



# A Multivariate Comparison of Family, Felony, and Public Mass Murders in the United States

Emma E. Fridel<sup>1</sup>

## Abstract

The mass murderer is known by a variety of names in both public and academic spheres, from the family annihilator to the active shooter, from the workplace avenger to the rampage school shooter. Although most researchers acknowledge that the phenomenon is heterogeneous, mass killing has defied classification, and currently no consensus typology exists. Most previous efforts at developing a classification scheme have focused on sorting these multicides into three broad groups, namely, family, felony, and public mass killings, exclusively relying on qualitative methods and case-study analysis to do so. The present study employs a multivariate approach to examine differences among types in victim, offender, and incident characteristics on the population of all mass murders in the United States from 2006 to 2016.

## Keywords

homicide, mental health and violence, workplace violence, domestic violence

## Introduction

Although mass murder—initially defined by the FBI as the killing of four or more victims in a single location within one event<sup>1</sup>—is a major area of public

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<sup>1</sup>Northeastern University, Boston, MA, USA

### Corresponding Author:

Emma E. Fridel, School of Criminology and Criminal Justice, Northeastern University, 409 Churchill Hall, 360 Huntington Avenue, Boston, MA 02115, USA.

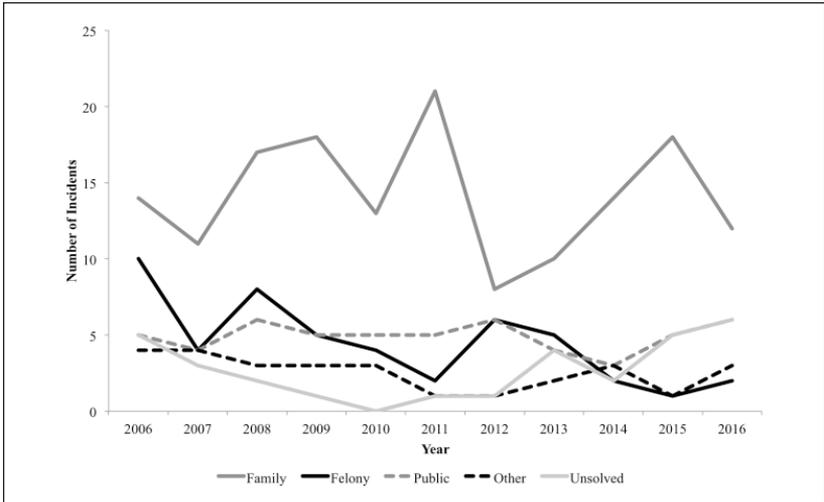
Email: fridel.e@husky.neu.edu

concern, academic research on this rare form of homicide remains in its infancy (Fox & Levin, 1998). Most previous work on mass murder has estimated the prevalence of the crime, developed a basic offender profile, or attempted to differentiate mass murder from other types of homicide. Noting systematic differences across incidents, some scholars have crafted typologies to group mass murderers by motive, victim–offender relationship, and/or location choice; yet, no classification scheme has been universally embraced by the academic community.

Early efforts to classify mass murder were based on Dietz's (1986) first known typology and Fox and Levin's (1996, 1998) motive-based categories (see Holmes & Holmes, 1992, 1994, 2001; Kelleher, 1997; Petee, Padgett, & York, 1997). Despite repeated attempts at developing consensus groupings of mass killings, these early typologies have been widely criticized for not being exhaustive and/or mutually exclusive and for overusing the same, highly publicized cases as examples of each type, despite the use of different substantive criteria (Duwe, 2005; Gresswell & Hollin, 1994). In some cases, types are briefly described in a few sentences, and vague criteria such as offender "lifestyle" are established to distinguish among categories or guide classification of ambiguous cases (Dietz, 1986; Holmes & Holmes, 1992, 2001). Others are subject to a high degree of interpretation (especially motive-based typologies) or fragment a rare phenomenon into so many small groups that complete disaggregation seems a better alternative (Levin & Fox, 1996; Fox & Levin, 1998; Petee et al., 1997). Although they are infrequently used in modern studies due to the above limitations, these pioneering typologies provided a foundation for future classification work.

Addressing the shortcomings of previous classification schemes, more recent research has dealt with the categorization problem in several ways. Some scholars have simply avoided the issue altogether by describing offender, victim, and incident characteristics independent of type (Aitken, Oosthuizen, Emsley, & Seedat, 2008; Duwe, 2000, 2004; Hempel, Meloy, & Richards, 1999; Lankford, 2015; Palermo, 1997) or by honing in on a single type of interest, typically public mass shootings (Follman, Aronsen, & Pan, 2016; Lankford, 2016a). Others have developed new, empirically based typologies by expanding the scope of data to include all forms of multicide or single-victim murder-suicides (Harper & Voight, 2007; Vaughn, DeLisi, Beaver, & Howard, 2009). These approaches are somewhat problematic, however, as they fail to recognize heterogeneity among mass murders, arbitrarily exclude known types, or change the underlying phenomenon of study by including offenses not traditionally considered mass murder.

As a result, most scholars have instead adopted broad categories that represent an amalgamation of previous typologies. Since the late 1990s, the most



**Figure 1.** Trends in mass murder by type, 2006 to 2016.

common scheme for categorizing mass murder has included family killers, who target their spouses and children before committing suicide; public killers, who attack strangers in a public space; and felony killers, who eliminate witnesses to another crime (Duwe, 2004, 2007; Krouse & Richardson, 2015; Overberg et al., 2016). Elements of these three types are described in almost all early typologies, albeit with different names.<sup>2</sup> Although this de facto classification scheme benefits from being broad, multidimensional, and easy to apply, it remains somewhat ad hoc due to its lack of exclusivity and use of different criteria to define each type. Despite its common usage, differences among the three types have only been examined with case studies and other qualitative analyses. Moreover, most studies on mass murder typologies are neither generalizable to the entire population of mass murderers nor replicable. This study seeks to quantitatively test differences among family, felony, and public mass killings with the *USA TODAY* database.

### Family Killings

Familicides or family annihilations represent the most common form of mass murder (see Figure 1), and are principally defined by a close victim–offender relationship (Fox & Levin, 2015; Krouse & Richardson, 2015). Perpetrators are typically White, middle-aged males who target their spouse or intimate partner, children, and other relatives (Duwe, 2007; Fox & Levin, 2015).

Whereas most family killings are committed by fathers and husbands, in some rare cases, sons attack their siblings and parents. The term “annihilation” reflects the fact that these offenders typically kill everyone present in the home, including family pets and often themselves (Dietz, 1986). Unlike public massacres, the number of victims in family killings is constrained by family size, and so the typical killer in this group claims four or five lives (Duwe, 2007). Tending to be blood relatives, victims are almost always the same race as the offender, share an intimate relationship, are disproportionately female (as most kill their wives or girlfriends), and are often children (below 18 years). The most popular method of execution is shooting (about two thirds of offenders), typically involving a family gun that was already present in the home, followed by stabbing, strangling, and bludgeoning (Duwe, 2007). Not surprisingly, these mass murders mostly occur in private residences in rural and suburban areas where family units are larger and bonds are expected to be strong.

Although rarely referenced explicitly, the anomie and strain theoretical perspective is frequently used to explain family annihilations. Family killers often experience a series of failures in their personal and professional lives that cumulate in an acute event, triggering violence (Fox & Levin, 1998, 2015; Hempel et al., 1999; Holmes & Holmes, 2001). Strains are usually related to the loss of the most positively valued stimuli, such as the breakup of a family or unemployment, which engender intense feelings of injustice, anger, and the desire for revenge when paired with an other-blame attributional style (Agnew, 1992; Unnithan, Huff-Corzine, Corzine, & Whitt, 1994). Depression and anxiety disorders are also common in this type of mass killings, likely increasing suicidal tendencies while eroding the coping skills necessary to handle strain nonviolently (Aitken et al., 2008). Responding to strain with a vengeance, the family annihilator frequently attacks the primary target and his or her extensions in a “murder by proxy”; this typically involves the killing of children to harm the wife following some intrafamilial conflict (Fox & Levin, 1998; Frazier, 1975). Marzuk, Tardiff, and Hirsch (1992) and Ewing (1997) also describe “dependent-protective” family killers, controlling perpetrators who believe that they alone can support their loved ones and satisfy their needs. The idealized “perfect” family forms a core component of the family annihilator’s identity, such that spouses and children are essentially seen as extensions of the self. When this romanticized notion and/or his control are threatened by strain, murder becomes the ultimate form of regaining control and preserving the family unit. In some cases, the source of strain does not affect family bonds or incite anger (e.g., financial troubles or homelessness), but rather causes intense feelings of shame and failure. In these instances, the perpetrator commits “suicide by proxy” out of a warped sense

of love, believing that his family members are better off in heaven than dealing with his failures in this world; these offenders almost always commit suicide after their murders to join their loved ones in the afterlife (Fox & Levin, 1998; Frazier, 1975). Regardless of its exact manifestation, familicide is most likely to occur in response to repeated, extreme strain that destroys the most valued aspects of an offender's life, incites feelings of anger and injustice, breaks social bonds, and increases suicidal ideation.

### *Public Killings*

Despite their extreme visibility, public mass killings account for the smallest proportion of all mass murders (Krouse & Richardson, 2015). Formally, these incidents are defined by attack location, but more often share the stipulation that "it could have been me" (Petee et al., 1997). Public mass killers are a heterogeneous group, and are frequently delineated into several subtypes. School shooters and workplace annihilators seek revenge on specific victims based on their loose personal relationships as classmates or coworkers. In contrast, individuals with psychosis such as James Holmes or Jared Loughner commit seemingly random attacks in crowded public spaces precipitated by their delusions. Domestic terrorists and hate-motivated assailants, such as the perpetrators of the 2016 Pulse Nightclub, 2015 San Bernardino, and 2015 Charleston Church attacks, kill to instill fear and draw attention to their ideological messages. Despite their differences, school shooters, workplace annihilators, individuals with psychosis, domestic terrorists, and hate criminals all operate in public spaces and are motivated by a personal vendetta unrelated to another felony. Therefore, for the purposes of this discussion, public offenders are treated as a single group, while acknowledging some inherent variation in terms of offender and offense characteristics.

Like family killers, public murderers are often stereotyped as middle-aged, White men who have suffered a series of failures in different areas of life, though some research indicates a disproportionate number of immigrants commit public massacres (Fox & Levin, 2015). So-called "collectors of injustice," public killers are driven to take revenge against specific individuals (e.g., classmates, coworkers), a general class of people (defined by gender, race or ethnicity, religion, or sexual orientation), or society as a whole (Knoll, 2010a). As a result, victims are most often acquaintances or strangers. The overarching goal of the public murderer is to kill as many people as possible, leading him or her to choose densely populated public areas such as a mall, college campus, or nightclub in urban or suburban areas. The result is a significantly higher death toll and number of causalities than in other mass murders, with an average of six victims killed and five wounded (Duwe,

2007). To kill as quickly and as many as possible, the public mass murderer almost exclusively uses firearms (often multiple), sometimes including assault weapons and high capacity magazines. Unlike family killers, who often act in response to immediate precipitants and use whatever weapon is available, public killers engage in extensive planning prior to their attacks, amassing an arsenal of weapons and leaving behind lengthy written or recorded explanations for their actions (Dietz, 1986; Knoll, 2010b). Nearly half of these offenders do not escape, instead facing off against the police or taking their own lives (Duwe, 2007; Palermo, 1997).

Most of the literature on these perpetrators indirectly intertwines social control, social learning, and mental health theories to frame the public mass murderer. As opposed to being driven to homicide as a result of strain, public killers are unfettered by traditional social ties and norms in the first place. As Hirschi's (1969) social bond theory suggests, these offenders exhibit extreme detachment and lack strong social networks; many school shooters and workplace avengers are described as socially isolated "loners" who came from broken homes and were excessively bullied during childhood (Knoll, 2010a, 2010b; Mullen, 2004; Vossekuil, Fein, Reddy, Borum, & Modzeleski, 2002). Exacerbated by a psychological predisposition toward paranoia and narcissism, these experiences encourage the rampage shooter to harbor persecutory beliefs (occasionally verging on delusional), externalize blame, and ruminate on past grievances, all of which can lead to the development of violent revenge fantasies (Knoll, 2010a, 2010b). Palermo (1997) also suggests that public mass killers may suffer from Nietzsche's superman complex, considering themselves a higher power over society to justify attacks against groups perceived as threatening. The combined effect of weak or nonexistent social ties and mental health problems also contributes to the prevalence of suicide among these murderers.

Socially isolated, offenders frequently retreat into violent media that complements their existing feelings of injustice and resentment. Public killers may learn to glorify killing and revenge from popular depictions in books, television shows, movies, and videogames (Akers, 1998; Sutherland, 1939). School shooters, in particular, have been linked to obsessions with the game *ID Software* (1993), the film *Natural Born Killers* Stone (1994), Stephen King's novel *Rage* Bachman (1977), and media coverage of other mass killers (Towers, Gomez-Lievano, Khan, Mubayi, & Castillo-Chavez, 2015; Vossekuil et al., 2002). Direct reinforcement of violence in the form of military experience or interest in paramilitary groups is also hypothesized to contribute to the normalization of violence, both psychologically via posttraumatic stress disorder (PTSD) and socially via learning (Fontana & Rosenheck, 2005; Resnick, Foy, Donahoe, & Miller, 1989). Considering the theoretical

approaches to public massacres, this type of mass murder is differentially associated with mental health problems, social detachment, and military experience/exposure to violent media.

### *Felony Killings*

Whereas familicides are defined by the victim–offender relationship and public massacres by location, felony killings are distinguished by motive. Murder is used to achieve some primary criminal objective, typically involving financial gain. In most instances, the murders serve to eliminate witnesses of a robbery, drug crime, or gang-related attack. Due to their general lack of sensationalism, felony killings are not widely publicized despite representing the second largest category of mass murder (Krouse & Richardson, 2015). Furthermore, although some form of family and public killings are incorporated in most typologies, felony killings are sometimes excluded, illustrating the emphasis on the most notorious cases and lack of exhaustivity (Dietz, 1986; Holmes & Holmes, 1992, 2001). For this reason, previous research on profit-related mass murders is sparse, yet suggests a profile not unlike the average single-victim homicide offender (Fox & Levin, 2015).

Perpetrators of felony mass murders tend to be young Black or Hispanic males with extensive criminal records (Lankford, 2016b). With frequent ties to the drug trade or gangs, they operate in pairs or small groups in urban areas (Fox & Levin, 2015; Petee et al., 1997). As the primary purpose of murder is to cover up another crime, felony killers leave few survivors and generally claim four or five victims on average, similar to family killers (Duwe, 2007). These offenders are rarely suicidal, instead intending to survive to reap the benefits of their crime, and thus typically are arrested. Victims are typically male acquaintances, criminal associates, or strangers who are approximately the same age as the offender(s). As with homicide in general, most victims are the same race as the offender(s), and more than three quarters of incidents involve firearms due to their efficacy in intimidating victims to comply with the perpetrator(s)' demands.

Due to the dearth of research on this type, the theoretical underpinnings of felony mass murder are relatively unclear in comparison with their family and public counterparts. Although murder is the ultimate goal of the other two types, killing is only a means toward an end for felony assailants. Considering their overall similarities to more common instrumental homicides, a wide variety of theoretical frameworks can be applied to felony killings. It is likely that a combination of individual (i.e., low self-control, disconnect between aspirations and expectations) and community-level factors (i.e., social disorganization and low collective efficacy) help to explain felony-related mass murders.

### *The Need for Empirical Research*

Although the literature provides rich descriptions of the various types of mass murder, most previous work has been qualitative or based on case studies, in large part, due to the lack of data. Existing data sets are drawn primarily from media reports (Duwe, 2007; Lankford, 2015; Petee et al., 1997), yet are sometimes corroborated with official data from the FBI's Supplementary Homicide Reports (SHR; Duwe, 2007; Fox & Levin, 1998, 2015; Levin & Fox, 1985). With the exception of the work done by the Congressional Research Service (Krouse & Richardson, 2015), all mass murder data sets have been compiled by individual scholars or research collaborations (e.g., Duwe, 2007; Stanford Geospatial Center and Stanford Libraries), gun control advocacy groups (including Everytown for Gun Safety, Mother Jones, and the Gun Violence Archive's Mass Shooting Tracker), or news agencies (*USA TODAY*). The majority of these databases are of minimal utility due to the extent of missing data, lack of case coverage in earlier years, exclusive reliance on media reports, limited selection of variables, and seemingly arbitrary inclusion criteria.

The lack of reliable data on a large number of cases has resulted in the overreliance of case study analysis and descriptive statistics in mass murder research. For example, the only existing quantitative test of any mass murder typology was a univariate analysis by Petee et al. (1997) that compared their nine proposed groups. Whether by the media or researchers themselves, presumed characteristics of mass murder types are inappropriately generalized from a small—and atypical—sample to the entire population without quantitative support. The victim, offender, and incident characteristics of family, felony, and public mass murders delineated above, therefore, may not be representative of the population as a whole. Factors presumed to be causal must be empirically examined as overemphasizing their influence may obscure other, potentially more important explanatory frameworks. Felony mass murder, for example, has been largely ignored in the academic sphere and lacks an established theoretical framework as offenders are stereotyped as career criminals. Although felony mass murderers clearly differ from offenders with similar criminal records due to their rarity, little attention has been paid to other factors that may influence these perpetrators to kill so many victims, such as mental illness, intellectual disability, or prior victimization.

The perpetuation of potentially inaccurate stereotypes not only misguides future research on this relatively unexplored crime but also shapes the social construction of mass murder (Duwe, 2000, 2005; Fox & Fridel, 2016). Although mass murders account for less than 0.2% of all U.S. homicides annually, their impact on government policies is disproportionately large due

to public concern (Krouse & Richardson, 2015). In 2014, becoming the victim of a random mass shooting was one of the top five fears of the average American, and in 2016, more than one quarter of those surveyed remained afraid or very afraid of mass murder victimization (Chapman University, 2014, 2016). As discussed by Duwe (2005), advocacy groups often capitalize on this moral panic to garner support for key political platforms, such as gun control, bullying, mental health services, and antiterrorism; without accurate statistics on the phenomenon in general, it is impossible to determine whether mass murder provides evidence for or against policies related to these issues. Given the high-profile nature of mass murder research, it is crucial to quantitatively test old assumptions regarding this sensational crime.

### *Current Study*

The present study seeks to address these gaps in the literature by empirically comparing offender, victim, and incident characteristics of family, felony, and public mass murders using an augmented *USA TODAY* database. Specifically, I seek to test the following three hypotheses:

**Hypothesis 1:** Family killing is differentially associated with romantic and/or financial strain linked to the victim–offender relationship, as compared with felony and public killings.

**Hypothesis 2:** Public killing is differentially associated with mental health problems and previous exposure to violence, as compared with family and felony killings.

**Hypothesis 3:** Felony killing is differentially associated with demographic differences and criminal experience, as compared with family and public killings.

## **Method**

### *Data*

The *USA TODAY* database was used in this study as it has the most rigorous data collection methodology, highest degree of case coverage, and broadest range of information of all available databases on mass murder for cases between 2006 and 2016. A team of *USA TODAY* researchers first identified potential incidents in the United States from the FBI's SHR, subsequently utilizing media accounts, court documents, academic journal articles, and books to substantiate and add information (Overberg et al., 2016). Local law enforcement records obtained through Freedom of Information Act requests

further validated data in 30% of all cases. Each data point was corroborated by multiple sources, which were compiled into a single document to assess the quality of information. In case(s) of contradiction among sources, official law enforcement or court records were used, when available, followed by the most recent media or academic source. Case information was subsequently compared with every other known mass murder database to ensure reliability and validity. Even further, the author conducted independent searches and personally verified data for all cases in the data set (Fridel, 2016). The *USA TODAY* database, therefore, has been substantiated by both official and open sources, with at least three groups verifying case information (the newspaper research team, other mass murder database research groups, and the author). The *USA TODAY* data are also complete in terms of case coverage; the database contains all cases fitting its definition and time period identified in the databases of the Congressional Research Service (Krouse & Richardson, 2015), Gun Violence Archive, Stanford Geospatial Center and Stanford Libraries, Mother Jones, Everytown for Gun Safety, and the New York City Police Department report on active shooters (Kelly, 2010).

An additional advantage of the data set is its broad range of information. While verifying case information, the author also expanded the scope of variables to include a range of offender, victim, and incident characteristics. As opposed to reporting only basic offender/victim demographics and weapon information as do most other mass murder data sets, the enhanced *USA TODAY* data include variables addressing prior mental health diagnoses and treatment, criminal history, drug use, military experience, marital status, number of children, occupation and employment status, location population, family strife, and financial troubles. The enhanced *USA TODAY* database contains information on 318 incidents, 390 offenders, and more than 1,500 victims in the United States from 2006 to 2016.

### *Mass Murder Type*

By employing the more traditional definition of mass murder (four or more victims intentionally killed, excluding unborn children and the offender, within a 24-hour period), the analysis focuses on cases that are inarguably mass killings. This approach also does not artificially inflate the sample size and minimizes potential measurement error by limiting cases missed in media reports (see Duwe, 2004). The time frame of 24 hours was chosen to eliminate conflation with spree killers, who kill multiple victims in quick succession in different locations or incidents, and to satisfy the traditional requirement of occurring in a “single incident” (Dietz, 1986; Douglas, Burgess, Burgess, & Ressler, 1992; Duwe, 2004).<sup>3</sup> Another benefit of this

definition is that it does not exclude cases based on method (e.g., shootings only), type or motivation (e.g., public only), or number of locations (e.g., one), which is imperative when analyzing differences among types.

Mass murders were classified according to incident type as family, felony, or public. Specifically, 156 cases were considered familicides as the offender was related to the victims by blood, marriage, or some other romantic relationship (e.g., unmarried partners). A total of 49 cases in which the murders occurred during the commission of another crime were considered felony killings. The 54 incidents in which the majority of victims were slain in a public place were identified as public killings. Finally, 30 unsolved incidents and 28 cases that did not fit any of these three *de facto* classes were excluded from the present analysis as an “other” category has no inherent meaning. Of the cases with known type, only one lacked data on relevant variables, and so was excluded from the analysis for a final sample size of 258 incidents, 327 offenders, and 1,363 victims.

### *Independent Variables*

Because the incident is the unit of analysis, victim and multiple-offender characteristics are pooled to the incident level. Incident-level characteristics included the number of victims with nonfatal injuries, region (South vs. other), method (shooting vs. other), and rural area (less than 10,000 people).

Available offender characteristics included age at the time of the massacre, race (White, Black, and Other or mixed<sup>4</sup>), and immigrant status. Beyond basic demographics, several variables related to purported causes of mass murder were employed, including stressors/triggering events, prior criminal history, and existence of mental health issues. As measures of strain, whether the perpetrator had romantic or family issues (such as divorce, separation, a breakup, or child custody disputes), experienced financial difficulties (such as debt, bankruptcy, homelessness, or unemployment), or committed domestic violence were included as binary measures. Previous learned violent behaviors were also measured as indicator variables, such as whether the offender had a prior violent criminal history and had military experience or demonstrated a clear interest in enlisting. Mental health status was measured by binary indicators of treatment prior to the incident and whether the offender died during the attack (committed suicide or suicide-by-cop, where the offender purposely provokes law enforcement to shoot him or her with the intention of dying). For the 40 incidents with multiple perpetrators, offender information was aggregated to the incident level, such that all variables indicated at least one perpetrator in the group possessed the characteristic; age for multiple-offender incidents was measured as the mean age of all offenders, and race was measured in three groups, including all White, all Black, and Other/mixed race.

Victim characteristics for all incidents were similarly pooled into percent of all slain victims who were female, children (below 18), and of a different race than the offender(s). Defining characteristics for each type, such as victim–offender relationship, motive, and location were excluded to avoid discussing tautological differences among groups. Table 1 shows the distribution of all variables for each of the types as well as mass murder incidents as a whole.

### **Analytical Strategy**

The analysis proceeded in three stages. First, as an initial examination of the differences among the three mass murder types, trends over time were examined to determine relative frequency for each incident type. Second, bivariate measures of association between all incident, offender, and victim characteristics and type were calculated. Third, a multinomial logistic regression model was utilized to calculate relative risk ratios (exponentiated coefficients) for an incident falling into one type over another. Model diagnostics, including the Hausman test of the independence of irrelevant alternatives, Wald tests for combining alternatives, and variance inflation factors, all indicated that this model is appropriate for the data.

## **Results**

### **Trends**

From 2006 to 2016, mass murders occurred between 22 and 38 times annually, with a mean of about 29 incidents per year in the United States. As shown in Figure 1, familicides account for about half of all incidents, with an average of 14 family-related massacres per year. Felony murders account for four to five mass murder cases annually, though they recently have declined from a high of 10 in 2006 to counts well below five in the past 4 years. Despite the widespread claim that public mass killings are on the rise in the United States (Follman et al., 2016), these incidents only account for four to five mass murders annually, similar to their more obscure counterparts, felony killings. Other and unsolved incidents rarely occur more than five times a year, with annual averages of two to three incidents, though more recent years exhibit slightly higher counts of unsolved murders as investigators continue working on these cases. Overall, the trends presented in Figure 1 generally concur with findings from the Congressional Research Service; yet, annual counts are slightly lower in their estimation due to their exclusion of nonshooting cases (Krouse & Richardson, 2015).

**Table 1.** Descriptive Statistics for Offender, Victim, and Incident Characteristics by Mass Murder Type.

Variable	Family	Felony	Public	Total	<i>p</i>
<b>Offender characteristics</b>					
Age	34.82	29.12	31.15	32.34	<.001
Race					<.001
Black	30.67%	50.49%	31.15%	37.00%	
White	47.85%	22.33%	49.18%	40.06%	
Other and mixed	21.47%	27.18%	19.67%	22.94%	
Immigrant	17.79%	9.71%	24.59%	16.51%	.038
Military interest	10.43%	6.80%	18.03%	10.70%	.079
Domestic violence history	28.83%	2.91%	6.56%	16.51%	<.001
Dead	49.69%	3.88%	54.10%	36.09%	<.001
Violent criminal record	26.38%	29.13%	18.03%	25.69%	.279
Romantic and familial difficulties	46.01%	3.88%	22.95%	28.44%	<.001
Financial troubles	26.99%	5.83%	32.79%	21.41%	<.001
Mental health treatment	15.95%	1.94%	32.79%	14.68%	<.001
<b>Victim characteristics</b>					
Female victims	57.13%	42.62%	43.85%	51.61%	<.001
Child victims (below 18)	49.24%	20.02%	10.66%	35.67%	<.001
Different race victims	11.20%	26.78%	34.12%	18.87%	<.001
<b>Incident characteristics</b>					
Number of victims injured	0.47	0.29	7.89	1.98	<.001
City size					.002
Rural (below 10,000)	31.41%	28.57%	11.11%	26.64%	
Suburban (10,000-99,999)	36.54%	20.41%	37.04%	33.59%	
Urban (100,000+)	32.05%	51.02%	51.85%	39.77%	
Shooting	67.95%	69.39%	92.59%	73.36%	<.001
Region					.003
South	46.15%	40.82%	27.78%	41.31%	
Midwest	24.36%	36.73%	16.67%	25.10%	
Northeast	6.41%	10.20%	16.67%	9.27%	
West	23.08%	12.24%	38.89%	24.32%	

Note. The *p* values correspond to tests of differences in means or percentages, as appropriate, between mass murder types. Categorical variables were tested with a chi-square, whereas continuous predictors were tested with Spearman's rho.

**Bivariate Relationships**

As anticipated by earlier research, all variables were significantly associated with type at the bivariate level, with the exception of military experience and

violent criminal record (see Table 1). Offender age, however, does not appear to be substantively different among types despite reaching statistical significance, as all offender types act in their early to mid-thirties, despite suggestions that family killers are older than felony or public offenders. These descriptive statistics generally support the differences suggested by previous research. Strikingly, however, less than a third of felony offenders had violent criminal records, calling into question their previous characterization as hardened career criminals. Similarly, although a greater proportion of public killers have experience with, or interest in, the military, the lack of significance suggests that the presumed association may be based on highly publicized incidents such as those at Fort Hood and the Washington Navy Yard. It is also interesting to note that romantic and financial troubles seem common among family annihilators as well as public killers, albeit to a lesser degree. At the incident level, nearly 30% of felony massacres and more than 10% of public killings occur in rural areas, contrary to their presumed connection with densely populated urban areas.

### *Multivariate Relationships*

Multinomial logistic regression was used to compare the three types in terms of incident, offender, and victim characteristics. Table 2 shows the relative risk ratios (exponentiated coefficients interpreted in the same way as odds ratios) along with 95% confidence intervals for all comparisons, indicating the percentage increase or decrease in the relative risk of engaging in one type of mass murder over another ( $(\text{risk ratio} - 1) \times 100\%$ ). Relative risk ratios below one demonstrate that individuals with that characteristic are more likely to commit the reference category type of mass murder, whereas relative risk ratios above one indicate that the individual is more likely to commit the comparison type; the reference category is family killing for all comparisons, except for felony versus public, in which felony is the referent.

*Family versus felony killings.* Variables that had statistically significant differences between family and felony killings included offender race, domestic violence history, romantic and familial difficulties, and average victim type. As noted above, relative risk ratios above one indicate that the concomitant covariate has a stronger relationship with felony mass murder than with familicide, whereas relative risk ratios below one suggest a stronger relationship with family over felony killings. In terms of offender and victim demographics, the relative risk ratio of 6.150 for other and mixed race indicates that the risk of committing a felony killing as compared with a familicide is

**Table 2. Multinomial Logistic Regression of Offender, Victim, and Incident Characteristics on Mass Murder Type.**

Regressors	Family vs. Felony <sup>a</sup>		Family vs. Public <sup>a</sup>		Felony vs. Public <sup>b</sup>	
	RRR	95% CI	RRR	95% CI	RRR	95% CI
<b>Offender characteristics</b>						
Age (logged)	0.972	[0.166, 5.680]	1.060	[0.138, 8.170]	1.090	[0.092, 12.93]
Race (ref.: White)						
Black	1.832	[0.451, 7.453]	0.219	[0.037, 1.287]	0.120*	[0.016, 0.876]
Other and mixed	6.150*	[1.360, 27.80]	0.374	[0.063, 2.205]	0.061**	[0.008, 0.482]
Immigrant	0.407	[0.066, 2.523]	5.660	[0.761, 42.11]	13.91*	[1.149, 168.5]
Military interest	0.874	[0.191, 3.989]	0.819	[0.166, 4.039]	0.938	[0.128, 6.877]
Domestic violence history						
Dead	0.171*	[0.035, 0.834]	0.282	[0.048, 1.643]	1.644	[0.169, 15.99]
	0.035***	[0.006, 0.197]	0.271	[0.072, 1.012]	7.699*	[1.118, 53.00]
Violent criminal record	1.988	[0.707, 5.591]	0.758	[0.170, 3.373]	0.381	[0.076, 1.909]
Romantic and familial difficulties	0.154*	[0.033, 0.713]	0.352	[0.095, 1.302]	2.277	[0.336, 15.42]
Financial troubles	0.846	[0.219, 3.269]	1.299	[0.321, 5.260]	1.536	[0.265, 8.903]
Mental health treatment	0.524	[0.079, 3.452]	2.353	[0.608, 9.102]	4.492	[0.538, 37.48]
<b>Victim characteristics</b>						
Percent female victims	0.983	[0.963, 1.003]	0.980	[0.958, 1.002]	0.997	[0.970, 1.024]
Percent child victims	0.964***	[0.945, 0.983]	0.971**	[0.950, 0.993]	1.008	[0.980, 1.036]
Percent different race victims	1.019*	[1.004, 1.034]	1.020*	[1.001, 1.039]	1.001	[0.981, 1.022]
<b>Incident characteristics</b>						
Number of victims injured	0.717	[0.384, 1.336]	3.635***	[2.180, 6.060]	5.073***	[2.457, 10.47]
Rural	1.480	[0.450, 4.870]	0.258	[0.048, 1.393]	0.174	[0.025, 1.204]
Shooting	1.363	[0.446, 4.172]	40.23**	[2.539, 637.5]	29.51*	[1.650, 527.6]
South	0.576	[0.220, 1.506]	0.243*	[0.060, 0.986]	0.422	[0.089, 2.014]
Constant	3.767	[0.009, 1.575]	0.070	[0.000, 208.5]	0.019	[0.000, 201.9]

Note. N = 258,  $\chi^2 = 284.04$ ,  $p < .000$ . Pseudo-R<sup>2</sup> = .583. CI = confidence interval; RRR = relative risk ratio.

<sup>a</sup>Family is the reference category.

<sup>b</sup>Felony is the reference category.

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

515%  $((6.150 - 1) \times 100\%)$  greater for other or mixed race offender as compared with a White perpetrator. In addition, the relative risk of a felony over a family massacre decreases 3.6%  $((0.964 - 1) \times 100\%)$  per every percentage point increase in victims below the age of 18 and increases 1.9%  $((1.019 - 1) \times 100\%)$  for every percentage point increase in victims of a different race than the offender(s). These results are consistent with the portrayal of family annihilators as White men who target their own children and other family members in contrast to felony offenders who are more likely to be non-White and attack adults, though the lack of significance for victim sex is surprising. In terms of strain and postcrime behavior, the relative risk of committing a felony-related massacre over a familicide decreases 82.9%  $((0.171 - 1) \times 100\%)$  if the offender has a history of domestic violence, decreases 96.5%  $((0.035 - 1) \times 100\%)$  if he commits suicide or suicide-by-cop after the crime, and decreases 84.6%  $((0.154 - 1) \times 100\%)$  if he has experienced romantic or family stressors. These results provide empirical support for the strain model of familicide, in which controlling and sometimes abusive husbands lash out against children to punish their wives, ultimately committing suicide. However, financial difficulties and mental health issues showed no significant differences between these two types, though both theoretically differentiate the family killer, suggesting that the most significant strains for this type of offender may be linked to the intimate partner relationship. Hypothesis 1 is, therefore, only partially supported, as family killings are not differentially associated with financial stressors in comparison with felony murders.

Most of the characteristics used to define the felony killer could not significantly differentiate them from their family murder counterparts. Despite their portrayal as young minority career criminals operating in urban areas, felony perpetrators are no more likely to be Black over White, be older, have a violent criminal history, or kill in urban locations than are family annihilators. These results suggest that Hypothesis 3 is not substantiated when felony killers are compared with family assailants. No incident characteristics significantly distinguished family and felony murders.

*Family versus public killings.* Although family and felony perpetrators can be clearly differentiated, family and public offenders exhibit no significant differences for any offender characteristics; rather, victim and incident traits separate these two mass murder types. Similar to felony killers, the relative risk of committing a public massacre over a familicide decreases 2.9% per every percentage point increase in child victims and increases 2.0% for every percent point increase in victims of a different race than the perpetrator. Again, these findings are consistent with the literature's emphasis on victim characteristics, particularly the victim-offender relationship, in defining the

family murderer. However, these results also indicate that family and public killers may suffer from similar levels of strain, as the romantic and financial stressor variables did not distinguish the two types. As a whole, Hypothesis 1 is only supported for family killings in terms of the victim–offender relationship in comparison with both other types; neither romantic nor financial strain variables can significantly differentiate familicides from both felony and public murders.

In contrast, incident characteristics are strongly linked to the public assailant. The relative risk of a public killing over a family killing increases 39 times if the massacre was a shooting and another 2.64 times per each additional victim injured, supporting the assumption that public killers almost exclusively use firearms to kill and/or injure as many victims as possible. The relative risk of a public killing over a familicide occurring in the South over another region is decreased 75.7%, suggesting that family murders are more likely to occur in this region of the country than are mass public shootings. Strikingly, prior mental health treatment, immigrant status, and military experience/interest show no significant differences between the two types despite the stereotype of the mass public shooter as a pseudo-commando with psychosis, casting doubt on Hypothesis 2.<sup>5</sup>

*Felony versus public killings.* Felony and public killings are primarily separated by offender demographics and incident characteristics. In particular, public massacres are more likely than felony murders to be associated with many injured victims, shootings, suicide, and White or immigrant offenders. The relative risk of a public shooting over a felony murder drops by 88% and 93.9%, respectively, for Black and Other or mixed race offender(s) over White killer(s). Consistent with some previous research, immigrants are more likely to commit a public over a felony murder, with an increase in the relative risk nearly 13 times the size if the perpetrator was not born in the United States. Similar to the differences between family and public killings, the relative risk of a public killing over a felony murder increases 6.69 times if the offender commits suicide or suicide-by-cop, 4.07 times per each additional victim injured, and nearly 29 times if the attack is a shooting. Just like family killers, felony killers are no less likely to have military experience, be treated previously for mental health issues, or operate in rural areas than are public killers, despite theoretical support for Hypothesis 2. Taken together, there is evidence that the public mass killer is primarily defined by incident—and not offender—characteristics.

These findings are broadly consistent with prior research, as familicides are primarily differentiated by victim characteristics, felony killings by offender characteristics, and public massacres by incident characteristics.

Specifically, offender and victim characteristics distinguish family from felony murder; victim and incident characteristics distinguish family from public killings; and offender and incident characteristics distinguish felony from public massacres. However, only a few traits consistently differentiate each type from all others: Family killers target children and other family members of the same race, felony offenders rarely perish after their crimes, and public attackers use guns to injure as many victims as possible. More interesting than these anticipated differences among the three groups are the traits that do not significantly vary, contrary to traditional assumptions. Although previous studies have suggested that family killers are older than their counterparts, suffer from financial stressors, and tend to target more female victims, none of these predictors could significantly differentiate familicide from the other two types when all other variables were accounted for in the model. Similarly, felony killers are no more likely to be Black over White in comparison with family killers, and no more likely to have a violent criminal record than either of the other categories. Far from mentally ill pseudo-commandos, public killers were just as likely to have been treated for mental illness or have military experience as other assailants.

## **Discussion**

Decades of descriptive and case-study research has suggested that mass murder is not a homogeneous phenomenon; yet, the lack of data has prevented the quantitative comparison of differences among family, felony, and public mass killings. Using a rich U.S. mass murder data set, this study sought to empirically test whether family killings are differentially associated with romantic and financial strains related to the victim–offender relationship (Hypothesis 1), whether public killings are associated with mental health problems and military experience (Hypothesis 2), and whether felony killings are associated with certain demographic groups and criminal records (Hypothesis 3).

Overall, these findings indicate that family, felony, and public killings are indeed distinct classes of mass murder, each with its own unique characteristics beyond mere definitional traits. It is interesting that the characteristics that differentiate each mass murder type from both others tend to fall at the same level of analysis as its defining trait. Defined primarily by the victim–offender relationship, familicides only differ from both felony murders and public slayings in terms of other victim characteristics (and not offender characteristics such as strain, as suggested in Hypothesis 1). Similarly, public massacres are distinguished by location, and are unique only in their incident characteristics in comparison with the other two types (and not offender

characteristics such as mental health and military experience, as suggested in Hypothesis 2). Felony murders are classified by perpetrator motive, and only can be distinguished from both other types by offender characteristics (partially consistent with Hypothesis 3).

This is not to suggest, however, that the differences discussed in the literature do not exist at all, but rather that their magnitude is smaller than previously expected when controlling for other variables. As the analysis is based on the population of mass murders in the United States, and not a sample, the descriptive statistics presented in Table 1 are true differences. Family killers are older by a few years on average and have the highest proportion of female victims, though these differences are only 10% to 15% greater for this type over felony and public offenders. Similarly, although felony killings have the highest proportion of non-White offenders and perpetrators with violent criminal histories, and public murderers have the highest percentage of military enthusiasts and mentally ill perpetrators, these differences are not especially large. Substantive interpretation of all variables remained the same when using the offender as the unit of analysis, suggesting that these results are not an artifact of aggregation.

### *Implications for Research and Policy*

These results provide several key insights into the study of mass murder. First, the failure to find empirical support for assumed differences among mass murder types demonstrates the importance of verifying relationships established by descriptive research with multivariate analysis. Furthermore, the modest differences among types of variables assumed to be significant indicate that stereotyping based on a limited number of cases may lead to a distorted understanding of mass murder and its causes. The majority of previous work classifying mass murder has either utilized a handful of case studies or descriptive statistics on small samples; as these studies only examine the most infamous cases, they do not reflect the population of mass murderers as a whole, potentially leading to the dissemination of inaccurate information to the public (Duwe, 2005).

Considering the political impact of mass murder research, stereotypes can hamper our understanding of, and response to, mass killings. Overstating the prevalence of specific characteristics among types hinders research into their underlying causes, as certain traits may be granted too much explanatory power at the expense of other factors. Mental illness, for example, is often described as a major cause of mass public murders, even though rarely mentioned financial problems characterize the same proportion of these offenders (about one third). Considering that public and family offenders are virtually

indistinguishable according to the results of this study, it is possible that a strain model emphasizing romantic, familial, and financial stressors may better characterize public killers than a framework mainly relying on mental health problems. Similarly, most researchers have neglected to develop theories to explain felony murders, assuming that the offenders' violent lifestyles are causal; however, this study suggests that other explanatory factors may be at least as important, as felony killers are not significantly more likely to have a violent criminal history in comparison with the other two types.

Beyond misguiding efforts to understand the phenomenon itself, propagating stereotypes may also adversely affect policy and stigmatize broad segments of the population who are not at risk of violent behavior. Due to several high-profile attacks involving offenders with psychosis, for example, 63% of Americans believe that problems in the nation's mental health system are responsible for mass public shootings (Washington Post/ABC News, 2015). Despite evidence that individuals suffering from psychosis are no more likely to be violent than other citizens (Fox & Fridel, 2016), several groups including the National Rifle Association (NRA) have continued to stigmatize the mentally ill and support increased restrictions on their rights. In the wake of the attack in Newtown, Connecticut, NRA vice president Wayne LaPierre labeled individuals with psychosis as "lunatics" and cautioned against allowing these "monsters" to continue walking the streets (quoted in Meet the Press, 2012). However, contrary to the stereotype of public mass killers as suffering from psychosis, the results of this study indicate that only 15% of all mass murderers in the past decade were treated for mental illness, with public mass murderers no more likely to experience mental health problems than family or felony offenders. As this example demonstrates, propagating mass murder stereotypes without empirical support has substantive effects on policy and practice.

### *Limitations*

Although informing our understanding of the differences among mass murder types, the results are subject to certain limitations. The only incidents included in the analysis were those from the past decade in the United States, potentially limiting the generalizability of the findings to earlier years and other nations. Unfortunately, although the enhanced *USA TODAY* data set benefits from high case coverage and a plethora of variables, detailed incident, offender, and victim information was only available for domestic cases from 2006 to 2016 at the time of this study. Another limitation of the database is the partial utilization of open source information. Despite the strict data collection methodology of the enhanced *USA TODAY* database, the inherent

potential for inaccurate reporting must be acknowledged. However, data inaccuracy is unlikely to be an issue as (a) multiple sources were utilized; (b) information was substantiated by official sources including the FBI's SHR, court records, and local police reports; and (c) data accuracy was verified through comparison with all other mass murder databases. Given the general unavailability of confidential documents (such as medical records or active investigation reports), it is important to note that open source data are typically the only kind available to study mass murder. Previous research on mass murder has relied on this type of data, including work by Duwe (2000, 2004, 2005, 2007), Fox and Levin (1994), Langman (2009), Lankford (2012, 2015, 2016b), Lankford and Hakim (2011), Larkin (2009), and Newman and Fox (2009), among others.

Furthermore, several characteristics of interest were excluded due to multicollinearity or missing data problems, such as marital and employment status, number of offenders per incident, education, legal gun ownership, occurrence in a gun-free zone, and type of firearm used. Quantification of concepts that have previously only been examined in qualitative studies and descriptive accounts is also subject to researcher interpretation, such as what precisely constitutes financial troubles, romantic problems, or displaying an interest in the military. Some variables are similarly limited by known information; mentally ill perpetrators, for example, may have never been diagnosed or treated prior to their crimes, and so no record exists that can reliably document the condition. Perhaps, the greatest shortcoming of the study, however, is the level of analysis; considering the hierarchical nature of the data, the ideal approach would be to use a hierarchical model of victims nested within offenders nested within incidents, but with the current sample size, aggregation to the incident level was the best available analytical strategy. Pooling offender and victim characteristics may reduce variability in these traits; yet, considering that 85% of incidents involved a single offender and 55% involved four victims, this issue is not likely to substantially alter results.

### *Future Directions*

Overall, this analysis indicates that the broad categories of family, felony, and public mass killings are indeed distinct types, yet also suggests that some presumed differences among these groups have limited empirical support. More work is needed to test the typologies proposed by Dietz (1986), Holmes and Holmes (1992, 2001), Fox and Levin (1998), and Petee et al. (1997) to determine any of these typologies is more effective in maximizing differences among groups. Another concern is the residual "other" category, which is composed of all cases that do not fit one of the specified

types. All the previously proposed typologies implicitly assume that an “other” category exists, yet do not reference it or attempt to describe attributes linking cases within this group. More effort is needed to categorize the residual cases so as to expand the exhaustivity of any classification system. Similarly, more studies are required to examine the factors underlying felony mass murder, as this type has been largely neglected and theoretically underexplored. With increased amounts of data on mass murder available, it may also be possible to develop an empirical typology of mass killing using clustering techniques.

Beyond a more detailed examination of mass murder types in the United States, future research should examine the differences in this extreme crime at home and abroad. Although the United States accounts for a large proportion of the world’s mass murders unrelated to war, it stands alone in its political and social climate (Lankford, 2016a). Specifically, the United States is unique among comparable first world nations with its weak gun control laws—according to the United Nations Office of Drugs and Crime (UNDOC; 2007) Small Arms Survey, the United States ranks first in gun ownership, with a rate of 88.8 firearms per 100 people. Whereas nearly three fourths of U.S. mass murders involve firearms, a much smaller fraction of international incidents do, as guns are much less prevalent and more difficult to acquire. In comparison with the United States, many attempted mass murder incidents do not reach the minimum victim threshold of four killed due to the lesser lethality of easily accessible weapons such as knives or vehicles. Another influential factor is the location of the United States. Geographically distant from the center of many international terrorist organizations, the United States experiences far fewer incidents of terrorist mass murder than its European counterparts, which particularly influences the traits of public killers. As a result of these two factors, it is likely that the characteristics of mass murder observed in the present study would not generalize to international incidents.

## **Conclusion**

As the first multivariate analysis of a mass murder typology, this study supports previous research suggesting that mass killings can be sorted into the three distinct categories of family, felony, and public incidents. Besides the traits used to define groups, each type is differentiated by traits at separate units of analysis: Family killings significantly differ from the other two types in victim choice, felony murders have unique offender traits, and public attacks are defined by incident characteristics. More specifically, family killers target young victims of the same race, felony killers are

disproportionately non-White males who survive their crimes, and public killers employ firearms to gun down as many victims as possible. The lack of significant differences among types in previously suggested areas indicates that scholars must be wary of adopting stereotypes based on exceptional cases.

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### **Notes**

1. Although prior to the 1980s mass murder was used interchangeably with multiple homicide, the FBI's Behavioral Sciences Unit later separated multiple murder into three distinct groups: mass, serial, and spree murder (Douglas, Burgess, Burgess, & Ressler, 1992; FBI, 2008). Mass murder was originally defined as the killing of four or more victims in a single location within one event, though the number of victims was arbitrarily lowered to three by Congress in 2013 (Public Law 112-265). These distinctions have not been universally accepted, however, leading scholars to employ a variety of definitions to examine the same crime. The minimum number of victims required for a mass murder is alternatively set at three (Dietz, 1986; Holmes & Holmes, 1992, 2001; Meloy et al., 2004; Petee, Padgett, & York, 1997) or four (Duwe, 2000, 2004, 2007; Fox & Levin, 1998, 2015). Complicating matters further has been the introduction of the more recent term "mass shooting," which can be conceptualized as a subtype of mass murder involving firearms (e.g., four or more victims killed with a gun), or more recently as four or more victims shot (but not necessarily killed) in a single incident (Gun Violence Archive, 2016; Krouse & Richardson, 2015). For the purposes of the present discussion, the FBI's original definition of mass murder—four or more killed in a single incident—will be used as few convincing arguments have been supplied for a three-victim minimum or the inclusion of injuries in death counts.
2. Family murderers include Dietz's (1986) and Holmes and Holmes' (2001) family annihilators, Fox and Levin's (1998) loyalty and revenge killers, and Petee et al.'s (1997) domestic/romantic-related killers. Public murderers include Dietz's (1986) pseudo-commando; Holmes and Holmes' (2001) disgruntled employee, psychotic killer, and ideological killer; Fox and Levin's (1998) power and terror killers; and Petee et al.'s (1997) political and anger/revenge killers. Felony murderers include Fox and Levin's (1998) profit killer and Petee et al.'s (1997) felony-related and gang-related killers.

3. By specifying the word “intentionally,” the definition also excludes negligent homicides due to driving under the influence and accidental house fires.
4. Hispanic/Latino, Asian, and American Indian were pooled into this category due to low sample size.
5. There were no significant changes in the model when mental health diagnosis was used instead of treatment history.

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### Author Biography

**Emma E. Fridel** is a doctoral student in the School of Criminology and Criminal Justice at Northeastern University. Her research interests include homicide, murder-suicide, and serial and mass murder.