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Family Mass Murder: An Exploratory Study of the Role of Arson

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FAMILY MASS MURDER: AN EXPLORATORY STUDY OF THE ROLE
OF ARSON

by

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ABSTRACT

The current literature on the use of arson in homicides analyzes the role of psychosis and mental illness, detection avoidance, and fire-setting as a precursor to violent crime. Only recently have researchers examined the connection between arson and family violence through the means of coercive control. Remaining unanswered is the role of arson in family mass murders occurring in a private residence. Using the Mass Killings in America database compiled and maintained by the Associated Press, USA Today, and Northeastern University (2006-2022), I compare characteristics of family mass murders that are arson-related to those that are non-arson-related. While family mass murders are a small percentage of homicides across the US, the large victim counts are significant. Due to the prevalence of homicide-suicide in mass murder, the study further analyzes whether a family mass murder being arson-related impacts the odds of offender suicide. Analysis found three variables significantly related to whether an event involved the use of arson; 1) taking place in the Southern region, 2) a shooting taking place during the incident and 3) at least one child victim (under 18) killed in the incident. Further, while arson use was not a significant predictor of offender suicide, many variables were; at least one non-family member killed, a despondent offender, a shooting taking place during the incident, offender age, and offender race.

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LIST OF ABBREVIATIONS

IPH	Intimate Partner Homicide
IPV	Intimate Partner Violence
MKA	Mass Killings in America
VOR	Victim-Offender Relationship

CHAPTER 1

INTRODUCTION

The epidemic of domestic violence, the most extreme form being domestic homicide, has received an increasing focus from criminologists, practitioners, and policymakers over the past few decades. Within the domestic violence literature, the conceptualization of coercive control, a perpetrator aiming to dominate, control, inflict fear, and restrict their intimate partner, has undergone increased investigation in recent years. Additionally, many studies examine not only incidents of domestic homicide, but also cases of family mass murder (Dietz, 1986; Fleming, 2012; Fox & Levin, 1998, 2022; Karlsson et al., 2021; Liem et al., 2013). In the increasing exploration of the phenomena, scholars identify various risk factors, characteristics, motivations, and methods associated with these offenses. One of the most well-established findings about family mass murders is that most incidents occur with a firearm and remain a private incident in the home (Fox & Levin, 2022; Fridel, 2021). However, this is not to say that all incidents occur alike with a firearm. Rather, there are several unexplored methods of killing employed by perpetrators, such as arson.

While much focus is given to arson from the psychological perspective, arson remains one of the less frequently explored bodies of literature in criminology. This is possibly due to the trouble criminologists face in distinguishing arson from non-criminal fire-setting. Much of the current literature focuses on juvenile crimes, arson employed as detection avoidance, homicide-staging, repeat arsonists and the comparison of ante-

mortem versus post-mortem fire-setting. Only recently have studies begun to focus on arson as a weapon of homicide, a tool of coercive control, and in the context of domestic violence/homicide (Davies & Mouzos, 2007; Douglas, 2023; Ferguson et al., 2015). Arson may perhaps be one of the biggest threats used against victims of family violence due to its unique features of being undetectable as a crime, easily accessible, and extremely painful and traumatic to experience. To differentiate cases of family mass murder that are arson-related to non-arson-related, cases are defined as being arson-related when any form of burning or fire is employed by the perpetrator at any point during the commission of the killings. This includes the use of arson against the person(s) or property involved, whether or not it is the cause of death of the victims, or used ante-mortem or post-mortem.

With such an increase in focus on incidents of family violence, criminologists also examine mass murder specifically within the family unit. As a result, we have learned about the sociodemographic, perpetrator, victim, and incident characteristics for this rare but severe event. Despite arson receiving some attention in the criminological literature, available literature on domestic violence, domestic homicide, and family mass murder has yet to fully explore the use of arson in these extreme forms of violence. Exploring the use of arson in the perpetration of family mass murder will allow experts to identify any variations in family mass murder trends and characteristics, vital to forming best policy implications, preventive measures, and more. While arson is often perceived as a rare form of violence primarily used by juveniles, the fact that it is the second most frequently used weapon in the perpetration of mass murder (USA Today, 2023), and has been conceived of as a tool of coercive control (Douglas, 2023), has many implications

for further research of arson in the context of family mass murder. Areas of further research may take place in qualitative methods, accessibility to fire and sources of ignition, arson as crime concealment or homicide-staging in mass murder, and more.

Thus, the research integrates three broad bodies of literature: 1) family violence, 2) arson and 3) mass murder. The bodies of literature pertaining to family violence and mass murder are integrated to build the foundation for the examination of family mass murder in criminology. The arson literature gives insight to arson crime and offender characteristics, essential to compare and differentiate the typical arson offender from those that use arson in committing a family mass murder. The existent literature on homicide-suicide, and that specific to family mass murder, is also explored since many perpetrators of mass murder and family mass murder commit suicide following the event (Dietz, 1986; Fox & Levin, 1998;2022; Zeoli, 2018). It is essential to integrate these often-disparate bodies of literature to answer my first research question, “*What are the differences in incident, offender, and victim characteristics between family mass murders that are arson-related and non-arson-related?*”. The specific body of literature in criminology pertaining to acts of homicide-suicide also known as extended-suicide, dyadic death, or murder-suicide (Rouchy et al., 2020 & Saleva et al., 2007), has displayed slow but steady growth over the past two decades. Therefore, the second research question is, “*How does the use of fire during a family mass murder impact the odds of the perpetrator committing suicide?*”. Select studies examine the idea of increased gun legislation as a means to decrease homicide-suicides (Liem et al., 2011). What has not been previously explored are the means by which homicide-suicide can be prevented when the employed weapon is not a firearm. Thus, the research analyzes whether the use

of arson can predict the likelihood of offender suicide, controlling for other relevant victim, offender, and incident characteristics, in efforts of creating future research targeted in prevention.

Answering the first research question will descriptively differentiate cases of family mass murder that are arson-related from those that are not, providing an increased understanding of the dynamics of family mass murder using arson. Results from the second research question link potential connections between homicide-suicide and the use of arson during the commission of a family mass murder. The study first examines the theoretical framework, coercive control, to identify the threat arson poses against victims of domestic violence. Next presented is a review of the literature on family violence, arson, and mass murder. Integration of the family violence and mass murder literature allows for the literature of family mass murder to be thoroughly explored. Further, the homicide-suicide literature is analyzed separately, as it only pertains to research question two. Drawing from the literature and theoretical framework, the next section introduces the study's research questions. The methodology section will then detail the data source, variables, analytic strategy used to carry out this research, and considerations. Results are then presented separately for each research question. The discussion section directs attention to significant findings and links to prior research. Finally, the study's limitations, implications, and directions for future research are presented in the conclusion.

CHAPTER 2

THEORETICAL FRAMEWORK (“COERCIVE CONTROL”)

2.1 COERCIVE CONTROL IN DOMESTIC VIOLENCE

Dutton and Goodman (2005) gave one of the earliest conceptualizations of coercive control. Coercive control is defined as a “dynamic process linking a demand with a credible threatened negative consequence for noncompliance” (Dutton & Goodman, 2005, p. 746-747). Shortly thereafter, Stark (2009) similarly defined the term “coercive control” as an ongoing method a perpetrator uses to control, intimidate, and dominate their victims. Depriving a victim of resources such as money or transportation is another aspect of coercive control (Stark, 2009).

Coercive control is argued to be a means of microregulating a victim’s behaviors such as cooking, cleaning, sexual performance, or socialization, all characteristics of a female’s stereotypical role in the household (Stark, 2009). Such micro regulation is accomplished through taking away resources often deemed to be rewards of “newfound equality,” such as earned money for labor (Stark, 2009). Interpreting coercive control as a means to microregulate women to perform stereotypical female roles necessitates a brief discussion of the exposure reduction hypothesis and backlash hypothesis. The exposure reduction hypothesis suggests that the risk of homicide between intimate partners decreases as the time spent with one another decreases (Stansfield et al., 2019). Contributing to decreased time spent between intimate partners are factors contributing to furthering women’s equality such as entry into the workforce, education opportunities,

and increased income. With increased equality, the likelihood of females murdering their male intimate partners decreases due to the fact that they have opportunities and resources to leave abusive relationships. The backlash hypothesis proposes that as women become more equal, men perceive a threat to their power and control, resulting in retaliation and violence. Thus, as women gain more equality, they may be less likely to kill their male intimate partner, but men are more likely to attempt to control, retaliate, and commit violence upon their partner as a means to stay in power (Stansfield et al., 2019).

Building from earlier conceptualizations, Douglas (2023:27) states coercive control to be the process of a perpetrator “dominating or controlling another, it is highly gendered, mainly being perpetrated by men against women.” Further, the perpetrator of domestic violence often utilizes coercive control as a tool against their intimate partner for the sole purpose of domination, inflicting fear, and control (Douglas, 2023). Most commonly, the victim is a female being abused by her male intimate partner (Douglas, 2023). In inflicting coercive control against the victim, the perpetrator uses intimidation, threats, control, and abuse (Douglas, 2023). Coercive control is even compared, generally, to stalking, harassment, and kidnapping, because all of these crimes are used for the means of humiliation, control, domination, and more (Stark, 2009). Further, the chance of violence escalation resulting in victim fatality is often increased by the use of coercive control, as noted in previous studies identifying non-fatal strangulation as an effective tool for such (Stansfield & Williams, 2021). Thus, similar to non-fatal strangulation, the non-fatal use of arson or burning, or even threats to do so, may act as significant predictors of the perpetrator’s likelihood to escalate their acts of violence to

intimate partner or domestic homicide. To frame the study, an understanding of how and why arson is an extremely effective tool of coercive control is vital.

2.2 ARSON AS COERCIVE CONTROL

In one of the only known studies to date on the topic, Douglas (2023) details several reasons why fire, or arson, is an extremely effective tool of coercive control to use against an intimate partner. Firstly, the simple fact that fire is capable of inflicting an unbearable and extremely painful amount of pain, torture, and trauma against an individual, enforces its effectiveness. Further, such infliction often times causes permanent injury or even death. Secondly, even if fire is not used against the individual's physical person, such use against a victim's property is highly effective as an individual's home oftentimes represents safety and ownership. Destroying a victim's property or possessions with fire may cause feelings of defenselessness, weakness, and vulnerability, and make the victim more reliant on their abuser (Douglas, 2023).

The third reason why arson is an effective tool of coercive control in domestic violence is its *potential* harm in spreading. Fire is highly capable of spreading at a high rate, especially in hot or dry climates, and may even spread to people or property that were not intended as the original victim(s) (Douglas, 2023; Horsley, 2019). It can also be further speculated that fire's potential to spread is increased in urban areas where homes are in closer proximity to one another. Another potential harm to consider is the threat it poses to law enforcement and firefighters responding to emergency service calls (Douglas, 2023). The last reason arson is an effective tool of coercive control is the perpetrator's ability to make it appear as an accident (Douglas, 2023). Further, when

cases of arson are falsely perceived as an accident, the abuse may be less likely to come to the attention of law enforcement, reducing opportunities for formal intervention.

Recent findings also indicate that perpetrators threatening to use fire against their victims tend to display an escalation of coercive control over time (Lelliott & Wallis, 2023). Most often, such threats occurred in cases of serious domestic violence that displayed an escalating pattern. In their analysis of domestic and family violence service providers in Australia, Lelliott and Wallis (2023) found that other forms of threats and behavior to coercively control the victim were used before the threat to use fire was made. In many cases from the sample, the threat to use fire was made after a “trigger event” such as police involvement, divorce/separation, loss of custody of a child, etc., and was perceived to be the perpetrator “losing control”. Another important note made in the study was the fact that sources of ignition and accelerant are easily available, making the threat more effective to control the victim (Lelliott & Wallis, 2023).

2.3 ARSON AS COERCIVE CONTROL ESCALATES TO FAMILY MASS MURDER

The existent evidence supporting the fact that arson is an effective tool of coercive control in domestic violence may be extended to family mass murder. The reasons presented for why arson is an effective tool of coercive control are arguably heightened in cases of family mass murder since the victims are most commonly females and children. In the case that a mother is being abused and threatened with the use of fire by her intimate partner, such tactics would be more coercively controlling because she would also fear for her children to suffer such pain. A second reason may simply rest in the fact that many children, especially young children, are scared of fire, not even fully

aware of its potential to cause harm. Now that the theoretical framework of coercive control is established, prior research is discussed.

CHAPTER 3

LITERATURE REVIEW

In order to effectively integrate the distinct bodies of literature of family violence, arson and mass murder, the literature is presented through four sections. The following sections are presented; 1) Terms and Definitions, 2) Typologies/Classifications, 3) Prevalence and Characteristics and 4) Arson and Family Mass Murder.

3.1 TERMS AND DEFINITIONS

For the purpose of the current study, the forms of family violence initially defined are intimate partner violence and intimate partner homicide. Intimate partner violence (IPV) is a form of ongoing abuse, aimed to subdue, dominate, and control an intimate partner (Hamberger et al., 2017). The form of abuse may be psychological, physical, or even financial. As this form of violence is often ongoing, usually in a cyclical pattern, IPV has been conceptualized using power and control models, coercive control models, and domination and control models (Hamberger et al., 2017).

The form of homicide that occurs following the escalation of IPV is intimate partner homicide. The term intimate partner homicide (IPH) refers to an individual killing their intimate partner, most commonly the male partner killing their female partner (Diem & Pizarro, 2010). Although there are other contexts when IPH occurs, it is most often related to an escalation of IPV. IPH often succeeds past abuse, partner jealousy, control (Diem & Pizarro, 2010).

To adequately discuss the literature relevant to mass murder, common terms must be highlighted. Presenting such variations in terminology used within the scope of the family mass murder literature is vital in understanding how the prevalence and severity of such events have been recorded over time to the current day.

One of the earliest definitions for “mass murder” is an incident in which one perpetrator kills multiple people in one incident (Dietz, 1986). However, Dietz (1986) notes that in order for the term to be operationalized, the components inherent to a mass murder such as “multiple victims” and a “single incident” must be defined. Thus, one of the most commonly used definitions is the killing of at least four victims, not including the perpetrator, within one single event (Fox & Levin, 1998). Various definitions over the decades since may have differing victim thresholds, time constraints, location restrictions, or perpetrator motivation qualifiers. Such restrictions on the definition of mass murder distinguish the term from other forms of multiple homicide such as serial killings and spree murders (Dietz, 1986; Fox & Levin, 1998). Dietz (1986) went further to coin the term “family annihilator;” an individual who kills every family member present at the time of the incident, often including family pets. In the case that the offender kills at least four family members, the incident could also be termed family mass murder.

Defining the act or use of arson in the current literature has remained relatively consistent and straightforward over time. In psychiatry, the acts of “fire-setting” and “arson” are distinguished from one another (Burton et al., 2012). First and foremost, the act of fire-setting may be either accidental or intentional (Burton et al., 2012). Arson, however, is always the intentional and malicious fire-setting to a property or person,

excluding those that occur on accident, and is a violation of criminal law (Burton et al., 2012). While fire-setting has its own unique implications, this paper will focus solely on the act of arson, thus only including incidents where the perpetrator broke the law, and acted intentionally and maliciously to set the fire.

3.2 TYPOLOGIES AND CLASSIFICATIONS

For the purpose of integrating the two bodies of literature, mass murder and arson, the typologies or motivations of both are presented. According to Fox and Levin (1998), there are five motive-based typologies of a mass murderer: revenge, loyalty, profit, terror, and power. Firstly, a revenge mass murderer may target their former workplace or colleagues after being fired. Loyalty mass murderers may be the patriarch of a family attempting to rid his family of a “miserable existence”. A mass murder committed for profit may take place as the perpetrator is robbing a bank. Terror mass murderers are often extremists that aim to send messages, often political. Lastly, a mass murder perpetrator that may fit into the power typology aims for dominance and control. These perpetrators often see themselves as “playing God”. Fox and Levin (1998) note that there is often overlap when deciphering what typology a mass murderer may be, and they may not be completely exclusive of one another. Their typologies are also not exhaustive and there may be a mass murderer who doesn’t fit any of the five typologies.

Similar to mass murder, scholars contributing to the arson literature attempt to apply classification systems to the crime of arson. Classification may be based on offense or offender characteristics, usually with the goal of providing additional information for investigators (Doley, 2003). One of the earliest classification systems separated arsonists with an intellectual disorder from those without (Doley, 2003). Since this early model,

scholars have debated whether to use motive, psychiatry, or other means in shaping classification models (Doley, 2003). Despite these debates, one of the most widely accepted classification systems for arson offenders was presented by Douglas et al., (1992), focusing on motive, behavioral, and social factors (Doley, 2003). Six classifications are presented: 1) vandalism-motivated, 2) excitement-motivated, 3) revenge-motivated, 4) crime concealment, 5) profit-motivated and 6) extremist-motivated (Douglas et al., 1992). Vandalism-motivated arson is associated with juvenile mischief, experimentation, and peer pressure. Excitement-motivated arsonists are identified as attention or thrill seekers, or those with sexual perversions. Arsonists motivated by revenge may commit their acts against an individual or institution due to spite, jealousy, or to inflict intimidation. The crime concealment motivation may occur when an offender uses arson to cover up their crimes such as larceny, breaking and entering, or even homicide-staging. Profit-motivated arsonists may commit arson to commit fraud, by claiming insurance or dissolving a business. Lastly, extremist-motivated arsonists often commit their acts on the basis of terrorism or discrimination (Douglas et al., 1992).

In a 1987 FBI Law Enforcement Bulletin entitled “*Motive-Based Offender Profiles of Arson and Fire-Related Crimes*,” the frequency of arson crimes separated by the previously stated classification model is detailed. In a sample of 1,016 cases of arson perpetrated by both juveniles and adults, 49% were committed with a motive of vandalism (Icove & Estep, 1987). Approximately one fourth of cases were committed for excitement. At almost half that rate, 14% of cases were committed for revenge. Surprisingly, only 2% were motivated by crime concealment, and 1% for profit. When differentiating the juvenile and adult population, one of the biggest differences between

these perpetrators is the motive for which they commit arson. In approximately 65% of arsons perpetrated by juveniles, vandalism was the motive. Conversely, adults were motivated by vandalism in only 6% of cases. Another vast difference rests in the revenge-motivated cases. Adult arsonists were revenge-motivated in 42% of cases while juveniles were in only 4%. Cases motivated by excitement were nearly the same for juveniles (24%) and adults (28%). Cases motivated by crime concealment were rare for both age groups, but slightly more frequent for adults (Icove & Estep, 1987). Therefore, the biggest contrasts in motivations between juveniles and adults who commit arson is that juveniles are more frequently motivated by vandalism, while adults are much more likely to be motivated by revenge.

Mass murder and arson typologies display some overlap, but each has their own typologies or classifications that the other does not. Table 3.1 displays the typologies or classifications for each type of offender, as well as their similarities and distinctions. Both arson and mass murder have a typology or classification motivated by revenge, profit, and extremism. However, motivations related to power and loyalty are unique to mass murder while vandalism, excitement and crime concealment are unique to arson. Thus, while the separate and distinct crimes have their own unique motivations, some overlap is seen, further calling for the interconnection of the literature.

Table 3.1 Overlap and Distinctions between Mass Murder Typologies and Arson Classifications

Arson Classifications (Douglas et al., 1992)		Mass Murder Typologies (Fox & Levin, 1998)	
<ul style="list-style-type: none"> • Vandalism-motivated • Excitement-motivated • Crime-concealment 	<ul style="list-style-type: none"> • Revenge-motivated/Revenge • Profit-motivated/Profit • Extremist-motivated/Terror 	<ul style="list-style-type: none"> • Power • Loyalty 	

3.3 PREVALENCE AND CHARACTERISTICS

The prevalence of IPH has declined over the past couple decades, consistent with the overall homicide decline beginning in the 1990s (Caman et al., 2017). Besides an intimate relationship between the victim and the offender, perhaps the most well-established characteristics of IPH are that it is primarily a male perpetrated crime, and most victims are female (Caman et al., 2017). Accordingly, homicide perpetrators overall are most commonly male (95%), as well as victims (80%) (Caman et al., 2017).

Meanwhile, for IPH alone, females account for two-thirds of the victims (Caman et al., 2017). While males are more likely to be killed by an acquaintance, or even strangers, females are most likely to be killed by an intimate partner (Caman et al., 2017).

Researchers have examined differences in male perpetrated and female perpetrated IPH. In cases perpetrated by females, motivations often rest in previous abuse by their male partner, and a desire to escape ongoing abuse (Diem & Pizarro, 2010). Male-perpetrated

cases of IPH often result from jealousy and a desire to control their partner (Diem & Pizarro, 2010). As previously stated, the act of IPH is often referred to be on the “far end of the spectrum” of IPV (Caman et al., 2017, p. 14). Therefore, the most significant predictor of IPH is previous IPV (Caman et al., 2017; Campbell, 2007; Diem & Pizarro, 2010).

Criminologists know that the firearm is the most commonly used weapon in all circumstances of homicide across the United States, demonstrated by the fact that 74% of homicides in 2017 were due to firearm injury (Pizarro et al., 2021). However, criminology has only narrowly examined the relationship between offender weapon and motivation and premeditation. In a study conducted by Pizarro et al., (2021), the use of firearms during the commission of violent crimes in relation to premeditation and offender motivation is explored. Results displayed that multiple variables, including race, motivation, victim-offender relationship (VOR), premeditation, and age, were covariates to the perpetrator’s use of a firearm. Identification of such covariates allows for the formation of prevention strategies (Pizarro et al., 2021). Thus, with approximately 62,000 arson crimes taking place a year (Burton et al., 2012), the prevalence, characteristics, and relevant covariates of its use in homicides are unique elements in need of further exploration.

As previously noted, most arson crimes are perpetrated by juveniles, and studies exclusively on adult arsonists are rare. Dickens and colleagues (2007), however, present descriptive characteristics from psychiatric assessments of a relatively large sample of 167 adult arson offenders. Approximately 77% of offenders were male. The average age of all offenders was 29 years old. Over half of offenders were either separated or single

and the large majority were Caucasian (86%) (Dickens et al., 2007). When characterizing adult arson offenders, a couple of the most accepted findings in the literature is that arsonists have a record of property offenses and are from poor or disadvantaged backgrounds (Doley et al., 2011).

With a crime like arson, it is vital to note the differences between one-time arson offenders and repeat, or serial, offenders. The literature presents an array of statistics regarding the rate of arson recidivism (Doley et al., 2011). Depending on the timeframe and sample, rates of arson recidivism range anywhere from 4% to 46%. In studies drawing comparisons among the risk factors associated with both arson recidivism and one-time arson offenders, many significant differences were found. Repeat arson offenders were younger than one-time offenders, single, displayed histories of aggression and suicide attempts, had a criminal record or spent time in a correctional institution, had a history of substance abuse, experienced problems with relationships, and hold a greater number of property offenses committed before their arson offense(s). As well-established in the arson literature, many arson offenders have a record of property offenses. Repeat arson offenders more often have a history of property crime than their one-time offender counterparts (97% versus 80%) (Doley et al., 2011). Central to this study, research focused on risk assessment has found that repeat arson offenders are extremely dangerous, as they display a higher likelihood of continuing their acts of violence at a greater magnitude due to previous and multiple engagements in the behavior (Doley et al., 2011). Within the violence risk assessment, two factors are presented to gauge an individual's risk for future violent offenses: age at the time the perpetrator committed their first violent offense and the number of violent offenses committed throughout their

criminal history (Doley et al., 2011). Therefore, on the basis that arson offenders oftentimes begin their violent offenses as juveniles, and are likely to be recidivists, the likelihood of violence continuation is high.

Clearly, not all arson offenses are an act of arson-related homicide, and not all arson crimes are related to family violence. However, to better understand the connection between arson and family mass murder, it is important to analyze the current literature on the characteristics of arson-related homicide offenders as well. Ferguson et al. (2015) conducted a study on arson-associated homicides compared to a control sample of homicide cases not involving arson. An arson-associated homicide was defined as any homicide in which a fire was set deliberately to cause or be in conjunction with an individual's death. Regarding offender characteristics, female arson-associated homicide offenders were more frequent than in the control (25.7% versus 13.1%). The average age of an offender was slightly younger for offenders who committed arson-associated homicide (35.6 years versus 38.5 years). For victim characteristics, there were a higher proportion of female victims in arson-associated homicides (43.5% versus 36.3%). Victim-offender relationships displayed both consistency and discrepancies between arson-associated homicides and the control sample. Approximately 23.5% of victims were an intimate partner in arson-associated homicide, but nearly the same, 24%, was reported for the control group. Interestingly, a higher proportion of victims were considered "other family" in arson-associated homicides (22.4% versus 15.7%). Arson-associated homicides also had a higher proportion of stranger victim-offender relationships (14.1% versus 11.4%). One possible explanation for this finding is that arson-associated homicides may claim the lives of individuals that are not the

perpetrator's target of homicide, due to the spread of fire and destruction. When examining incident characteristics, one of the greatest differences between the arson-associated homicides and the control group was the location where the homicide took place. Arson-associated homicides were more likely to occur in the home of the victim (65% versus 47.4%). Inherent to arson-associated homicides, the cause of death was "burns/effects of fire" in 75.9% of cases (Ferguson et al., 2015), indicating victims in nearly one-quarter of arson-associated homicides were killed by some other means and providing additional support for the need to consider the multifaceted role arson may play in family mass murders.

It was once believed that arson was a crime primarily committed by young females, as a form of rebellion or protest (Gannon, 2010). However, research has discovered in more recent years that arson is in fact primarily committed by males. It is estimated that only between 4%-28% of arsonists are female (Gannon, 2010). Nonetheless, it is vital to examine the female arsonist alone, since females and males do typically contrast in crime perpetration, arson-associated homicides display a higher proportion of female offenders than other forms of homicide (Ferguson et al., 2015) and mass murder perpetrators are most likely to be female when it is a family mass murder (Fox & Levin, 2022). Researchers find female arsonists are usually Caucasian women between the approximate ages of 25-40 years old, and typically come from lower economic status backgrounds (Gannon, 2010). Poor education and low IQ were also common characteristics (Gannon, 2010). As described above, most arson offenders will have already committed another crime or have been arrested before their arson offense. Research shows over half of female arsonists do have a record of arrest, with

approximately one third of such being for aggressive assaults, a particularly violent crime (Gannon, 2010).

Now discussing family mass murder, a multivariate comparison conducted by Fridel (2021) found that among family, public, and felony mass murders, family mass murders are the most prevalent. Research shows that family mass murder perpetrators are most commonly Caucasian. Further, the average age of offenders is approximately 34 years old, slightly older than other forms of mass murder. Perpetrators of family mass murder also commonly display a history of domestic violence (28%) and violent criminality (26%). This history of domestic violence and violent criminality is highest with perpetrators of family mass murders, as 3% of felony mass murderers and 7% of public mass murderers have a history of domestic violence. Family mass murderers have nearly the same likelihood of having a criminal record as felony mass murderers (29%), but public mass murderers at a lesser rate than both (18%). This trend is consistent with the fact that family mass murder is often an escalation of IPV. However, the large percentage of family mass murderers without a documented history of violence points to possibly disparate drivers of family mass murder from IPH. One possibility could be that these offenders are more despondent, suicidal, or likely to kill their families out of a sense of loyalty than offenders who only kill their intimate partner. Female victims (57%) were also seen to be more prevalent than male victims, consistent with trends in IPV and IPH. A characteristic unique to family mass murder, unseen in cases of IPH, is the prevalence of juvenile victims below the age of 18 (49%). It is also important to note that in Fridel's entire sample of mass murders, regardless of type, 85% of cases were

perpetrated by a lone offender. The most prevalent form of killing in family mass murders is shooting in 68% of cases (Fridel, 2021)

3.4 HOMICIDE SUICIDE

To assess research question two, prior research on homicide-suicide is discussed. The literature has received increasing attention since homicide-suicide is deemed a public health crisis, not only affecting the individual committing suicide, but their family, and society as well (Rouchy et al., 2020). In a study conducted by Liem et al., (2011) on an international comparison of homicide-suicide characteristics, it was found that the most prevalent form of homicide-suicide in all analyzed countries, including the US, are those where the victim is an intimate partner. Further, in Fox and Levin's (2022) study on mass murder, 43% of family mass murder perpetrators committed suicide. A consistent definition for the term homicide-suicide does not exist in the literature, as variations typically differ based on the timeframe of which the suicide takes place (Rouchy et al., 2020)

Homicide-suicide is an extremely rare event across the United States (Bridges & Lester, 2011; Large et al., 2009; Liem et al., 2011; Rouchy et al., 2020; Saleva et al., 2007). According to Zeoli (2018), the perpetrator commits suicide following approximately 5% of all homicides, however, this percentage increases to 20-59% of cases when limited to just IPH. When comparing the act of homicide-suicide combined, to that of homicide or suicide alone, scholars have uncovered that few commonalities exist (Saleva et al., 2007). In comparing homicide-suicide to both homicide and suicide alone, research finds it most compares to suicide (Large et al., 2009).

While cases of homicide-suicide in single-victim homicides are extremely rare, the likelihood is higher in cases of mass murder. Fox and Levin (2022) illuminate these distinctions in their recent study of mass murder that separated cases by type (family, felony, public, and other) using the Associated Press/USA Today/Northeastern University Mass Killings database. In all cases of mass murder combined, the perpetrator committed suicide in 25.5% of cases (Fox & Levin, 2022), similar to the percentage in IPH (Zeoli, 2018). However, in family mass murders, the perpetrator committed suicide in 43.2% of cases and in 37.8% of public mass murders (Fox & Levin, 2022). Thus, implications arise due to the fact that homicide-suicide is much more common in the context of mass murder, particularly in the case of family mass murder.

Many of the common perpetrator, victim, and incident characteristics of homicide-suicides remain constant across various studies. Incidents of homicide-suicide most often take place in the family unit, involve an intimate partner, and are perpetrated by the patriarch of the family (Liem et al., 2011). Homicide-suicide perpetrators are nearly always men (Bridges & Lester, 2011; Liem et al., 2011; Rouchy et al., 2020; Saleva et al., 2007) and older than the average homicide offender (Rouchy et al., 2020; Saleva et al., 2007). Whereas the most common victim of a homicide alone is a male, females are more commonly the victims of homicide-suicides (Bridges & Lester, 2011; Liem et al., 2011; Rouchy et al., 2020). The literature also noted that juveniles 17 years of age or younger were more commonly victims in incidents of homicide-suicide than homicide alone (Liem et al., 2011), likely due to the frequency of homicide-suicide within the family.

3.5 ARSON AND FAMILY MASS MURDER

Research has established that arson is often used as a staging and crime concealment tool for homicides. A study conducted in 2012 analyzed over 900 crime scenes and found 8.35% were staged (Schlesinger et al., 2012). Important to this thesis, in the staged crime scenes, arson was the most frequently used staging method in 25.31% of cases. It is significant to note that the most frequent type of homicide staged in the study were domestic homicides. Approximately 18% of the 276 cases of domestic homicide were staged, 11.53% by arson (Schlesinger et al., 2012). Taken together, these findings suggest arson may play a unique and important role in family mass murder, particularly when considered alongside offender suicide.

Despite the theoretical linkages between arson and domestic violence, empirical studies examining this intersection is sparse. In one of the only studies to date, Douglas (2023) analyzed the use of arson as a form of coercive control against a domestic partner. She defined coercive control as a perpetrator “dominating or controlling another, it is highly gendered, mainly being perpetrated by men against women” (Douglas, 2023, p. 27). While there are many tools that a perpetrator may use against their victim to employ this coercive control, it is noted that fire is a dangerous, easy to spread, extremely painful and traumatic tactic used to scare a victim of domestic violence. While the victim may never receive physical pain against their body, the burning of property or possessions can also be used to control the victim by taking away resources and security. The use of fire is also an effective tool of coercive control because it is often falsely perceived as an accident (Douglas, 2023).

The argument may therefore be made that the perpetrator's use or threat to use arson as a tool of coercive control may often indicate the likelihood of escalation to IPH, and further, family mass murder. Taking Fox and Levin's (1998) power typology of a mass murderer, one that commits his act for control and dominance, this is arguably the last stage of coercive control when such a typology is present in a family mass murder. For example, if an abusive patriarch of a family unit was committing acts of coercive control, attempting to dominate and isolate his family, if such acts were unsuccessful in gaining power and control in his eyes, the last step to gain such would be family mass murder. Informed by the literature, the next section presents the current study's research questions.

CHAPTER 4

THE CURRENT STUDY

In the current study, I seek to increase the current knowledge on arson use in family mass murders by examining incidents that are arson-related in comparison to non-arson-related cases. The research questions are presented below. This is followed by a description of the methods employed to answer these questions.

Research Question 1: *What are the differences in incident, offender, and victim characteristics between family mass murders that are arson-related and non-arson-related?*

Research Question 2: *How does the use of fire during a family mass murder impact the odds of the perpetrator committing suicide?*

CHAPTER 5

METHODS

5.1 DATA SOURCE

The data source for this research is the publicly available Mass Killings in America database compiled and maintained by the Associated Press, USA Today, and Northeastern University (hereafter referred to as MKA).¹ As previously stated, the database contains data on all identified mass killings in the USA from 2006 to the present. For the current study, only cases occurring between 2006 and 2022 are used (the last full year of data available). In order for a case to fit the criteria for inclusion in MKA, the mass murder must be intentional, and have a victim fatality count of at least four individuals, not including the perpetrator. Weapon type is not a variable of consideration for inclusion (USA Today, 2023).

The creators of the database made four Excel files publicly available for download: 1) an incident-level file, 2) a victim-level file, 3) an offender-level file, and 4) a weapon file. This study uses the first three named files, as the weapon file only contains more detailed data on the use of firearms. The **incident-level file** contains data pertaining to the time and geographical location of the incident, the number of victims and offenders (both living and deceased), cause of death (both first and second), type of situation (i.e., homicide circumstance), incident type (e.g., family, public, felony-related), location type,

¹ Available online at <https://data.world/associatedpress/mass-killings-public>.

and a narrative. The narratives contain a brief statement, depending on both the complexity of the event and information made available, on how the incident occurred and whom it involved. The **victim-level file** includes data on each victim's race, sex, age, and relationship to the offender. The **offender-level file** includes data on each offender's race, sex, age, whether or not they committed suicide, and outcome (e.g., killed, convicted, suicide). Both the victim and offender-level files contain an incident ID number correlating to a case from the incident-level file, allowing victim, offender, and incident characteristics to be linked and compiled into a single dataset for analysis.

5.2 CREATING THE DATASET

Prior to analyzing the data, it was necessary to transform the data into a useable format. This was done in stages. The original MKA dataset coded incidents with at least one family VOR as having a "type" of "Family". Thus, I first excluded all cases that were not coded as "Family", now having a family only sample (n = 252). Looking at whether my family sample was impacted by missing data, the original MKA dataset contained two incidents with a situation type of "undetermined" and 21 with "unsolved". Thus, only approximately 4% of the sample had a "type" that was unknown, and may have potentially been a family mass murder. Several criteria were used to determine if a case was arson-related. Using only the family cases, I then coded all cases with a "situation type" (i.e., homicide circumstance) of "arson" as "1" to signify that they were arson-related. Only one case met this criteria. Next, thirteen cases coded as having "smoke inhalation & burns" as the first cause of death were coded as "1." The nine cases coded with the second cause of death being "smoke inhalation & burns" were also coded as "1." Lastly, I read through all the case narratives to identify whether the description indicated

fire use at any point during the incident whether that be ante-mortem or post-mortem. Thirty-eight of the arson-related cases mentioned the use of fire in the narrative. Thus, each arson-related case is coded as “1,” based on one or more of the following categories: 1) situation type, 2) first cause of death, 3) second cause of death, and 4) the narrative. Now, the dataset is composed of two subgroups; arson-related (36) and non-arson-related (n = 201). Arson-related incidents are coded as “1” and non-arson-related events as “0.”

The unit of analysis is the mass killing incident. The dataset excluded any incident in MKA with more than one offender. Excluding incidents with more than one offender is justified due to the qualitative differences between single-offender and multiple-offender incidents, as well as the difficulties in coding multiple offender incidents and an offender-based outcome as the dependent variable for research question two. Also due to the incident unit of analysis, victim characteristic from the victim-level file were aggregated to the incident level with dummy variables.

These changes produced two new datafiles: 1) an incident-level file with victim characteristics and 2) an incident-level with offender characteristics. These two additional files were merged with the original incident-based file based on their corresponding incident ID numbers. This final dataset, which contained 237 incidents of single-offender family mass murder, was used for analysis. All variables are derived from available data in the MKA database.

5.3 DEPENDENT VARIABLES

The dependent variable used to address the first research question is whether the family mass murder was arson related. As previously mentioned, cases were classified as *arson-related* through multiple fields presented in the database. Any case with a coded

situation of “arson,” first or second cause of death as “smoke inhalation or burns,” or mention the use of fire in the incident narrative, was coded as arson related. Cases that are arson-related are coded as “1,” and those that are not as “0.”

Next, to answer research question two, the dependent variable is the *suicide of the perpetrator* following the mass killing. Cases where the perpetrator committed suicide following the event were coded as “1,” and cases where they did not were coded as “0.” Data for offender suicides are extracted from the “suicide” variable in the offender-level file, where it is indicated to either be “true” or “false” that the offender committed suicide following the event. The suicide variable only includes self-inflicted suicide, not incidents where the perpetrator commits suicide by cop. Another variable called “outcome”, not used in this analysis, identifies whether the perpetrator was killed, committed suicide, was convicted, and other outcomes. Although timing has been debated in the literature as to how soon the suicide must occur after the homicide to be considered a homicide-suicide, the file does not specify a time frame following the incident in which the suicide must occur to be coded as “true.”

5.4 INDEPENDENT VARIABLES

The independent variables can be broadly classified as incident, offender, or victim characteristics, and are described in more detail below.

5.4.1 INCIDENT CHARACTERISTICS

The incident variables employed are location type, situation type, region, victim-offender relationship (VOR), cause of death, and living victims. The original Location type variable in MKA contained more detailed information on where an incident occurred with locations like place of worship, government/transit, open space, etc. For the current

analysis, this variable was collapsed and coded as: *Residence* = “1” and Non-Residence = “0,” because the majority of family mass murders occur in a private residence. *Situation type* was collapsed into four categories: Despondency = “1,” Family Issue = “2,” Interpersonal Conflict = “3” and Undetermined/Other = “4.” Despondency, family issue, and interpersonal conflict were the most prevalent categories reported by MKA, with the rest being collapsed down into the “Undetermined/Other” category. The region, not specifically included in the database, was derived by the state in which the incident took place and coded as: South = “1” and Non-South = “0.” States were classified as being in the *Southern region* based on U.S. Census classifications.²

VORs are included in the victim-level file. However, for the purpose of analyses, an incident-level VOR was derived. Due to the fact that all cases have at least one victim with a family VOR, *victim-offender relationship* is coded based on the most distant VOR, with intimate partner or immediate family only = “1,” any extended family = “2” and any non-family = “3.” Each incident is coded by its least associated VOR as the research seeks to identify cases in which any extended-family members or non-family members were killed, as this may impact implications and conclusions. For example, if an incident contained one intimate partner and three strangers, the event would be coded as “3” for non-family. Similarly, if three victims were immediate family members, but one of the victims was the aunt of the offender, it was coded as “2” for any extended family.

Immediate family includes the following types of familial relationships: child or stepchild, dating relationship, ex-dating relationship, ex-spouse, parent or stepparent,

² *Southern Region*: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf

sibling, or spouse. Extended family includes the following relationships: aunt/uncle, cousin, former relative/in-law, grandchild, grandparent, in-law, niece/nephew, other familial relationship, or relative of a known person. Non-family member relationships include: acquaintance, co-worker/employee, first responder, friend, individuals with some non-blood/marriage relationship, neighbor, other, random bystander/stranger, and roommate.³

Additionally, because prior research documents most family mass murders are committed with a firearm, I include a dichotomous variable to indicate whether a *shooting* was a documented cause of death. Cases that involved a shooting were coded as “1”, and those that did not as “0”. Reading through the case narratives, there are several examples where the offender shoots his family members and then sets the home on fire.

To indicate whether an incident involved at least one injured victim, I include a variable called *living victim*. Incidents with at least one injured victim were coded as “1”, and those without as “0”.

5.4.2 OFFENDER AND VICTIM CHARACTERISTICS

The offender characteristic variables examined are offender sex, offender race, and offender age. Offender sex was used to create a *female offender* binary variable coded as Male = “0,” Female = “1.” *Offender race* was coded as a categorical variable with: White = “1,” Black = “2,” Hispanic = “3,” and Other Race = “4.” The offender’s race was missing for 13 incidents, but internet searches allowed me to fill in the missing values for all but one case. Because the database codes “Hispanic” under victim race,

³ An example of the VOR “individual with some non-blood/marriage relationship to a known person” may involve victims that are the current intimate partner or spouse of the perpetrator’s ex-intimate/ex-spouse partner. One example of the VOR “relative of a known person” are victims that are blood related to the individual related to the perpetrator such as the nephews of the perpetrator’s ex-intimate partner.

rather than a separate ethnicity, all victims identified as White, Black, or Other are assumed to be non-Hispanic. The Other Race category includes victims identified as American Indian or Asian/Pacific Islander. While not ideal, there were not enough cases to examine these other racial groups separately. *Offender age* is a continuous variable based on the offender's age at the time the mass murder was committed.

For victim characteristics, the variables pertaining to the number of female victims per incident, and the presence of a child victim are employed. The *number of female victims* per incident is a continuous variable. A dummy variable was not used to indicate at least one female victim in an incident since family mass murder victims are more likely to be female, and the perpetrator's targets are most commonly a girlfriend, wife, or ex-wife (Fox & Levin, 2022). Preliminary exploration of the data revealed over 98% of incidents involved at least one female victim. *Victim age* is recorded in the original MKA dataset as a continuous variable. While the overall average of victim age was not used for analysis, this variable was pertinent in the construction of the next variable, *child victim*. This variable was coded as "1," if an incident involved any victim under the age of 18, and as "0," if it did not. Since the literature notes that family mass murders often claim the lives of children present at the event (Fox & Levin, 2022; Fridel 2021;2022), the dummy variable for child victim was used rather than the average number of child victims per incident. Knowing the average number of child victims per incident may prove redundant since any variation could simply be attributed to the size of a family. For example, if an arson-related incident took the lives of the perpetrators four children, but a non-arson-related incident killed two children it would appear that the arson-related incident was more likely to result in child victims. However, this may be

attributed to the number of children in the family. Thus, to analyze whether or not arson-related family mass murders are more of a threat to children than non-arson-related cases, the child victim dummy variable is utilized.

5.5 ANALYTIC STRATEGY

To begin the analysis, I first present descriptive statistics for the sample overall. To answer research question one, I compare descriptive statistics for the two subsets of interest (i.e., arson-related or non-arson-related). While the incident is the unit of analysis, and since only single offender cases are included, this will also create a statistical profile of family mass murder offenders who commit their acts with arson and allow for comparison between the arson and non-arson-related homicides, as well as family mass murders overall.

Bivariate analyses were also conducted to examine whether there were statistically significant differences in variables across the two groups. Specifically, independent samples t-tests are used for the continuous variables and crosstabulations with Chi-square statistics are used for categorical variables.

In order to answer research question two, I use logistic regression analysis because the dependent variable, suicide of the perpetrator, is a binary outcome measure.⁴ OLS Regression is not used in the current study because of the possibility of obtaining estimates outside of the range of mathematical possibilities (i.e., possibilities less than 0 or greater than 1). The analysis will control for all other independent variables above, with the primary independent variable of interest whether the mass murder was arson-related. All categorical variables will be dummy coded for use in the logistic regression

⁴ Only bivariate analysis is conducted for research question one, as opposed to conducting logistic regression due to the small percentage of arson-related cases (15.19%).

analysis to assess whether the use of arson can predict the likelihood of offender suicide, controlling for other relevant victim, offender, and incident characteristics.

5.6 METHODOLOGICAL CONSIDERATIONS

One methodological consideration within the current study was the decision of how to handle cases with more than one offender. After careful consideration and preliminary analysis of the frequency of these incidents, the decision was made to exclude these cases. Frequency distributions revealed there were only 15 cases (6%) out of the entire sample ($n = 252$) that had more than one offender. These cases were excluded for several reasons, including the difficulties in coding incidents with multiple offenders and an offender-based outcome as the dependent variable for research question two, as well as the suspected qualitative differences between incidents perpetrated by a lone offender, and multiple offenders. It is expected that these cases are likely qualitatively different from single offender family mass murders. To eliminate the possibility of these cases skewing results, they were excluded from analysis.

Next, victim characteristics were aggregated to the incident-level due to the incident unit of analysis. Rather than having victim characteristics for the entire sample of victims ($n = 1070$), victim characteristics at the incident-level are presented.

Another methodological consideration when working with homicide data is how to appropriately deal with missing data (Regoeczi & Riedel, 2003). Originally, 13 cases (5.49%) had a missing offender race. Though after conducting internet searches, all of these races were found except for one (0.42%). Victim race was missing for approximately 9% of all victims ($n=1070$) which translated to 12% of all incidents. Victim race was not a variable used for analysis. However, 84.13% of incidents were

deemed to be intraracial crimes. An incident was deemed intraracial if the offender's race was the same as at least one of the victims killed. Limitations exist when analyzing data on mass murders, and family mass murders specifically, due to the possibility of missing data for VORs. There is a possibility that some incidents of family mass murder are not coded as having a situation of "family," due to a missing VOR. As previously noted, only approximately 4% of the sample had a "type" that was unknown, and may have potentially been a family mass murder.

CHAPTER 6

RESULTS

6.1 DESCRIPTIVE STATISTICS

Before turning to results that answer my research questions, I provide a brief overview of descriptive statistics for the entire sample in my analyses. These results are reported in Table 6.1. The entire sample of family mass murders consisted of 237 incidents with 36 (15.2%) being arson-related. Examining the incident characteristics for the overall sample, nearly half of all incidents (46.4%) ended with the offender committing suicide. The relationship between the victims and the offender was classified into three categories, intimate partner/immediate family members only, at least one extended family member, and at least one non-family member victim. Most frequently, occurring in approximately 45% of all cases, the VOR only consisted of an intimate partner/immediate family members. This is followed by cases that had at least one extended family member (approximately 38%), and 17% of cases involved at least one non-family victim. Consistent with prior literature, nearly all cases of family mass murder occurred in a residence (93%). The most prevalent recorded situation type for the family mass murder was an interpersonal conflict (50.6%). The remaining incidents were roughly evenly split among the other three recorded situation types (despondency, family issue, and undetermined/other). Approximately half of the cases occurred in the Southern region (49.4%) and in three-quarters of the cases (75.5%), a shooting was the cause of death for at least one victim. Lastly, just over one quarter of the cases (26.6%) involved

at least one living victim who was not killed but sustained non-fatal injuries during the event.

The average number of female victims per incident was 2.57, although this ranged from incidents with a minimum of 0 female victims to a maximum of 6 female victims. Although not reported in Table 6.1, almost all incidents involved at least 1 female victim (98.5%). Over 80% of cases involved at least one child victim, with an average of 2.12 child victims per incident.

For offender demographics, offender sex, age, and race were analyzed. Consistent with prior literature on family mass murders and homicides overall, only a small proportion of all cases in my sample were committed by a female offender (7.6%). The average age for an offender was approximately 34 years old, although offender age varied widely and ranged from 9 years old to 73 years old. Approximately half of all incidents (51%) were committed by a white offender, while just over one-quarter (28%) were perpetrated by a Black offender, and 14% by a Hispanic offender. The remaining 7% of incidents were committed by offenders of another racial or ethnic group (American Indian, Asian/Pacific Islander, and an “Other” race). The bulk of these incidents (5%) were committed by Asian/Pacific Islander offenders.

6.2 RESEARCH QUESTION 1

In answering research question one, *What are the differences in incident, offender, and victim characteristics between family mass murders that are arson-related and non-arson-related?*, descriptive statistics for each subgroup are also presented in Table 6.1. Additionally, bivariate statistics were used to analyze whether there were significant differences between the two groups. Independent samples t-tests were used to assess

statistically significant relationships for the continuous variables and chi square tests were used for the categorical variables.

6.2.1 BIVARIATE ANALYSIS

For comparative analysis, the two groups, arson-related (15.2%) and non-arson-related (84.8%) were separated from one another. Beginning with incident characteristics, a higher proportion of arson-related incidents involved the suicide of the offender than non-arson-related incidents (52.8% versus 45.3%), however, this was not a statistically significant difference. In both groups, a VOR of intimate partner/immediate family only was the most frequent VOR, although it was more commonly seen in arson-related cases (58.3%) than in non-arson-related cases (42.3%). The other two VOR categories, extended family and non-family, were more prevalent in cases not related to arson (39.8% and 17.9%, respectively for non-arson cases compared to 30.6% and 11.1% for arson-related cases). Despite the relatively large percentage gap between the two groups, this relationship also was not statistically significant. All cases related to arson took place in a residence, while approximately 92% of non-arson-related cases did, a marginally significant difference ($p=0.07$). The percentage of incidents that were connected to a situation type of interpersonal conflict was nearly equal between the two comparison groups, making up approximately half of the situation types for each group. Though no statistically significant relationship exists, arson-related cases were more frequently situated around despondency (22.2% versus 14.4%), while non arson-related cases had a higher percentage related to a family issue (16.9% versus 8.3%). A lower proportion of arson-related incidents occurred in the Southern region (33.3% versus 52.2%). A statistically significant relationship was found to exist between whether a case was arson-

related and if it occurred in the Southern region. Both of the comparison groups had a high percentage of incidents where at least one of the causes of death was a shooting, but this was more common in non arson-related cases than arson-related (78.6% versus 58.3%). Chi-square tests also found this to be a statistically significant difference. Relatively rare overall, arson-related cases had a lower proportion of cases with a surviving victim than non arson-related cases (16.7% versus 28.4%), but this relationship was not statistically significant.

Next, incident-level victim demographics for the comparison groups are presented. Cases that were not related to arson had a slightly higher average number of female victims per incident (2.59 versus 2.44), but again, this relationship was not statistically significant. Arson-related cases were found to almost always (97.2%) involve a child victim, while a much lower proportion of non-arson-related cases did (79.6%). A statistically significant relationship was found to exist between use of arson in the incident and whether a child victim was involved.

As with the overall sample, both comparison groups presented a low prevalence of incidents with a female offender, however female offenders were slightly more prevalent in the non-arson-related cases (7.9%) compared to those that were arson-related (5.6%), an insignificant difference. The average age of the offender was nearly the same between the comparison groups, with 34 years old being the mean for both groups. While the average age did not differ between the two groups, an examination of the age of the youngest and oldest offenders illuminates some age differences between the groups. In arson-related cases, the youngest offender was nine years old and the oldest 59. A higher minimum and maximum offender age is seen in the non-arson-related subgroup with the

youngest being 14 and the oldest 73. Similarly, the offender racial demographics remained relatively stable between the two groups, with arson-related cases containing a slightly higher proportion of incidents committed by a white offender (55.6% versus 50.0%), while non-arson cases had slightly higher percentages of Hispanic offenders (14.5% versus 11.1%) and offenders of another race (7.5% versus 5.6%). There was virtually no difference in the proportion of Black offenders in arson compared to non-arson-related incidents (both involving Black offenders in approximately 28.0% of cases). No statistically significant relationships were found to exist between whether a case was arson-related and any offender demographics. Overall, these results suggest little influence of offender and victim demographics on the use of arson in family mass murders. Instead, the use of arson appears to be more closely linked with situational characteristics of the event, although even these differences are mostly insignificant. It is important to note the lack of power associated with the small sample size overall, 237 cases, and especially for arson-related cases (15.2%) may have contributed to these non-significant findings despite sometimes large differences in percentages between the two comparison groups.

Table 6.1 Descriptive and Bivariate Statistics for Total Sample and Arson-Related and Non Arson-Related Family Mass Murders

Characteristics	Total (N=237)	Arson- Related (N=36)	Non Arson- Related (N=201)	Chi ² /t-test Arson v. Non-Arson
Incident Characteristics				
Arson-related	36 (15.2%)			
Non-Arson-related	201 (84.8%)			
Offender Suicide	110 (46.4%)	19 (52.8%)	91 (45.3%)	
VOR				
Int. Partner/Immediate Family	106 (44.7%)	21 (58.3%)	85 (42.3%)	
Extended Family	91 (38.4%)	11 (30.6%)	80 (39.8%)	
Non-Family	40 (16.9%)	4 (11.1%)	36 (17.9%)	
Residence	220 (92.8%)	36 (100%)	184 (91.5%)	
Situation				
Interpersonal Conflict	120 (50.6%)	18 (50.0%)	102 (50.8%)	
Despondency	37 (15.6%)	8 (22.2%)	29 (14.4%)	
Family Issue	37 (15.6%)	3 (8.3%)	34 (16.9%)	
Undetermined/Other	43 (18.1%)	7 (19.4%)	36 (17.9%)	
South	117 (49.4%)	12 (33.3%)	105 (52.2%)	*
Shooting	179 (75.5%)	21 (58.3%)	158 (78.6%)	**
Living Victim	63 (26.6%)	6 (16.7%)	57 (28.4%)	
Victim Demographics				
# of Female Victims				
Average (SD)	2.57 (1.06)	2.44 (0.88)	2.59 (1.09)	
Min, Max	0, 6	0, 5	0, 6	
Child Victim (Under 18)	195 (82.3%)	35 (97.2%)	160 (79.6%)	*
Offender Demographics				
Female Offender	18 (7.6%)	2 (5.6%)	16 (7.9%)	
Offender Age				
Average (SD)	34.70 (10.76)	34.33 (10.86)	34.77 (10.77)	
Min, Max	9, 73	9, 59	14, 73	
Offender Race ^a				
White	120 (50.9%)	20 (55.6%)	100 (50.0%)	
Black	66 (27.9%)	10 (27.8%)	56 (28.0%)	
Hispanic	33 (13.9%)	4 (11.1%)	29 (14.5%)	
Other	17 (7.2%)	2 (5.6%)	15 (7.5%)	

^a Offender race missing for 1 non arson-related case (N=236 for the total sample and N=200 for the arson-related sample).

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

6.3 RESEARCH QUESTION 2

Logistic regression analysis, with suicide of the perpetrator as the dependent variable, was utilized to assess whether the use of arson is associated with the probability that an offender commits suicide. While relation to arson is the primary independent variable of interest, the analysis also controlled for the other incident, victim, and offender variables included in Table 6.2. The presentation of variables impacting the odds of offender suicide are separated by those that are protective factors (decreasing odds), and risk factors (increasing odds).

6.3.1 PROTECTIVE FACTORS

One VOR category, the presence of any non-family member among the victims, is a significant predictor for offender suicide. Specifically, incidents where a non-family member is killed decrease the odds of the offender committing suicide by an estimated 65.5% compared to incidents that only involve intimate partners and immediate family members. If the situation type is undetermined/other, this decreases the odds of offender suicide by an estimated 70.5%. Another variable found to be a significant predictor variable of offender suicide is the race of the offender. In cases where the offender is Black, the odds of offender suicide decrease by an estimated 73.3%, compared to an incident with a White offender.

6.3.2 RISK FACTORS

The situation type of despondency is a significant predictor variable compared to incidents stemming from interpersonal conflict. In incidents where the situation type is despondency, the odds of the offender committing suicide are approximately 3.2 times greater than incidents where the situation type is interpersonal conflict. If a shooting takes

place at the family mass murder, the odds of offender suicide are approximately 9.2 times greater than incidents where a shooting did not occur. Offender age was also found to be a significant predictor variable of offender suicide. A one-year increase in offender age increases the odds of offender suicide by an estimated 7.2%.

The primary variable of interest, whether a case is arson-related, is not found to have a significant relationship with offender suicide. However, a higher proportion of arson-related incidents involved the suicide of the offender (52.8% versus 45.3%). The remaining independent variables, residence, South, number of female victims, presence of a living victim, presence of a child victim, and female offender also do not significantly impact the odds of offender suicide.

Table 6.2 Logistic Regression Results Predicting Offender Suicide (N=236 incidents)

Variable	Coefficient (SE)	Odds Ratio
Arson Related	0.722 (.50)	2.058
VOR ^a		
Extended Family	-0.241 (.40)	0.786
Non-Family	-1.063 (.52)*	0.345
Residence	-0.955 (.68)	0.385
Situation ^b		
Despondency	1.157 (.54)*	3.180
Family Issue	-0.092 (.48)	0.912
Undetermined/Other	-1.219 (.49)*	0.295
South	-0.231 (.34)	0.794
Shooting	2.221 (.47)***	9.219
# of Female Victims	0.237 (.16)	1.267
Living Victim	-0.534 (.39)	0.586
Child Victim (Under 18)	0.022 (.52)	1.022
Female Offender	0.356 (.62)	1.428
Offender Age	0.069 (.02)***	1.072
Offender Race ^c		
Black	-1.319 (.42)**	0.267
Hispanic	0.313 (.47)	1.368
Other	-0.056 (.66)	0.946

SE = standard error

^aOmitted reference category is intimate partner/immediate family only.

^bOmitted reference category is interpersonal conflict.

^cOmitted reference category is White.

*** p < .001; ** p < .01; * p < .05

CHAPTER 7

DISCUSSION

Recently, Douglas (2023) noted fire's effectiveness as a tool of coercive control, stating that additional research was needed to understand the linkages between the use or threat of use of arson and domestic violence. To further explore this relationship in the most extreme cases of domestic violence, the current study sought to answer two research questions: 1) *What are the differences in incident, offender, and victim characteristics between family mass murders that are arson-related and non-arson-related?* 2) *How does the use of fire during a family mass murder impact the odds of the perpetrator committing suicide?* In comparing the two groups, arson-related and non-arson-related family mass murders, descriptive statistics, chi-square tests, and independent samples t-tests were used to answer research question one. In order to answer research question two, logistic regression analysis with a dichotomous measure of offender suicide as the dependent variable was utilized, and multiple significant predictor variables of offender suicide were found.

7.1 RESEARCH QUESTION 1

First, answering research question one, statistically significant relationships between the incident, victim, and offender characteristics and the use of arson will be discussed. Three variables were found to have a statistically significant relationship with whether or not an event was arson-related: taking place in the Southern region, at least one cause of death due to a shooting, and at least one child victim (under 18) being killed.

The first variable, the incident taking place in the Southern region, represented 49% of cases in the entire sample. Fox and Levin's recent (2022) study reported similar findings, that 47% of family mass killings occurred in the Southern region, leaving 53% in other regions. Analyzing differences between the comparison groups, a lower proportion of arson-related incidents occurred in the South (33.3% versus 52.2%). One possible explanation for this lower proportion of arson-related cases occurring in the South is that the other regions such as the Northeast have greater population densities with residences in closer proximity to one another. However, further research is needed to assess this potential explanation. A more likely explanation may be due to increased prevalence of gun ownership among Southerners (O'Connor & Lizotte, 1978), that plays a role in increased violent crime, including firearm violence. Therefore, it may be explained that due to the higher rate of firearm ownership and overall gun culture present in the South, other methods such as arson are less likely to be used. Future research that controls for firearm availability and/or firearm legislation could help support or refute this potential explanation.

There was also a statistically significant relationship between whether the incident involved arson and a shooting as a cause of death. A well-established fact related to lethal violence is that the firearm is the most prevalent weapon used in homicides, including single murders (65.7%), double murders (79.3%), triple murders (77.3%) and mass murders (77.6%) (Fox & Levin, 1998). Upon separating mass murders by type, family mass murders are also most commonly committed with a firearm (72.6%) (Fox & Levin, 1998). Further, the most prominent method employed in cases of IPH is the firearm (60%) (Fridel & Zimmerman, 2022), and the offender's access to a firearm increases the

risk of IPV escalation to IPH more than any other risk factor (Fridel & Zimmerman, 2022). Thus, it is not unexpected that a higher proportion of the non-arson cases involve a shooting (78.6% versus 58.3%).

In a study examining the use of firearms in IPHs, Fridel and Zimmerman (2022) found that male offenders are less likely to use a firearm when coercive control is maintained, but more likely when control is lost. Applying this finding to results in the current study, if an offender has coercively gained control through the use of arson, there theoretically should be a lower odds of firearm usage. However, further analysis examining the connection and temporal ordering between the time of the shooting and time of fire use during a single incident would need to be conducted.

For crime scene staging of homicides, Schlesinger et al. (2012) found arson was the most prevalent method employed overall (25.31%), even above other staging methods such as burglary/robbery (17.72%) and accidents (13.92%). However, the authors also found that crime scene staging in homicide, in general, is relatively rare with only 8.35% of cases being staged (Schlesinger et al., 2012). One may argue that the connection between family mass murder and crime scene staging, when using arson, is differentially impacted by various factors. In further examining this possibility, I examined the situation type and whether the offender committed suicide for the arson-related subsample. This analysis revealed a higher proportion of arson-related incidents in which the offender committed suicide were situated around despondency than in the cases where the offender did not commit suicide (31.58% versus 11.76%). However, in cases where the offender commits the family mass murder for more instrumental purposes, such as profit, the use of arson for crime concealment logically may be higher.

Therefore, I argue the reason for an offender's use of arson during a family mass murder is likely contextual, largely dependent on the underlying motivations behind perpetrating the event, but more research is needed to explore this possibility.

The last variable significantly related to the dependent variable is at least one child victim being killed in the incident. Almost all arson-related cases involved a child victim, while only approximately 80% of non-arson-related cases did. Such findings may be a result of the variations in offender motivation when committing arson-related versus non-arson-related family mass murder. We see a higher proportion of arson-related cases are situated around despondency, than cases that are not related to arson (22.2% versus 14.4%). In cases where the act is committed due to despondency, there is a likelihood that the offender while wanting to save his children from a cruel fate, does not want to experience the physical sensation of killing his children. The other motivation commonly associated with the killing of children in the family context is revenge. In these cases, the offender wants revenge against his intimate partner by killing their children, or the children are deemed to be collateral damage. Where these two situations may be argued to differentiate from one another for how children are killed, in cases of despondency it may be assumed that the offender ensures all of his children are present at the event, because he wants to save all of them. However, in cases of revenge, the offender is likely to commit his acts against those that happen to be present at the time. Thus, it is argued that in arson-related cases, because the situation is more likely to be situated around the offender's despondency, the offender in an attempt to save his family, ensures that his children are present, resulting in a higher proportion of children victims.

Despite some significant relationships, several incident, victim, and offender characteristics did not have a statistically significant relationship with whether a case was arson related. Descriptive statistics revealed that a higher proportion of cases related to arson had a VOR of only intimate partner/immediately family members (58.3% versus 42.3%), whereas the non-arson-related cases had a higher proportion of the other two VOR categories: extended family (39.8% versus 30.6%) and non-family (17.9% versus 11.1%). These findings are somewhat unexpected, due to the fact that the current literature emphasizes arson's *potential* to cause greater harm due to its ability to rapidly spread and uncontrollable nature, thus becoming a danger to those outside the immediate family unit, including first responders (Douglas, 2023).

Comparisons of situation type by whether the incident involved arson revealed notable differences. Proportionately, almost twice as many arson-related cases had a situation type of despondency, while the situation type of family issue was twice as common in non-arson cases than those involving arson. Thus, it is argued that arson-related cases more commonly result from the offender's feelings of hopelessness, rather than a specific issue in the family unit. Regardless, interpersonal conflict made up approximately half of the situation types for both subgroups. While prior studies (Icove & Estep, 1987) found that approximately 42% of all forms of adult-perpetrated arson cases were revenge-motivated, this does not coincide with the results of the current study, when the sample is reduced to arson-related family mass murder alone. Instead, the findings of this study suggest when arson is used against the family unit specifically, the situational context appears to more likely result from the offender's own feelings of hopelessness, rather than more common motives such as revenge. This characterization compares to

Fox and Levin's (2022) explanation of mass killers that experience a "distorted sense of love and loyalty" (p. 38). These mass murderers are believed to be motivated by releasing their family from life's hardships, misery, or cruelty (Fox & Levin, 2022). Further, mass murderers within this situation type may be described to commit a "suicide by proxy" due to feelings of despondency regarding their suffering (Fox & Levin, 2022).

Arson-related cases were less likely to have at least one surviving victim (16.67%) than non-arson-related cases (28.36%), demonstrating the increased potential for harm caused by fire. This variation may be explained by arson's unique characteristics. The simple lethality of arson, associated with its potential to ignite, spread, and cause destruction quickly (Douglas, 2023), results in a lower proportion of cases with injured victims because the rate of survival is lower. Another potential explanation is that as indicated by prior studies on non-fatal strangulation, that the chance of violence escalation resulting in victim fatality is often increased by the use of coercive control (Stansfield & Williams, 2021).

Ferguson and colleagues' (2015) study on arson-associated homicide revealed that female perpetrators of arson-associated homicides were more frequent than in the control group, the non arson-associated homicides, being the perpetrators approximately twice as often (25.7% versus 13.1%). The current study revealed a lower proportion of arson-related cases committed by a female offender (5.56% versus 7.96%). A potential explanation for the lower proportion of female offenders in the current arson-related subgroup than in Ferguson and colleagues' (2015) study may be because the sample is constrained to mass murders, and more specifically family mass murders, both of which are most commonly perpetrated by males (Fox & Levin 1998; 2022). Fox and Levin

(2022) found that 10% of offenders in their sample of family mass murderers were female, roughly equivalent to their involvement in homicides, overall (Fox et al., 2018). The current study displayed a slightly lower involvement of female offenders, with approximately 7.5% of incidents being committed by a female. The difference could be due to Fox and Levin's analysis being conducted at the victim-level, whereas this study was conducted at the incident-level. However, the current arson subgroup only contained approximately 5% of incidents committed by a female, thus, discrepancies exist for the prevalence of female offenders in family mass murders, dependent on the method of killing employed. If the method employed includes arson, the likelihood of a female offender decreases by approximately half. As noted, multiple variables display insignificant association with whether or not an incident is arson-related, but this may be explained by the small sample size of arson-related cases within the overall sample (15.19%).

7.2 RESEARCH QUESTION TWO

The last section of discussion will focus on research question two, which examined the association between arson use in family mass murders and the likelihood the offender commits. Although, the offender's use of arson was not found to be a significant predictor of offender suicide. Results from the logistic regression analysis revealed several significant predictors that impacted the likelihood of offender suicide, including non-family VOR, despondency situation type, undetermined/other situation type, shooting at an incident, offender age, and a Black offender.

The existing literature on mass murder, and family mass murder specifically, notes the high prevalence of offender suicide (Dietz, 1986; Fox & Levin, 1998, 2022;

Zeoli, 2018). For single-victim/single-offender homicides, Zeoli (2018) notes that homicide-suicide only occurs in approximately 5% of overall homicides, but this increases to between 20% and 59% when the homicide is an IPH. The same trend follows in cases of mass murder. When looking at all cases of mass murder combined, approximately one quarter of offenders commit suicide (Fox & Levin, 2022). For cases of family mass murder alone, offenders commit suicide at a higher frequency (43.2%) (Fox & Levin, 2022). Therefore, the literature suggests that homicide-suicide is most prevalent in cases, regardless of victim threshold, where the VOR is family, including an intimate partner. This prevalence only increases when the victim threshold increases from events of single-homicide to cases of family mass murder. What remains ambiguous, is the interaction of arson with various other components previously discussed such as coercive control, despondency, crime concealment, and mental health. Further, how these differential factors may associate with arson in different ways, impacting the odds of offender suicide differently from one another.

7.2.1 PROTECTIVE FACTORS OF OFFENDER SUICIDE

Incidents with at least one non-family VOR were associated with a lower odds of offender suicide than those with only an intimate partner/immediate family present. This finding is consistent with the prior literature, where the most prevalent VOR type for homicide-suicide in the US is an intimate-partner (Liem et al., 2011). Results also revealed that if the situation type is “undetermined/other,” the odds of offender suicide is lower compared to those due to an interpersonal conflict. The “undetermined/other” category contains situation types such as for profit and indiscriminate massacres. It is logical to assume if an offender is committing the family mass murder for profit, he

would want to live to reap those benefits. While this is only speculation, it points to other motivations not traditionally linked to suicide. Lastly, in cases where the offender is Black, there is a lower odds of offender suicide than in cases with a White offender. This finding is consistent with the homicide-suicide literature, as White males are the most likely to commit homicide-suicide (Gregory, 2012).

7.2.2 RISK FACTORS OF OFFENDER SUICIDE

In cases where the situation type is despondency, there is a higher odds of offender suicide compared to those stemming from interpersonal conflict. This result is expected due to the offender's feelings of hopelessness, which oftentimes motivates the incident altogether.

Next, if the shooting of a firearm occurred during the incident there is a higher odds of offender suicide. Shooting being a predictor variable may likely be explained by the fact that suicide is more commonly committed with a firearm, a means that is believed to involve less suffering and be quick. Offenders may be less likely to commit suicide when not having a firearm, but utilizing arson, because they do not want to die by the agonizing and suffering pain of fire.

Offender age was also a significant predictor variable. As offender age increases, so do the odds of offender suicide. This is also consistent with the prior homicide-suicide literature, as homicide-suicide offenders are noted to be, on average, older than the typical homicide offender (Rouchy et al., 2020; Saleva et al., 2007).

Therefore, for research question one, many notable differences between arson-related and non-arson related cases, including statistically significant relationships (1) Southern region, 2) shooting and 3) child victim under 18 killed) were found. For

research question two, even though arson use was not a significant predictor of offender suicide, many variables were; 1) non-family VOR, 2) despondency situation type, 3) undetermined/other situation type, 4) shooting, 5) offender age and 6) offender race. Further, variables identified to be significant predictors of offender suicide remained consistent with the homicide-suicide literature. In the next chapter, limitations of the study, implications, and areas of future research are discussed.

CHAPTER 8

CONCLUSION

The current study sought to integrate three broad bodies of literature that had not been connected before: 1) family violence, 2) arson and 3) mass murder. Few studies analyze the use of arson in homicides (Davies & Mouzos, 2007; Ferguson et al., 2015), and even less as a tool of coercive control in domestic violence/homicide (Douglas, 2023). Due to arson's unique features to go undetected as a crime, be easily accessible, and serve as a form of coercive control, it is a significant threat to victims of family violence. My results have provided an increased understanding of the dynamics of family mass murder that use arson in comparison to those that do not. Further, results from the second question, while not finding the use of arson to be a significant predictor, revealed a number of predictor variables for offender suicide in family mass murder. The current study's implications, limitations, and propositions for future research are now discussed.

8.1 IMPLICATIONS

One implication that arises from the study's findings is that while the main focus in arson-related cases of family mass murder may be sources of ignition or gasoline, firearms are still in need of great consideration. A firearm was used in over 50% of arson-related cases, therefore not ridding the sample of considerations discussed in the homicide or mass murder literature where the firearm is the most prevalent method of killing. Further, the homicide-suicide literature focusing on gun legislation as a means to

decrease homicide-suicide (Liem et al., 2011) may still be applied in cases where multiple methods are used, such as with the current study.

As stated by Douglas (2023), the enactment of coercive control through the use of fire often inhibits victims from receiving help that they need due to the offender's ability to easily cover up the crime as an accident. This is also supported by the discussed literature on crime scene staging, where arson was the most prominently used method in staged crimes (Schlesinger et al., 2012). Thus, considering cases of IPV and those that may escalate to family mass murder, it is important for investigators and first responders to ensure that a fire is not a means to conceal other crimes, or is not an act of coercive control to dominate an intimate partner or the family within an ongoing cycle of abuse. There is also a high likelihood that the known prevalence of arson-related family mass murder revealed in the current study is undercounted due to cases of arson being falsely perceived as an accident, particularly in cases that also include the death of the perpetrator.

Another major implication is the easy accessibility of ignition sources for fire. Almost any individual in the general public, including juveniles, may purchase items such as lighters, lighter fluid, gasoline, fireworks, or other items that can ignite a fire. Existent literature focuses greatly on gun legislation as a means to decrease firearm violence (Liem et al., 2011), but in this case, sources of fire cannot be given the same treatment since they are essential for daily life. Further, regulating these sources from being accessed by minors would not yield great effect since very few family mass murderers are children. Thus, further exploration in how to assess violence prevention for a weapon that must be accessible to the general public is needed.

8.2 LIMITATIONS

While informative, this study is not without limitations. Arguably, the largest limitation is the small sample size overall (N= 237). Such a small sample size is a limitation because it is likely too small to identify meaningful differences between the two subgroups, or even significant effects in the logistic regression analysis. Further, the arson-related cases only represented approximately 15% of the entire sample. Such a small sample of arson-related cases did not allow for in-depth comparison of ante-mortem and post-mortem arson, or arson for crime-concealment and arson for despondency. Another limitation of the study is missing data regarding victim characteristics, specifically victim race. Victim race was missing for approximately 9% of all victims (n=1070), which translated into missing victim race for approximately 12% of the incidents examined. Similarly, the offender's race was initially missing for approximately 5.49% of cases. However, the missing data on offender race were able to be manually inserted after conducting article searches and finding the information. After doing so, less than one percent of cases had a missing offender race. The lack of inclusion of victim race is not as salient because approximately 84% of incidents without missing data were intraracial crimes (between offender and at least one victim in an incident), which may have caused issues related to multicollinearity if included.

The literature notes there is not a clear line between “fire-setting” and “arson.” As previously mentioned, the two acts are distinct from one another, and arson must be intentional and malicious (Burton et al., 2012). However, Douglas (2023) notes that one of the reasons that arson is an effective tool of coercive control is due to the offender easily being able to make it appear as an accident, reducing formal intervention by law

enforcement (Douglas, 2023). Thus, a notable limitation is an unknown number of cases not included in the dataset since arson often goes undetected as a crime and arson-related family mass murders may be perceived to be accidental. While there are not necessarily steps to remedy these missing cases, it is important to keep this caveat in mind when interpreting the results.

The arson literature notes that many offenders have a record of property offenses (Doley et al., 2011). However, the current study is limited in the fact that criminal record or history of domestic violence could not be controlled for. Analyzing previous criminal record and history of domestic violence among family mass murderers who use arson would allow for comparison and contrasts to the typical arson offender.

An additional limitation is that incidents with more than one offender were excluded from the study. Prior to exclusion, there were only 15 cases (5.95%) that had more than one offender. These cases were excluded because their inclusion presented issues with non-independent observations in this incident-level analysis. Further, these cases are likely qualitatively different from single offender incidents, and their inclusion may skew results.

8.3 FUTURE RESEARCH

The literature is lacking information regarding the interconnection of arson, mass murder, and domestic violence. Although, the current study's results display a glimpse of the characteristics of family mass murder (arson-related versus non-arson-related), and hence, relationships existing between the three bodies of literature. An area of future research may be to extend the study to a larger sample size. Rather than focusing on mass murder, one could analyze single victim homicides and the use of arson. Another area of

future research would be to extend the sample to all forms of mass murder, not just that within the family. While this may not have implications for domestic violence, it could have general implications for the bodies of arson and mass murder. As previously mentioned, future research is needed to assess violence prevention for a weapon of choice or convenience, such as fire, when it is an item that must be accessible to the general public for everyday life. Finally, further research could apply the same methodologies for other rare methods of killing that are underexplored, such as strangulation, stabbing, drowning, and poisoning. However, limitations of the current study, a small sample size, would likely carry over since these methods of killing are not common.

There are multiple possible routes for future research indicated by the current study's results. First, further exploration into the interconnection of an incident's situation type, often called motivation, the use of arson, and offender suicide. Another possibility is intertwining the filicide literature to the current study, exploring the increased prevalence of child victims in cases of arson family mass murder. Future research may also investigate cases of arson family mass murder with previous threats to use fire. The analysis of previous threats to use fire could potentially support the fact that perpetrators who use fire display an escalation of coercive control over time (Lelliott & Wallis, 2023). Controlling for the offender's criminal record or history of domestic violence in future research would also allow for comparison and contrasts to the typical arson offender. Results from this research may prove useful because if it is found that a large percentage of arson-related family mass murderers do not have a documented history of violence, disparate drivers of family mass murder from IPH could exist. These potential results could point to more despondent or suicidal offenders motivated by a

sense of loyalty than in cases of IPH. Next, since we know that arson is employed as homicide-staging most commonly in cases of domestic homicide (Schlesinger et al., 2012), research is needed to connect the time of fire use (ante-mortem versus post-mortem) with offender motivations. Applying qualitative methods to the current study would also prove useful, allowing for an increased understanding of the escalation of coercive control and domestic violence over time, and thus, arson in some cases. Collecting data from case files or interviewing victim family members could allow insight into whether or not perpetrators who use arson have a history of using fire against their victim(s) or threatening to do so.

I conclude by reiterating the fact that the interconnection between domestic violence, arson, and mass murder needs further exploration. The current study identified several significant relationships between the use of fire and incident, victim, and offender characteristics in family mass murders, as well as significant predictors of offender suicide. These findings and correlating discussions may be utilized in promoting future research in forming best policy and practice implications, in the endeavor of preventing this rare form of family violence.

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APPENDIX A
IRB APPROVAL

OFFICE OF RESEARCH COMPLIANCE

**INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH
DECLARATION of NOT HUMAN SUBJECTS**

Ashley Mancik
1305 Greene St
Columbia, SC 29208

Re: **Pro00132878**

Dear Dr. Ashley Mancik:

This is to certify that Research Proposal entitled ***Family Mass Murder: An Exploratory Study of the Role of Arson*** was reviewed on **10/23/2023** by the Office of Research Compliance, an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). The Office of Research Compliance, on behalf of the Institutional Review Board, has determined that the referenced study meets the Not Human Subject criteria set forth by the Code of Federal Regulations (45 CFR 46) of:

- a. the specimens and/or private information/data were not collected specifically for the currently proposed research project through an interaction/intervention with living individuals OR
- b. the investigator(s) including collaborators on the proposed research cannot readily ascertain the identity of the individual(s) to whom the coded private information or specimens pertain

No further oversight by the USC IRB is required; however, the investigator should inform the Office of Research Compliance prior to making any substantive changes in the research methods, as this may alter the status of the project.

If you have questions, contact Lisa M. Johnson at lisaj@mailbox.sc.edu or (803) 777-6670.

Sincerely,



Lisa M. Johnson
Director