stabbed four strangers in a transportation station in Germany. The perpetrator shouted "Allahu Akbar" while carrying out the attack. He was arrested and charged, and had no known affiliations to Islamist or terrorist organizations. During judicial proceedings, the perpetrator was found not criminally responsible for the attack because his actions were psychosis-driven, and he was committed to an inpatient psychiatric facility.

The second case illustrates intimate partner violence as the motivating factor. A 40-year-old man, who had a violent criminal record and no reported history of mental illness, fatally stabbed his wife and three children in the United States. His wife had a protective order against him at the time of the attack. The perpetrator doused the bodies with gasoline, set the residence on fire, and fled to a different state. He was arrested, charged, and found guilty of the crime.

The third case illustrates an example of unknown motivation. In Puerto Rico, a 14-year-old female stabbed 37 classmates with a hypodermic needle during recess. She had no reported history of violence or mental illness. Upon her arrest, she stated she stole the needle while visiting a relative at a hospital with the intention to pierce her ears. It is unclear as to why she decided to stab her fellow students.

Regarding the remainder of observed motivations, the next most prevalent motive was terrorism ($n = 14$; 10%) and retaliation for a perceived wrong ($n = 11$; 8%,). Within the terrorism motivation group, nine were considered unaffiliated "lone actor" and six were affiliated with a group. Half of the group affiliates were Chinese Uighurs. From among the remainder, one was affiliated with Islamic State of Iraq and Syria (ISIS) and one other affiliated with Islamic separatists according to news sources. One terror group affiliate's actual affiliation was unclear from the new sources reviewed. Five cases (4%) appeared to be motivated by a state of substance intoxication. Four cases (3%) were attributed to a felt "need to kill," desire to draw attention to an issue, financial or property dispute grievances, unemployment, and grievances based on a general perception of injustice. Two cases (1%) were driven by grievances with academic or workplace failures. The authors were unable to identify a motive in 21 cases (15%). An example of a "need to kill" case:

[4] The total exceeds the sample size ($N = 138$), because multiple motivations were noted for the offender(s) in several mass stabbing attacks.

Table 3
Descriptive Statistics of Victim Characteristics

Victim	Total sample $N = 138$ (100%)	
Age category		
Child	14	(10.1%)
Adolescent	10	(7.2%)
Adult	45	(32.6%)
Multiple ages	59	(42.8%)
Unknown	10	(7.2%)
Relationship to offender		
Strangers	97	(48.0%)
Acquaintances	53	(26.2%)
Friends	4	(2.0%)
Family	30	(14.9%)
Spouse/Intimate partners	18	(8.9%)

> While in a boy's locker room in Utah, the 16-year-old perpetrator hit his first victim from behind with a wooden martial arts staff, breaking it. He then used a knife to stab four other students. Victims were randomly chosen and the perpetrator later admitted that he just wanted to kill as many people as possible. He also stabbed himself in an apparent, and unsuccessful, attempt to die by suicide.

The authors note that, in addition to clear evidence of "motive," role conceptions within intimate partner relations, attitudes related to degree of patriarchy, and related attitudes about violence also vary across cultures. The data available to the authors within the sample lacked the depth necessary to engage in thoughtful analysis regarding these influences.

Outcome Findings

The 138 known mass stabbing attacks resulted in 1,519 injuries and 402 deaths, totaling 1,955 total casualties (Table 5). This translates to approximately 117 injuries, 31 deaths, and 150 total casualties per year across the 13-year period included in the study. The breakdown of case outcomes consisted of the following: the offender(s) was arrested ($n = 114$; 39%); was formally charged with legal action ($n = 80$; 27%); was incarcerated ($n = 48$; 16%); and/or died ($n = 47$; 16%).[5] None of the news articles indicated an offender remained at large in the aftermath. Approximately 19% ($n = 26$) of the cases involved offender(s) receiving mental health services while incarcerated. Of the 47 perpetrators who died, half ($n = 24$; 51%) were executed as a result of criminal justice process; a third ($n = 16$; 34%) were killed through adversarial action during the course or as a result of the attack, and a small fraction ($n = 7$; 15%) died by suicide.

Secondary Analyses

In order to further examine patterns in the data that may be of interest to threat assessment professionals, researchers conducted chi-square tests of independence to investigate statistical relationships between several variables.

A chi-square test of independence was conducted to examine the relation between attacker age and lethality of attack. The relation between these variables was significant, $\chi^2(3, N = 138) = 14.02$, $p = .003$, such that attacks by adults were far more likely to be fatal.

A chi-square test of independence was conducted to examine the relation between attack motive and attack location. The relation between these variables was significant, $\chi^2(66, N = 138) = 100.16$, $p = .004$, such that attacks with certain motives were more likely to occur at some locations as compared to others. See discussion for greater detail about these patterns of findings.

Chi-square tests of independence were conducted to examine the relation between both reported presence of mental illness and mental illness as an apparent motive. The relations between these variables were not significant for either presence of mental illness, $\chi^2(6, N = 138) = 8.52$, $p = .202$, or mental illness as a motive, $\chi^2(3, N = 138) = 5.87$, $p = .118$.

A chi-square test of independence was conducted to examine the relation between reported presence of mental illness and leakage. The relation between these variables was not significant, $\chi^2(1, N = 138) = 2.79$, $p = .095$.

Discussion

Researchers developed precise coding definitions and procedures when reviewing open-sourced internet websites. Interrater reliability was established before interpreting the descriptive findings. The percentage of agreement between coders was 89% and kappa coefficients across all coded variables ranged from moderate to almost perfect agreement. Overall, the results

[5] The total exceeds the sample size ($N = 138$), because multiple case outcomes were noted per offender per attack.

Table 4
Descriptive Statistics of Case Characteristics

Case characteristics	Total sample $N = 138$ (100%)	
Place of attack		
Residence	42	(22.6%)
School	44	(23.7%)
Street	42	(22.6%)
Transportation station	12	(6.5%)
Other public space	42	(22.6%)
Religious institution	4	(2.2%)
Multiple locations		
Yes	36	(26.1%)
No	102	(73.9%)
Weapons		
Knife	91	(65.9%)
Ax	10	(7.2%)
Sword	7	(5.1%)
Other	12	(8.7%)
Multiple types	18	(13.0%)
Number of weapons		
One	95	(68.8%)
Two	33	(23.9%)
Three	7	(5.1%)
Four	1	(0.7%)
Five	1	(0.7%)
Eight	1	(0.7%)
Stage of weapon use		
Possessed weapon prior to attack	11	(6.8%)
Obtained weapon for attack	12	(7.5%)
Brought weapon to attack	118	(73.3%)
Used opportunistic weapon	16	(9.9%)
Unknown	4	(2.5%)
Primary motivations		
(Ex) intimate partner violence	18	(13.0%)
Retaliation for specific action(s)	11	(8.0%)
Academic/Workplace failure	2	(1.4%)
Need to kill	4	(2.9%)
Mental illness	47	(34.1%)
Draw attention to issue	4	(2.9%)
Terrorism preoccupation/Affiliation	14	(10.1%)
Financial/Property dispute	4	(2.9%)
Unemployment	4	(2.9%)
General perception of injustice	4	(2.9%)
Intoxication	5	(3.6%)
Unknown	21	(15.2%)

indicate that the final codes are an accurate representation of the quality of the data used in the present study.

Prevalence

Results indicated that the United States experienced an average of 2.5 mass stabbing attacks per year. This is not a precise calculation, but it demonstrates that the risk of mass stabbing incidents for the United States could be lower than the general impression held by the public or governmental or law enforcement authorities. This calculation could also be an underrepresentation of the average risk of mass stabbings in the United States due to the nature in which the data were collected. Specifically, a news agency might not have recorded every incident of mass stabbing that occurred, older news articles may no longer appear online, or the researchers may simply have missed instances in their searches. Thus, the overall rate of mass stabbing attacks in the United States might increase upon a comprehensive review of law enforcement and governmental records. For the sake of comparison, one source calculated that the per year incidence of U.S. mass shooting events (four victims shot excluding offenders) has exceeded 250 since 2014—100 times the mass stabbings rate. (Gun Violence Archive, 2022a). A calculation of average incidents worldwide was not attempted in this study due to the higher risk of missing international incidents during data collection.

Perpetrator Characteristics

Mass stabbers were most often males, consistent with other research on mass murderers (Hilal et al., 2014; Meloy et al, 2004; Stone, 2015). It has been observed that engaging in mass murder is the domain of men (Stone, 2015). Such was the

Table 5
Descriptive Statistics of Outcome Findings

Outcome findings	*n*	Percentage
Victim count		
Injuries	1,519	(77.7%)
Fatalities	402	(20.6%)
Total	1,955	(100%)
Case outcome		
Offender at large	0	(0%)
Offender arrested	114	(39.0%)
Offender charged	80	(27.4%)
Offender incarcerated	48	(16.4%)
Offender death	47	(16.1%)
Unknown	3	(1.0%)
Mental health services while incarcerated		
Yes	26	(18.8%)
No	21	(15.2%)
Unknown	91	(65.9%)
Means of offender's death		
Suicide	7	(14.9%)
Adversarial action	16	(34.0%)
Executed	24	(51.1%)
Total	47	(100%)

case in this study, with 90% of stabbers being male. The overwhelming majority of all attackers were adults, as well, at 83%.

There was a higher number of attackers of Asian descent; however, interpreting this finding is rendered challenging by the nature of open-source research and the corresponding lack of data to support assigning reasons for it. The authors speculate that weapon access disparities account for the difference in frequency observed between the stabbing attacks in China and the United States or other countries. Firearms access is greatly limited in China, which correspondingly enjoys a low rate of shooting attacks in comparison to the United States (NationMaster, 2021). However, as in most places edged weapons are generally easy to access given their ubiquitous nature. Hilal et al. (2014) similarly found that the majority (57%, 94–165) of all mass attacks in China were committed with a knife and suggested it was due to the limited access to and lengthy incarceration associated with firearm possession. China is one of the most populous countries in the world and therefore it is not necessarily surprising to see higher absolute numbers from that country in this study, particularly if guns cannot be obtained.

Secondary analyses indicated there was a significant relationship between the age of attacker and lethality of attack, in that attacks by adults were disproportionately likely to be fatal. Neither substance abuse history nor criminal history was widely recorded as being present, though this may be partly due to paucity of reporting. Few ($n = 6$; 4%,) were recorded as having known affiliations with terrorist organizations; there were more lone actors ($n = 9$; 7%) than terror group affiliates, but relatively few of either. All of the lone actors were males. Two of the cases involving attackers associated with terrorist groups had both male and female perpetrators; the other four cases involved only males or attackers of unknown gender. Six (4%) offenders demonstrated increased isolation from others in the time leading up to the stabbing incident, and only two (1%) were recorded as exhibiting physical agitation before the attack. At least 20% of future mass stabbers were observably preoccupied with violence during the time preceding the stabbing incidents, often in regard to an interest in homicide ($n = 17$; 12%). In seven additional cases (5%), they exhibited a fascination with violence, generally. In four cases (3%), they demonstrated a preoccupation with both violence and homicide, specifically. Only 12 (9%) of the stabbers were recorded as having demonstrated suicidality prior to the index offense.

Concerning preattack behaviors, where data were known regarding leakage ($n = 18$; 15% of cases), the vast majority of those perpetrators ($n = 15$; 83%) leaked their violent intentions either directly to the target ($n = 3$; 20%) or indirectly to a third party ($n = 12$; 80%). This study adopted the expanded view of leakage (Meloy & O'Toole, 2011) proposed by the FBI's Behavioral Analysis Unit, which includes any expressions, regardless of whether communicated to others, which appear to convey "thoughts, feelings or intentions to do harm" (Behavioral Analysis Unit, 2017). The authors cross-referenced the presence of leakage with the reported presence of mental disorder, and found no statistically significant relationship between these variables in the sample.

Victim Characteristics

As noted, it was frequently observed that little information about victims was published in the news sources reviewed, limiting the data available for study. Accordingly, victim sex was not coded, Victims and offenders were about as likely to know one another ($n = 105$; 52%) as not ($n = 97$; 48%). Intimate partner attacks accounted for less than 10% of cases ($n = 18$)—even less than other familial relationships. Cases where victims were exclusively children 0 to age 12 represented a tenth of the sample ($n = 14$), slightly outpacing cases where only adolescents were the victims—7% ($n = 10$) of cases. Of these 24 juvenile victim cases, six were juvenile-on-juvenile needle stabbings, discussed below.

The highest number of recorded victims in a single case was 250, exclusive of offenders, and occurred only once in the sample (0.7%). The case was part of a series of mass needle stabbing attacks in China, related to erupting ethnic tensions between Uighurs and Hans. In another single case (0.7%), 130 injuries and 29 deaths, for a total of 159 victims, were reported, exclusive of offenders. In that incident, part of the same series and identified by Chinese authorities as a premeditated terrorist attack, eight attackers dressed in black indiscriminately stabbed men, women, and children with multiple types of stabbing instruments at a train station in Kunming, Yunnan province, China. The Chinese

government attributed both attacks to Uighur Muslim separatists.

Although the study data were insufficient to identify a victim's overall likelihood of enduring serious bodily injury, it was observed that victims often survived these incidents. In 41% of cases ($n = 56$), no one was killed. In 12% ($n = 16$) of cases, only a single fatality occurred. The available data were insufficient to attempt to correlate fatalities with an attacker's intended target(s) to determine whether or not stabbers were able to kill a desired, primary quarry. The highest fatality count in a single case was 29, which occurred in the same terrorist attack described above. The next highest fatality rate was 19, representing two cases (1.4%). In the majority of cases ($n = 105$; 77%), four or fewer were killed.

Case Characteristics

Regarding single-site attacks, attacks most frequently occurred at schools ($n = 44$; 24%), residences ($n = 42$; 23%), streets ($n = 42$; 23%), or other public spaces ($n = 42$; 23%) like shopping malls, markets, and transportation stations. Secondary analyses indicated there was a relationship between motive and location. Not surprisingly, IPV attacks were overwhelmingly likely to occur at home, which make for challenging prevention efforts by security planners in terms of target hardening—long-term threat management in collaboration with potential victims will likely continue to be the key to success in IPV cases; the authors recognize such collaboration may be challenging at best in some cultures. Attacks coded as motivated by mental illness were disproportionately likely to occur at school, implicating the critical role for mental health resources in academic settings, in addition to multidisciplinary threat management assets. Retaliatory attacks were also disproportionately likely to unfold at school; these attacks may stem from a desire to retaliate for any number of perceived wrongs, once again implicating a need for well-versed school threat management teams. The only motive category featuring at least one attack at every coded venue type was terrorist preoccupation/affiliation, highlighting the importance of counterterrorism efforts across all venue types.

More than a quarter of all cases ($n = 36$, 26%; Table 4) involved multiple attack locations. The substantial rate of multisite attacks in this study is noteworthy. Understanding that in a quarter of cases an attacker moved to at least one additional site and continued attacking, threat management, security, and first responder professionals should bear in mind the often-mobile nature of this form of mass attack. A subject pursuit of interception may be necessary to stop an attack, and emergency medical care may need to be deployed on a multisite basis.

Weapons

The vast majority of cases involved one ($n = 95$; 69%) or two weapons ($n = 33$; 24%). Only a handful of cases involved three or more ($n = 10$; 8%). Unsurprisingly, knives were the most common weapon type, followed by axes, and perpetrators usually brought their weapons with them to the site. This places security planners and responders both at potential advantage and disadvantage. Possible advantageousness centers around observable behavior in the preattack time period, during which bystander reporting may be feasible as a route to prevention depending on the ability and willingness of bystanders to report. Selecting and, without logical, legitimate reasoning, transporting a knife or an ax may be likely to grab attention by bystanders in a position to notice. The disadvantage comes in the form of the easily obtainable and concealable nature of many stabbing instruments; such implements are often readily accessible, and even a relatively small ax can fit into a bag or under clothing. Those venues with a security perimeter, such as some schools or open-air concert venues, will have a greater opportunity to discover attempts to smuggle weapons than spaces without. Opportunistic weapon selection on-site could dramatically reduce security responders' time to react where no other preattack warning behaviors are observed, but such opportunism was relatively uncommon in this sample.

A handful of stabbings-by-needle was identified in the study; six involved medical needles and one involved sewing needles. Of the seven total "needle" stabbing cases, six were perpetrated by 19 total juvenile students; only one case involved adult offenders. In the latter case, two male and one female adult were convicted in Chinese court for attacking randomly selected strangers with hypodermic needles (Wong & Ansfield, 2009). Although English language-accessible details are somewhat scarce in this case, those three

defendants appear to have been part of the weeks-long pattern, referenced above, of multivictim stabbing attacks in Urumqi, Xinjiang, China, which reportedly involved over 500 victims all told. The motive in this case was coded as "call attention to an issue or cause." Although Uighur–Han ethnic and political tensions in that region resulted in the series of attacks involving these offenders (the defendants were Uighur and the victims were Han), no terrorist group claimed or endorsed the violence.

All juvenile needle cases involved stabbings of fellow students. In one case, 40 student victims were stabbed by a single female, and in another over a dozen were stabbed—both incidents occurred at school. In the latter, the male offender told some of his victims "You now have Hepatitis B." This is somewhat reminiscent of the so-called "pinprick attack" hoaxes of the 1990s, discussed in greater detail below, and was a theme found in two of the seven needle cases in this sampling. The youngest needle stabber in the study sample was 8 years old. Serious injuries were recorded in none of the seven mass needle attacks in this study.

The motive in these cases was difficult to assess, and researchers were able to identify motive sufficient for coding in only one case. However, the totality of information found regarding the two incidents involving statements about communicable disease transmission strongly suggested prank motivation. Much of this lack of detail may stem from the general protectiveness of information pertaining to juveniles, or potentially a lack of perceived necessity to thoroughly interrogate juvenile offenders in such cases when no serious injuries resulted. None of the needle incidents appeared to be related to picquerism, a sexualized pricking (or worse) with sharp objects, usually perpetrated upon another person (Griffiths, 2015).

As noted, two cases in this study bear a degree of similarity to the "pinprick attack" urban myth which largely took off in the 1990s when email and internet communications had just become commonplace (Pin Prick Attack, n.d.). In a pinprick attack scenario, an email circulates, warning readers about a person who had been out doing a routine evening activity such as going to the movies or dancing at a club and felt a slight prick on the arm. Unconcerned, the person went on with the activity, but later found a note stuck to his or her clothing reading "welcome to the AIDS club." Several weeks later a positive Human Immunodeficiency Virus (HIV) test followed. This was, of course, a hoax made convenient by the internet's ease and anonymity—no one was actually stabbed in the hoax scenario. A few documented cases of successful disease transmission by deliberate needle attack were identified by the authors, most occurring in the 1990s and none which would have met study criteria for mass victimization. This suggests mass needle stabbing attacks lack the malice associated with the individualized and highly injurious incidents of willful disease transmission. This is likely due in part to a simple lack of homicidal malice, presumed in the juvenile cases in this study, but also to a lack of access to infectious pathogens which would be a hurdle for these youngsters.

Motivations

Analysis of motivations, overall, in this study yielded interesting results. Although in some cases secondary and tertiary motives were coded, for discussion a primary motive was singled out for each case. By far, the most prevalent primary motive was mental illness, at 34% of cases (n = 47). It should be noted that individual symptoms of reported mental illness (e.g., delusions, disorganized speech) were not broken down for coding. As noted, mental illness was coded as a motive when information available in the news reports indicated symptoms of the illness comprised the primary driving force behind the decision to attack (e.g., command hallucinations directing the attack) rather than being merely an attendant circumstance.

Although methodological diversity has made wide agreement challenging, from among the myriad forms of major mental illness a majority of research has identified psychotic disorders as being most closely associated with general violence risk, even when controlling for confounds and covariates (Douglas et al., 2009). That said, the superior approach for threat assessment professionals is likely to be a focus on individual symptoms, their onset and course, interactions with each other, and their logical relationship to the feared violence (Douglas et al., 2009; Monahan et al., 2001). In this study, the authors were unable to code individual symptomology due to scarcity of data in the public domain. However, the general notion of assessing symptomology (i.e., behaviors) and their logical

relationship to violence is well within the abilities of well-trained threat managers to accomplish, though it is always recommended to involve qualified mental health professionals on a multidisciplinary team in any event. Accessing clinical data or perhaps detailed investigative records, sufficient to identify specific symptoms, would be an ideal next step in any following study on mass stabbings involving major mental illness. In terms of targeted violence, substantially higher rates of severe mental illness including psychosis have been observed among adult mass murderers (Meloy et al, 2004). It has been recognized that psychosis can potentially cause violence, result from violence, or merely correlate with violence (Douglas et al., 2009). Accordingly, the authors chose to code both for the apparent presence of mental disorder, as well as for mental illness as an apparent primary motive to attack, such as when a psychotic episode was taking place during an attack and appeared to drive it according to details found in the news reports. Though mental illness was coded as a primary motivator when the news sources indicated as much, the nature of this open-source study precludes adopting the same posture of confidence in this data point as would result from, for example, inspection of treatment notes or investigation-quality interviews. Nevertheless, these open-source data do provide an interesting picture of the potential for significant contributions by behaviors consistent with positive psychotic symptoms in this genre of mass attack.

Mental health histories were often unknown in the present study, but where the data were available ($n = 68$; 49%), news articles reported the apparent substantial presence of mental disorder. Sixty-four offenders, or nearly all for whom data were known, were identified as being mentally ill in some form. This rate of mental illness within the mass stabber sample, assuming the news reports are accurate, appears to be higher than more multifaceted (i.e., including shooters) groups of mass attackers (Meloy et al., 2004; Silver et al., 2018). Only four cases featured a clear absence of mental disorder according to reports. Researchers coded "mental illness" as the primary motivation to attack in 47 cases, or 73% of those cases where any mental disorder was detected. To be clear, this indicates the publicly available data suggested not just the presence of psychosis, but those psychotic symptoms actually drove the attack in these instances.

Stone (2015) conducted a large analysis of 235 American mass murders, spanning a century of records. The study found that about a quarter of the attackers were considered seriously mentally ill. Concerning gender breakdown, 22% ($n = 46$) of the 226 men were classified reported as mentally ill, 40 of whom suffered from psychosis either long term or transiently at the time of the attack. Of the nine women in his sample, six were mentally ill with accompanying psychosis. In the present study, there were not sufficient data in the open-source reporting to distinguish between serious mental illness and less serious cases. Researchers cross-referenced gender with both the apparent presence of mental illness and mental illness as an apparent motive; neither analysis revealed a statistically significant relationship. The small sample size of females likely precluded detection of a relationship, if one exists.

Outcome Findings

No cases evolved into a fugitive matter, which may signify good news for law enforcement resource allocation in these types of attacks. Although the data in this case were not sufficiently robust to allow researchers to catalog the reasons for it, it is nevertheless interesting that mass stabbing perpetrators never ultimately escaped.

Suicidality is of interest both as a preexisting risk factor which may point to increased vulnerability to engage in violent planning, and as a dynamic warning behavior which may point to an accelerating threat of violence. It may also be valuable as *peri*attack behavior, helping public safety professionals understand whether self-destruction is more or less likely.

Mass stabbers generally survived their attacks. Whereas active shooters between 2000 and 2013, in a sampling of similar temporal expansiveness to the present study, suicided 40% of the time during or following the index offense (Blair & Schweit, 2014), only 5% ($n = 7$) of mass stabbers in this study died by suicide at their own hands (as opposed to "suicide by cop") during the attack or immediately following; an additional 12% ($n = 16$) died as a result of adversarial action either by security or law enforcement, or by civilians present at the time of the attack. The authors did not attempt to distinguish suicide-by-cop deaths from other adversarial actions due to the paucity of available detail in many instances. In one

additional case, data were unknown regarding exactly how an offender died. The remaining 114, or 82%, survived. This survival rate does not account for suicide attempts or nonfatal counterattack by others, as those data were largely unavailable and therefore not coded. Nevertheless, the apparently low incidence of suicide by mass stabbing offenders suggests they are more interested in survival than in self-destruction. Notably, 17% of active shooters in 2019 in the United States died by suicide at the conclusion of or following their attacks—considerably lower than the more wide-ranging 2000–2013 sample, as well as much lower than 2018 (Active Shooter Incidents in the United States in 2019, 2020). An additional 30% in 2019 were killed by law enforcement action, though the authors of that study offered no comment about the possibility of suicide by cop.

Largely, lower suicide rates have not necessarily been reflected in other genres of mass attack. It has been observed that most adult mass murderers, generally, do not survive their attacks, either because they die by suicide or "suicide by cop," but that adolescent mass attackers are likely to survive (Fessenden, 2000; Meloy et al., 2004). Studies have found prior suicidality in a majority of mass attackers (Mohandie et al., 2009). When Meloy et al. (2004) examined North American mass murderers, they assessed the incidence of suicide during or immediately following the index offense. Of the 30 adult mass murderers in the sample, 53% died by suicide, compared with 6 of 115 (5%) adult mass stabbers in the present study. Of the 34 adolescent offenders cataloged in the 2004 study, 9% died by suicide, compared with one of 17 (6%) adolescents in the present sample. No children younger than 13 in the present study died by suicide. The contrast between the high adult suicide rate in the 2004 study versus the low rate in this study is noteworthy. One obvious distinction between samples: The overwhelming majority of offenders in the 2004 sample attacked primarily with firearms (Meloy, 2020), and the entirety of the current sample attacked primarily with stabbing instruments. Insufficient data were available relative to the stabbing offenders for researchers to speculate about why stabbing offenders may be less inclined to suicide than their shooting brethren.

In the present study, six (86%) of the seven cases involving suicide took place in China; the remaining case (14%) occurred in India. In one instance, 40-year-old man, an ethnic Uighur and farmer, stabbed to death six people and injured eight others when he broke into a skating rink on the third floor of a shopping center. His victims were mostly teenagers. Following a police chase, he died by suicide by jumping off a building. According to the police, the attacker had a history of drug addiction, hostility toward society at large, and had previously displayed homicidal impulses on many occasions. This and other cases in this sample might also be referred to as "amok," a form of mass murder that manifests, with superficial variations, around the world but was once thought to be a culture-bound syndrome linked to Asia and the Western Pacific (Hagan et al., 2015; Hempel et al., 2000). Classically, amok occurred suddenly, involved males conducting sharp instrument assaults against many victims, and often ended either in claims of amnesia or suicide by the perpetrator. Other instrumentalities of assault have since been cataloged as amok behavior (Hempel et al., 2000). It has been argued that amok may actually be driven by a suicidal intention and therefore likely to result in one (Hagan et al., 2015). Inasmuch as co-called amok is recognized to occur irrespective of region or border, however, it would not seem to be an explanation for the higher occurrence of suicide in Asian cases in this sample.

Knoll (2010) wrote of the pseudocommando's obliterative mindset as potentially a stage-setter leading to near-inevitable suicide, though as highlighted by Mullen (2004) some of this ilk do survive. Other mass attacker subtypes, such as the family annihilator, also often suicide at the conclusion of attack (Felthous & Hempel, 1995), while criminal opportunist mass murders may be less likely to do so; this makes a degree of sense if one understands the criminal opportunist to be killing for pragmatic rather than ideological or emotional reasons, for example, a robber seeking to eliminate witnesses. Suicide would be counterproductive in that scenario. In the category of public figure attacks, as well, distinct desire to survive the event has been observed (Meloy & Amman, 2016), though probably for very different reasons. The public figure attacker is not likely to be pragmatically oriented in the way a robber is. Rather, they are more revenge-oriented, but unlike the retaliatory and obliterative pseudocommando, they want to live on (Meloy & Amman, 2016).

As far as implications for security and threat management planners are concerned, it bears

mention that an intention to survive a mass attack likely requires more, or at least different, planning than when the offender either does not care about survival or plans to die or be killed. In order to survive, the attacker's defense against counterattack must ordinarily be considered, as well as goals to be achieved before withdrawal, and escape. For attacks outside the home, a viable exit route must exist, and greater precautions in the planning and preparation stages may also be required. On the other hand, it is conceivable that attackers driven by psychosis did not specifically consider or plan for survival versus death; at the critical juncture they may have simply lacked the will or desire to suicide but did not necessarily form an advance plan in which they would purposefully endure. Researchers cross-referenced suicide with motive and found no statistically significant relationship between the two variables for any motive category.

Finally, although evidence to date has been lacking to establish that impulsive mass attacks truly occur, the authors acknowledge the possibility of the same when opportunistically selected weaponry is a factor. In their discussion of amok, Hempel et al. (2000) seemed to consider the same possibility: "Public shame could cause a nonrehearsed impulsive act which would add a cultural uniqueness to amok. But the fact is that there have been noted dramatic decreases in the rate of amok when the consequence was changed from hospitalization to hanging. This suggests that amok may be an act of predatory violence rather than affective violence, at least in terms of planning and intent, similar to mass murders, generally." In the current sample, an inspection of private and/or otherwise restricted case information at minimum would be required to opine definitively on this aspect.

Limitations and Conclusion

This descriptive study relied on open-source news articles, which is inherently limiting. As this sample only includes incidents reported in the media, it is highly likely, in fact it is presumed, that other attacks that met the inclusion criteria were not discovered through systematic internet searches. This may be particularly true for attacks happening overseas, for which media reporting was at least partially if not entirely in a language other than English. It is possible that other search terms would have captured additional attacks meeting inclusion criteria, and it is certainly true that more expansive inclusion criteria would have captured many more cases, particularly overseas. Another limitation is the level of detail reported varied widely among the incidents collected; therefore, our data may not be consistent in terms of depth and breadth. For example, some articles reported information about the perpetrator (e.g., criminal and mental health history) and case characteristics (e.g., motive), while other articles lacked such information. Additionally, the extent to which culture may have influenced these attacks in terms of quantity or quality is unknown, given the absence of information that would ordinarily come from sources such as witness interviews, investigative reports, or treatment notes. Finally, media reporting often contains objective and subjective errors, which the authors would not inherently know. Nevertheless, this study established interrater reliability across the coded variables and provides new information regarding mass stabbing attacks.

Despite these limitations, the findings provide operational data of mass stabbing attacks that will help law enforcement and threat assessment professionals better discern and prevent such incidents. There is a need to explore such attacks across additional characteristics and outcome variables. For example, what was the primary motivation and warning behaviors for perpetrators to stab strangers? Are perpetrators of mass stabbing attacks less likely to communicate threats indirectly or directly? Similarly, researchers should investigate the potential relationship between attack location and motive, such as attacks primarily motivated by mental illness that were more likely to occur at schools. Finally, a deeper analysis of similarities and differences between attacks in western hemisphere countries versus eastern would be an appropriate next step in investigating the likely role of cultural differences in mass stabbings.

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