

# **Firearm Homicide-Suicides in North Carolina: Evidence from the North Carolina Violent Death Reporting System, 2004-2014**

Rose Kerber

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Advisor: Philip J. Cook, PhD.

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## EXECUTIVE SUMMARY

### Firearm Homicide-Suicides in North Carolina: Evidence from the North Carolina Violent Death Reporting System, 2004-2014

Using data from the North Carolina Violent Death Reporting System, this analysis examines firearm homicide-suicides to discern patterns that differentiate homicide-suicides from other firearm homicides and suicides. Spanning the years 2004-2014 in North Carolina, this data set allows for three sets of logistic regressions that compare:

- 1) **Homicide-suicide victims** with other **homicide victims**, including sub-analyses of domestic homicide victims and intimate partner homicide victims
- 2) **Homicide-suicide perpetrators** with other **homicide perpetrators**, including a sub-analysis of domestic homicide perpetrators
- 3) **Homicide-suicide perpetrators** with other **suicidal individuals** that committed suicide with a gun

These three avenues of inquiry allow for a complete picture of homicide-suicide victims and perpetrators, contributing to our understanding of the patterns behind these incidents. The major findings from this analysis are:

- 1) **Almost all homicide-suicides were committed by men and involved the use of a gun.** 95% of homicide-suicide perpetrators were male. 98% of homicide-suicides involved the use of a gun in at least one death, and 84% involved the exclusive use of a gun.
- 2) **Female intimate partners, and spouses in particular, were the most frequent victims in homicide-suicides.** Two thirds of homicide-suicides were intimate partner homicides. Women killed by their husbands in homicide-suicides outnumbered women killed by their husbands in simple homicides. Even when considering only intimate partner homicides, the odds that a female victim was murdered in a homicide-suicide were seven times higher than for males.
- 3) **The termination of an abusive relationship is a major risk factor for homicide-suicide.** Separation or divorce raised the odds that a killer committed suicide following a domestic homicide by 5 times.
- 4) **More victims of homicide-suicides had restraining orders against their killers than other homicide victims.** 55 homicide victims had restraining orders against their killers. Just over half of these victims died in a homicide-suicide. Among suicidal people, a restraining order raised the odds of committing homicide prior to suicide by four.
- 5) **Mental illness and suicidal behavior are far less common in homicide-suicide perpetrators than in other suicidal individuals.** 40% of solely suicidal people were suffering from Depression, compared to 9% of the homicide-suicide perpetrators. Those who committed homicide along with suicide were less likely to have left a note, expressed suicidal intentions or have made previous suicide attempts.

Homicide-suicides are a patterned type of violence that is distinct from other suicides and other homicides. The evidence presented in this analysis suggests that compared to both homicides and suicides, homicide-suicides are less reflective of personal problems experienced by the perpetrator and more reflective of troubled and abusive relationships between the perpetrator and the victim(s). The evidence suggests that perpetrators become maximally violent when they have lost control of a

relationship. The intense fixation on the victim suggests that these incidents may be primarily homicidal. The suicidal act may be less premeditated than the homicide, and may instead reflect the perpetrator's complete loss of control and inability to function without their primary relationship.

Homicide-suicides are often preceded by a history of domestic violence and interaction with law enforcement. Interactions with law enforcement and the court system present key opportunities for intervention in abusive relationships that might prevent escalation. With better screening and robust policies that empower law enforcement and the court system to confiscate firearms from abusive individuals, hundreds of deaths could be prevented over the next decade.

Following policy examples from other states could strengthen North Carolina's capacity to prevent gun violence. North Carolina should adopt state laws that do the following:

1. Allow dating partners and all family members to petition for domestic violence restraining orders
2. Prohibit those convicted of misdemeanor stalking and all forms of domestic violence from firearm purchase or possession
3. Require removal of all firearms from the scene of domestic violence incidents
4. Require that law enforcement confiscate firearms from restraining order respondents and domestic violence misdemeanants
5. Adopt a system to screen for high risk domestic violence cases through coordination of the family court system, the mental health system, and law enforcement
6. Assign case managers to follow-up and report cases deemed high risk.

## I. Introduction

After 22 years of marriage, Jennifer Summers, 45, left her husband on May 25, 2015 (Sbraccia, 2015). In a violent outburst the night before, Michael Summers, 46, had slapped his wife across the face and pinned her to the ground as he stood on her chest (Jackson, 2015). Two days later Jennifer took out a restraining order against him, noting the presence of multiple firearms in their Clayton, NC home (WRAL, 2015). When Michael sued for custody of their two children nine days later, Jennifer withdrew the restraining order (Sbraccia, 2015). Over the months that followed, friends reported that the couple had reconciled (ABC11, 2015). On the night of November 23, 2015, their two sons, 11 and 16, went running for help to a neighbor's house as a vicious quarrel erupted between their parents. By the time police arrived at the scene, Michael had fatally shot Jennifer before turning the gun on himself (Jackson, 2015).

While rare, the distinctive pattern of violence that resulted in the Summers' deaths is not so uncommon as one might believe. Between 2004 and 2014, nearly 600 people died in homicide-suicides completed with a gun in North Carolina. These homicide-suicides accounted for less than 3% of the nearly 12,000 total gun deaths in North Carolina between 2004 and 2014. Of the gun deaths, there were 7,214 suicides, and 4,241 homicide victims. The remaining incidents were accidental gun deaths, legal intervention by law enforcement, or the circumstances were never established. Gun deaths in North Carolina over this time frame outnumbered violent deaths by all other methods combined, which numbered 9,112.

This analysis explores firearm homicide-suicides and provides answers to the following:

- How do the victims and perpetrators of homicide-suicides differ from the victims and perpetrators of simple homicides?
- How do the perpetrators of homicide-suicides differ from other suicidal individuals?
- What policy implications arise from developing answers to these questions?

The policy motivation for studying murder-suicides comes from a substantial body of literature that points to patterned—therefore predictable, and potentially preventable—behavior that results in homicide-suicides. Homicide-suicides often target females, usually intimate partners. Domestic violence precedes most homicide-suicides, and many victims have contact with law enforcement prior to their death. When a victim of abuse attempts to leave a relationship, they are in particular danger that is heightened when the perpetrator has access to a gun. This analysis contributes to the literature by comparing the individuals that commit firearm homicide-suicides to those who commit firearm homicides and firearm suicides, as well as comparing the victims of these crimes. This study is one of the first to examine homicide-suicides in the context of both other homicides and other suicides.

Mass shootings, the most visible incidents of gun violence in the US, can be considered a particular type of murder-suicide. Mass shootings often end with the suicide of the killer, and even when the killer does not commit suicide, he (rarely she) may reasonably expect to be killed during the event, and if he survives will never resume the life he led before the shooting. While there are too few incidents of mass shootings in North Carolina to do a robust quantitative analysis, some lessons from the study of murder-suicides may be more broadly applicable to mass shootings. The FBI defines a mass shooting as an incident that includes four or more homicides completed with a gun. Of the five events in North Carolina that meet that definition between 2004 and 2014, two were murder suicides. There were forty incidents over the same time period in which four or more people were shot in a single event. Five of these incidents ended with the suicide of the killer.

Homicide-suicides that target family members or intimate partners are far more common than mass shootings that target acquaintances or strangers. However, many mass shootings begin with a domestic homicide (“Analysis of Mass shootings”, 2015). There is substantial policy interest in addressing mass shootings, and insights from the study of more commonplace homicide-suicides could produce policy lessons that may help prevent multiple manifestations of interpersonal gun violence.

Homicide-suicides are a particularly enigmatic type of crime because it is difficult to discern whether these events are motivated primarily by a suicidal impulse, or the desire to kill others. This question is more than just a matter of semantics because there is abundant evidence that demonstrates fundamental differences between homicidal and suicidal people, including the influence of mental illness, impulsivity, and access to firearms. If murder-suicides are more like suicides due to mental illness and a history of suicidal behavior by the perpetrator, then attention toward mental health screening and access to behavioral health care ought to be policy priorities designed to prevent both suicides and the murders that may accompany them. If murder-suicides more closely resemble homicides, then they may be more effectively prevented through strengthening background check laws, domestic violence laws, enforcement of restraining orders, case management, and policing.

Using data from the North Carolina Violent Death Reporting System that documents all violent deaths in the state between 2004 and 2014, this analysis uses logistic regression to estimate odds ratios of suicide following homicide and homicide preceding suicide in firearm deaths. The evidence presented in this analysis suggests that compared to both homicides and suicides, homicide-suicides are less reflective of personal problems experienced by the perpetrator and more reflective of troubled and abusive relationships between the perpetrator and the victim(s). The evidence suggests that perpetrators become maximally violent when they have lost control of a relationship. The intense fixation on the victim suggests that these incidents may be primarily homicidal. The suicidal act may be less premeditated than the homicide, and may instead reflect the perpetrator’s complete loss of control and inability to function without their primary relationship.

The appropriate policy recommendations that follow from the findings presented in this paper focus on identifying points of intervention in the breakdown of abusive relationships, when law enforcement may be well-positioned to prevent escalating violence. Improving the enforcement of existing federal and state laws would be a good start. Following policy examples from other states could strengthen North Carolina’s capacity to prevent gun violence. North Carolina could consider adopting legislation that would:

7. Allow dating partners and all family members to petition for domestic violence restraining orders
8. Prohibit those convicted of misdemeanor stalking and all forms of domestic violence from firearm purchase or possession
9. Require removal of all firearms from the scene of domestic violence incidents
10. Require that law enforcement confiscate firearms from restraining order respondents and domestic violence misdemeanants
11. Adopt a system to screen for high risk domestic violence cases through coordination of the family court system, the mental health system, and law enforcement
12. Assign case managers to follow-up and report cases deemed high risk

This paper will begin with an overview of the relevant literature, move into a summary of the data and methodology employed in the analysis, and culminate in a discussion of the results and the insights gained. The paper concludes with a discussion of the policy implications that follow from the empirical analysis.

## II. Review of the Literature

The literature reviewed here establishes several key pieces of information relevant to homicide-suicide, mass shootings, and promising policy options for reducing firearm violence: 1) mass shootings often begin with a domestic homicide and end in the suicide or death of the shooter 2) access to firearms is a risk factor both suicide and homicide, particularly in domestic relationships 3) women are disproportionately victimized in domestic homicides and homicide-suicides, 4) homicide-suicides are frequently preceded by domestic violence and interactions with law enforcement or the court system, and 5) federal laws like the Lautenberg Amendment and state laws such as California's Gun Violence Restraining Order can be effective tools for reducing domestic homicides by keeping guns out of the hands of abusive individuals.

### *Mass Shootings*

The existing literature on mass shootings focuses primarily on the individual pathology of the shooter. Overall, 88% of homicide-suicides are performed with a gun, 91% of the perpetrators are male, and 77% are white (Logan et al., 2008). School shootings have attracted particular attention, and a large body of research has sought to identify risk factors among school shooters. Studies have found that school shooters exhibit different behaviors than youth who are prone to other displays of aggression (Verlinden et al., 2000). A study on all forms of homicide and suicide in schools found that homicide perpetrators were nearly seven times more likely than homicide victims to have made a past suicide attempt (Anderson et al., 2001). Past suicide attempts and access to weapons are important risk factors for school shootings, along with history of substance abuse or violence, and a recent precipitating event like a major loss or humiliation (Preti, 2008). Bullying, social isolation, and failure to integrate into the school setting have also been identified as common traits among school shooters leading some researchers to conclude that vengeance is a primary motivation among school shooters. Suicidal intent, desire for vengeance, and access to firearms are risk factors that, when combined are particularly dangerous (Preti, 2008).

Mass shootings are a particular type of homicide-suicide that often intersect with the more common domestic homicide-suicide. A study of 133 mass shootings by Everytown for Gun Safety found that in 76 (57%) of the cases, the shooter killed a family member or intimate partner in the course of their killing spree ("Analysis of Mass Shootings," 2015). This suggests that mass shootings may, in some cases be extensions of familial homicide-suicide. For the purposes of establishing mass shooting as an extension of other homicide-suicides, whether or not a shooter actually dies in the event may not be relevant if they might reasonably have expected to. According to an FBI report on active shooter incidents between 2000-2013, 94 out of 160 cases (59%) ended in the death of the shooter. Sixty-four of those deaths were suicides—40% of the total number of incidents ("A Study of Active Shooter Incidents in the United States Between 2000 and 2013," 2014). Sociologists Kalish and Kimmel (2010) suggest that consideration of social forces can help contextualize individual pathology and that entitlement and emasculation are closely linked with gender identity and desire for vengeance.

### *Motive in homicide-suicides*

Vengeance appears to be a primary motivating factor in familial homicide-suicides and some suicides as well as in mass shootings. A qualitative study of adolescents who survived multiple suicide attempts found that vengeance was a commonly cited motive (Orri et al., 2014). Another study found that while fewer than 5% of homicides were followed by suicide, 59% of men who killed their female intimate partner with a firearm took their own lives immediately after (Barber et

al., 2008). A study in England and Wales found similar figures for homicide-suicides, but found that in cases where men killed their families and themselves, the suicide was planned prior to the homicide (Milroy, 1998). Milroy suggests that these types of suicides are motivated by revenge rather than remorse. Vengeance may play a role in ordinary suicidal behavior, but plays a more central role in homicide-suicides.

Liem et al. (2009) conducted a study in the Netherlands that compared in-depth psychiatric reports on perpetrators of homicide-parasuicide (failed suicide), other perpetrators of domestic homicide, and other parasuicides. They found that compared to other perpetrators of domestic homicide, those who attempted suicide afterward were older, more likely to be male, more likely to be divorced, more likely to be depressed, and more likely to have killed multiple victims. Compared to other parasuicides, those who had committed homicide-parasuicide were equally likely to have made a prior suicide attempt, more likely to have a psychotic disorder or a personality disorder, and more likely to suggest that they were motivated by a relationship problem. Compared to both parasuicides and perpetrators of domestic homicide, the homicide-parasuicide group was more likely to have premeditated the crime, with the exception of intimate partner homicides (IPH). For the IPHs that were premeditated, the suicide attempt usually was not. Compared to other IPH perpetrators, those who attempted to kill themselves were more often motivated by a fear of abandonment and had a high level of emotional dependence on the victim (Liem and Roberts, 2009).

### *Firearms and Femicide*

While men make up the vast majority of homicide victims, domestic homicides disproportionately target women. Femicide, the murder of women, is distinct from other forms of homicide because unlike in other homicides, femicide perpetrators are likely to be the spouse or intimate partner of the victim. Domestic violence and the attempted termination of the relationship by the victim are key risk factors specific to femicide, but not other homicides (Moracco et al., 1998).

A study of femicides in North Carolina between 1991 and 1993 found that half of all femicides were committed by a partner, and that young women and African American women were particularly at risk of femicide (Moracco et al., 1998). In addition, 44% of the perpetrators had histories of assault, and 54% of the femicides were committed with a gun. Women under age 55 and Caucasian women were particularly likely to have been killed with a gun. Two thirds of the femicide perpetrators had a history of domestic violence. The vast majority of femicide victims had been threatened and physically abused by their killer prior to the incident that resulted in their death. In more than half of the cases that noted a history of domestic violence, the victim had been in contact with law enforcement in the year before their death.

Femicide-suicides make up a majority of homicide-suicides. Marzuk et al. (1992) found that between half and three quarters of homicide-suicides involved a male murdering a female spouse or intimate partner before killing himself. In a study that compared victims of femicide-suicide to controls with a history of violent partner abuse, the factors that distinguished the femicide-suicide cases from other female victims of domestic violence included previous suicide threats by the perpetrator and a marital relationship between the victim and the perpetrator (Koziol-McLain, 2006).

Campbell et al. (2003) found an increased risk of intimate partner femicide when the perpetrator had access to a gun, a stepchild in the home, stalking, rape and estrangement between the victim and perpetrator, especially if the victim was leaving for a new relationship. If the perpetrator had previously been arrested for domestic violence or had never cohabited with the victims, the risk of femicide decreased. A study of four field experiments in different US cities found that the deterrent effect of arrest on future domestic violence varied by marital status and

employment, abusers who were married and employed were at a lower risk of re-offense than unmarried or unemployed perpetrators, for whom arrests actually increased the likelihood of re-offense (Berk et al., 1992). However, these effects varied by site and demographic composition of the population and the authors decline to make policy recommendations due to a lack of mechanistic clarity.

Studies across multiple countries have found that suicide follows homicide in about one in four cases of intimate partner femicide, compared to only one in twenty cases of non-partner homicides (Koziol-Mclain, 2006). Compared to other women in abusive relationships, women in abusive relationships where the abuser had access to a gun were at 25 times the risk of being killed in a femicide-suicide. At the household level, households with a gun and a history of domestic violence were at 20 times the risk of partner homicide compared to households with a history of domestic violence, but without the presence of a gun (Raissian, 2016).

### *Firearms Access and Disqualifications*

Access to firearms is a key predictor of both homicide and suicide (Siegel et al., 2013; Miller et al., 2002). Keeping a gun in the house increases the odds of homicide within a household by 2.7 (Kellerman et al., 1993). More people in the US kill themselves with guns than with all other methods combined. Firearm availability actually increases the total number of suicides, rather than increasing only the proportion completed with a gun (Miller et al., 2002). There is little empirical support for the common misconception that people who intend to kill themselves will find a way to do it regardless of the available methods (Miller and Hemenway, 2008). For people who attempt suicide with a gun, the fatality rate is over 80% (Cook and Goss, 2014). In states with more gun control laws, suicide rates are lower than in states with fewer gun laws despite similar rates of suicide by other means, suggesting that suicide rates can be reduced through policies that limit access to guns (Brent, 2001).

According to the National Alliance on Mental Illness (2015), over 90% of the people who commit suicide have been diagnosed with a mental illness. To purchase a gun through a federally licensed firearms dealer, an individual must be able to pass a background check conducted by the FBI through the National Instant Criminal Background Check System (NICS). An individual is barred from purchasing a firearm under several conditions, including two conditions relevant to mental health—involuntary hospitalization for a psychiatric condition, or having been “adjudicated as a mental defective” by a court or other legal authority. Depression is the most common mental illness among suicidal people, however depression is not a disqualifying factor for gun ownership, nor is it likely to get someone involuntarily committed to a mental institution, which is a disqualifying factor (Swanson et al., 2013). “In other words, people suffering from the one mental health condition that is most closely and frequently linked to suicidality are unlikely to show up in a background check” (Swanson et al., 2013, p. 50). Swanson et al found that between 2007-2009 after Connecticut improved NICS reporting, violent crime was effectively reduced among the 6.2% of the population with mental health disqualifiers, however 96% of the violent crimes during that period were committed by people without a mental health disqualifying record.

State adherence to mental health reporting requirements varies widely. Even for the small percentage of the mentally ill population that meet either criteria, states have historically failed to report many cases to the FBI, meaning that individuals who should legally be prevented from purchasing a firearm could pass a background check in a state with lax reporting (Law Center to Prevent Gun Violence, 2013). Unfortunately, even with proper reporting, only a few individuals who have carried out a mass shooting would have failed a background check on these criteria (Buchanan et al., 2015). The shooter at Virginia Tech in 2007 is one exception. He had been involuntarily committed to a mental institution and should not have passed a background check, but did (Law

Center to Prevent Gun Violence, 2013). In the wake of the Virginia Tech shooting, the NICS Improvement Amendments Act of 2007 began to incentivize states to improve mental health records reporting to the National Instant Criminal Background Check System (NICS) (Bureau of Justice Statistics, 2015). About half the states have enacted enabling legislation to be eligible for grants to assist with mental health records reporting under NIAA, and the number of mental health records now in NICS has increased sevenfold since 2007 (Law Center to Prevent Gun Violence, 2013).

In 1994, the Violent Crime Control Act made it illegal for anyone to possess or purchase a firearm while subject to a restraining order that protects a spouse, former spouse, cohabitating partner or the child of an intimate partner (Vigdor and Mercy, 2006). Under the 1996 expansion of the Gun Control Act, people with a misdemeanor conviction for domestic violence are also prohibited from owning or purchasing a gun. This policy, known as the Lautenberg Amendment, expanded the existing law to prohibit domestic violence misdemeanants from gun possession or purchase. Many perpetrators of domestic violence ultimately plead guilty to a misdemeanor rather than a felony charge—thus the felon firearm prohibition in the 1968 Gun Control Act was ineffective at keeping guns out of the hands of domestic abusers. The Lautenberg Amendment requires that people convicted of misdemeanor domestic violence sign a statement swearing that if they are found in possession of a firearm, they may face federal prosecution. Many states have legislation that requires more than a sworn statement to demonstrate adherence to the Lautenberg Amendment.

#### *Domestic Violence, Restraining Orders, and Firearms*

While federal law requires that abusers convicted of a misdemeanor domestic violence be notified and given a hearing before the firearm prohibition goes into effect, some states have additional laws to prevent domestic violence misdemeanants and restraining order respondents from obtaining access to guns. Some states disqualify more categories of misdemeanant from gun possession than just those prohibited under federal law. For example, Illinois also disqualifies those convicted of misdemeanor stalking or who have violated a restraining order (Vigdor and Mercy, 2006). Some states empower law enforcement to confiscate weapons or issue ex parte protective orders, also known as temporary restraining orders. While federal law only recognizes restraining order petitions for the protection of intimate partners or children, several states use a more expansive definition of ‘intimate partner’ and grant restraining orders to dating partners, former dating partners, and other family members of an abusive individual.

One study of re-abuse among female restraining order petitioners found substantial declines in reports of abuse after a restraining order had been issued, although low socioeconomic status and the presence of children increased the odds of re-abuse (Carlson et al., 1999). Abusers who share children with their victim often use the family court system to perpetuate abuse through prolonged custody disputes that serve to maintain contact between victim and abuser (Przekop 2011). Even when victims have restraining orders or move away, custody battles will force them into contact with their abusers. LeFevre-Sillito and Salari (2011) found that children were more likely to witness a homicide-suicide than to be either absent or killed in the incident. Using news coverage, police reports and other incident descriptions, they classified individual perpetrators as primarily suicidal (indicated by previous suicide attempts, a suicide note, financial problems, poor health, depression and no history of domestic violence) or primarily homicidal (indicated by a history of domestic violence, stalking, restraining orders, crimes against primary victim, and seeking the victim out at his/her residence). They found that children killed in homicide-suicides were typically not the ‘primary’ victims and were more likely to be killed if the perpetrator was primarily suicidal. 90% of children killed in a homicide-suicide were the biological children of the perpetrator.

There is compelling evidence that state and federal domestic violence gun prohibitions reduce domestic homicides. One study of the effect of the Lautenberg Amendment on domestic homicides found a 17% reduction in female partner homicides and a 25% reduction in domestic child homicides (Raissian, 2016). Another study found that additional state level laws on misdemeanor domestic violence gun prohibition did not lead to any reduction in IPH beyond the effect of federal law, but that additional state level restraining order gun prohibitions reduced IPH by 8% (Vigdor and Mercy, 2006). However, restraining orders are not foolproof. Guns were the primary weapons used by IPH perpetrators against whom the victim had a restraining order (Sillito and Salari, 2011). However, Raissian (2016) and Vigdor and Mercy (2006) provide compelling evidence that restraining order prohibitions and federal misdemeanor prohibitions do reduce domestic homicides despite the major limitations of state and federal gun laws. Most states have no mechanism to confiscate existing firearms from abusers, and background check requirements can be circumvented easily in most states. While it is difficult to estimate how many gun sales are conducted without a background check, the most frequently cited estimate is about 40% (Cook and Ludwig, 1996).

States that issue ex parte restraining orders prohibit firearms purchase and possession before the abusive individual is notified and has a hearing. North Carolina is one of thirteen states that allows for ex parte orders (N.C.G. S. §50B-1, 50B-3(11), 50B-3.1). Women who leave an abusive relationship are 75% more likely to be severely injured or killed by their abuser than women who remain in abusive relationships (Przekop, 2011). Ex parte orders may be especially important for reducing IPH because many women seek restraining orders while separating from an abuser, during which they are at a heightened risk of homicide (Zeoli and Frattaroli, 2013).

#### *Policy Models for Preventing Gun Violence*

Sixteen states require the surrender of firearms by those convicted of domestic violence misdemeanors, via law enforcement confiscation (NJ, MA, HI) or through a court order. California law allows courts to issue search warrants for abusers who do not give up their weapons (Law Center to Prevent Gun Violence, 2015). California has among the strictest gun laws in the country, including a provision that requires all gun sales go through a licensed dealer who conducts an FBI background check. In other states, private gun sales and gun show sales are not subject to the background check requirement (Law Center to Prevent Gun Violence, 2015). California has attempted to close this so-called loophole by requiring private sales and gun show sales to be certified by a state-licensed dealer who is obligated to perform a background check. California also has a 10-day waiting period for new gun owners. A federal appeals court ruled in 2015 that the 10-day waiting period does not apply to people who already own guns. The ruling judge reasoned that a cooling off period would not prevent impulsive acts of violence for individuals who already had access to firearms (KRCA, 2015). California also has a new Gun Violence Restraining Order (GVRO). This law, passed in 2014, allows people to report dangerous behaviors in others so that a court can decide to remove firearms from a person posing an imminent threat to themselves or others (Horwitz et al., 2015; Frattaroli et al., 2015). Furthermore, California has had success in training law enforcement to recover firearms from restraining order respondents (Wintemute et al., 2014). Between 2006 and 2014, California confiscated 10,000 guns from legal purchasers who later became prohibited from possession.

There are a variety of policy options for states seeking to reduce domestic gun violence. North Carolina could follow the lead of states like California that actively confiscate weapons from abusive individuals. These measures have the potential to prevent thousands of violent deaths. Zeoli and Frattaroli (2013) provide a variety of federal policies that could reduce domestic gun violence; require federal background checks on all gun sales, create incentives for states to automate

restraining order and domestic violence misdemeanor reporting to NICS, create incentives for states to create gun registries, allow current and former dating partners to secure restraining orders, extend lifetime gun prohibitions to those convicted of misdemeanor stalking and those who have violated restraining orders, and provide training and technical assistance to improve implementation at the state level. States can pursue any of these options independently of federal progress toward these goals. Logan et al. (2008) emphasize the importance of integrating court systems with the mental health system to identify family court cases that are especially likely to become violent. In particular, they suggest that case managers could evaluate domestic violence history and firearm access and provide referrals to mental health services.

### **III. Data and Methodology**

This project was conducted with Institutional Review Board approval from Duke University in accordance with a Data Use Agreement with North Carolina's Violent Death Reporting System (NC-VDRS). North Carolina is one of 32 states that report comprehensive data on violent deaths to the CDC's National Violent Death Reporting System (NVDRS). NVDRS collects comprehensive information from death certificates, coroner and medical examiner reports, law enforcement reports and crime labs on a variety of facts relevant to violent deaths including mental health issues, interpersonal relationships, toxicology, and other crimes related to a particular incident (CDC, 2015)

Data from NC-VDRS was disaggregated by incidents, suspects, and victims. Perpetrators of homicide-suicide appeared in both the victim and suspect file, and were identifiable in the suspect file by having both attempted suicide and being labeled as "both suspect and victim". Certain non-suicidal homicide suspects who had been killed in the event of killing someone else also appeared as "both suspect and victim". Perpetrators of homicide-suicide were also identifiable in the victim folder with a label of "both victim and suspect" if their death manner was suicide. The homicide victims of homicide-suicide were identifiable by an Incident ID number that could be matched to the perpetrator. All incidents were verified as cases of homicide-suicide by cross-referencing cases with the detailed narratives provided in the incident file from law enforcement officers and medical examiners

The analysis progressed in three stages. The first stage consisted of logistic regressions comparing homicide victims in homicide-suicides to other homicide victims, with a particular focus on other victims of domestic homicide. This set of regressions was important for establishing the likelihood of having died in a homicide-suicide based on the victim's relationship to the killer. Models have been reported separately for all homicide victims, domestic homicide victims, and intimate partner homicide victims. Domestic and intimate partner homicides were designated based on the relationship of the victim to the killer. Domestic homicides include spouses, current intimate partners, children, parents, and other family members of the killer. Intimate partner homicides include spouses, current intimate partners, and former intimate partners of the killer.

The second set of logistic regressions compared perpetrators of homicide-suicide to other perpetrators of homicide. The third stage of analysis compared perpetrators of homicide-suicide to other suicidal individuals. These regressions included mental health indicators, previous suicidal behavior, and a range of precipitating circumstances that were not available for either homicide victims or homicide perpetrators.

#### IV. Results and Discussion

Between 2004 and 2014 in North Carolina, there were 3,509 firearm homicides, including 258 homicide-suicides. Two thirds of homicide-suicides were intimate partner homicides. In fact, more spouses that were killed with a gun died in homicide-suicides than in simple cases of homicide during this time period. In other words, more than half of spousal homicides were homicide-suicides. In all, 17% of all homicides were domestic homicides—the killer targeted their spouse or current partner, child, parent, sibling, or other family member. One third of domestic homicides ended in the suicide of the perpetrator.

Most homicidal gun violence claimed only one life, but 198 incidents included multiple homicide victims (Table 1). About 5% of homicides targeted multiple victims, compared to 11% of murder-suicides. In 12% of homicides, at least one victim survived, while only 8% of homicide-suicides left survivors. Homicide-suicides are especially deadly, not only because the death of the killer increases the fatality rate, but also because they claim more innocent lives per incident and are less likely to leave survivors (Table 2).

**Table 1**

<b>Total Number of Homicide Victims by Incident Type</b>		
<b>Number of Homicide Victims</b>	<b>Homicides</b>	<b>Homicide-suicides</b>
1	3081 94.77%	230 89.15%
2	150 4.61%	20 7.75%
3	17 0.52%	6 2.33%
4	2 0.06%	1 0.39%
5	0 0.00%	1 0.39%
6	0 0.00%	0 0.00%
7	0 0.00%	0 0.00%
8	1 0.03%	0 0.00%
<b>Total Homicide Victims</b>	<b>3448</b>	<b>297</b>
<b>Total Incidents</b>	<b>3251</b>	<b>258</b>
<b>Victims:Incident</b>	<b>1.06</b>	<b>1.15</b>

Table 2

Total Number of Non-fatal Injuries by Incident Type		
Number Injured	Homicide	Homicide-suicide
1	285 8.77%	15 5.81%
2	67 2.06%	5 1.94%
3	14 0.43%	0 0.00%
4	5 0.15%	0 0.00%
5	1 0.03%	0 0.00%
Total Non-fatal Injuries	372	20
Percent of Incidents with Nonfatal Injuries	11.44%	7.75%

Between 2004 and 2014, 274 murder-suicides claimed the lives of 582 North Carolinians. Of those 274 events, 270 involved the use of a gun in at least one death and 230 were completed exclusively with a gun. More than one weapon was used in 39 incidents (Table 3). In 11 of the mixed-method incidents, the victims were killed with a gun and the perpetrators committed suicide by another method. In the remaining 28 incidents, the victims died by another method, and the killers committed suicide with a gun. In 258 total incidents, the killer used a gun to complete suicide following homicide.

Table 3

Homicide Suicides in North Carolina, 2004-2014		
Weapon	Total Incidents	Total deaths
All	274	582
Only gun	230 83.9%	490 84.2%
Gun + Other weapon	39 14.2%	84 14.4%
No guns	4 1.5%	8 1.4%

### A. Comparing victims of firearm homicide to firearm homicide-suicide victims

The most obvious difference—and one that is well established in the literature—between firearm homicide victims and firearm homicide-suicide victims is that the homicide victims in homicide-suicides are overwhelmingly female (Figure 1). Homicide-suicide victims are also very likely to have been married to, or in a current or former intimate relationship with, their killer (Figure 2).

Figure 1

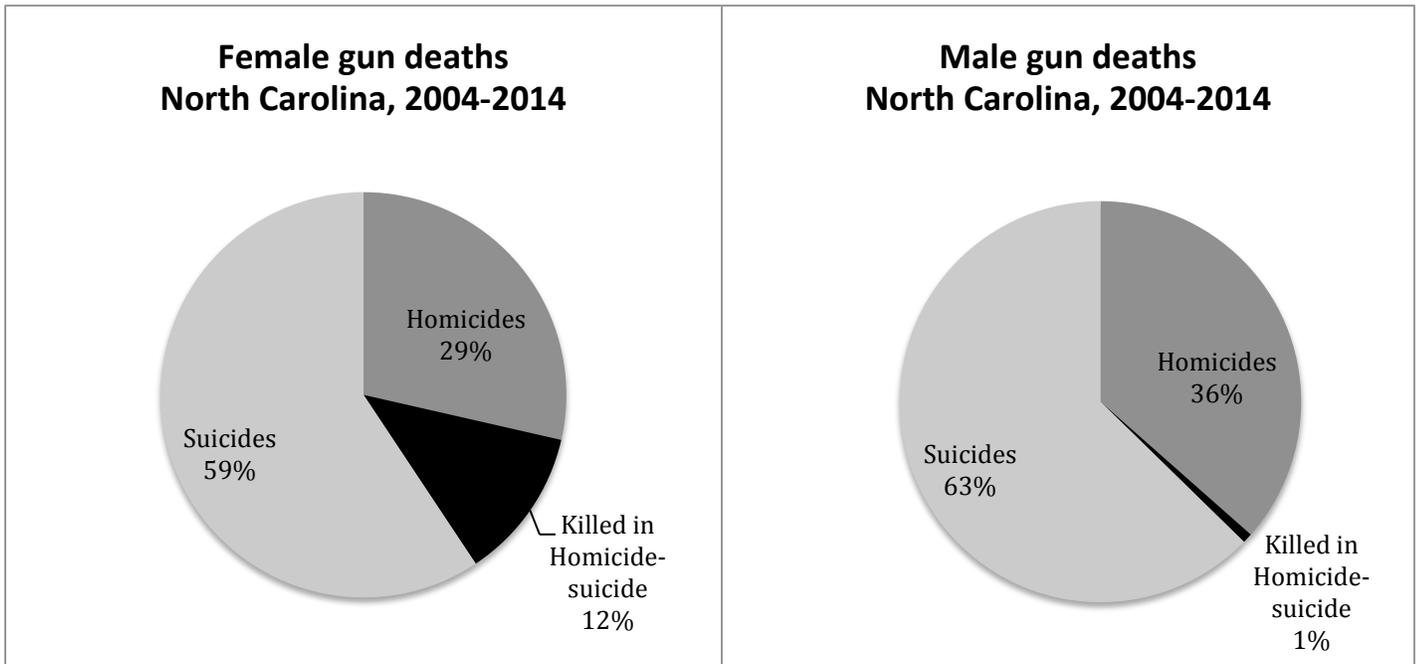
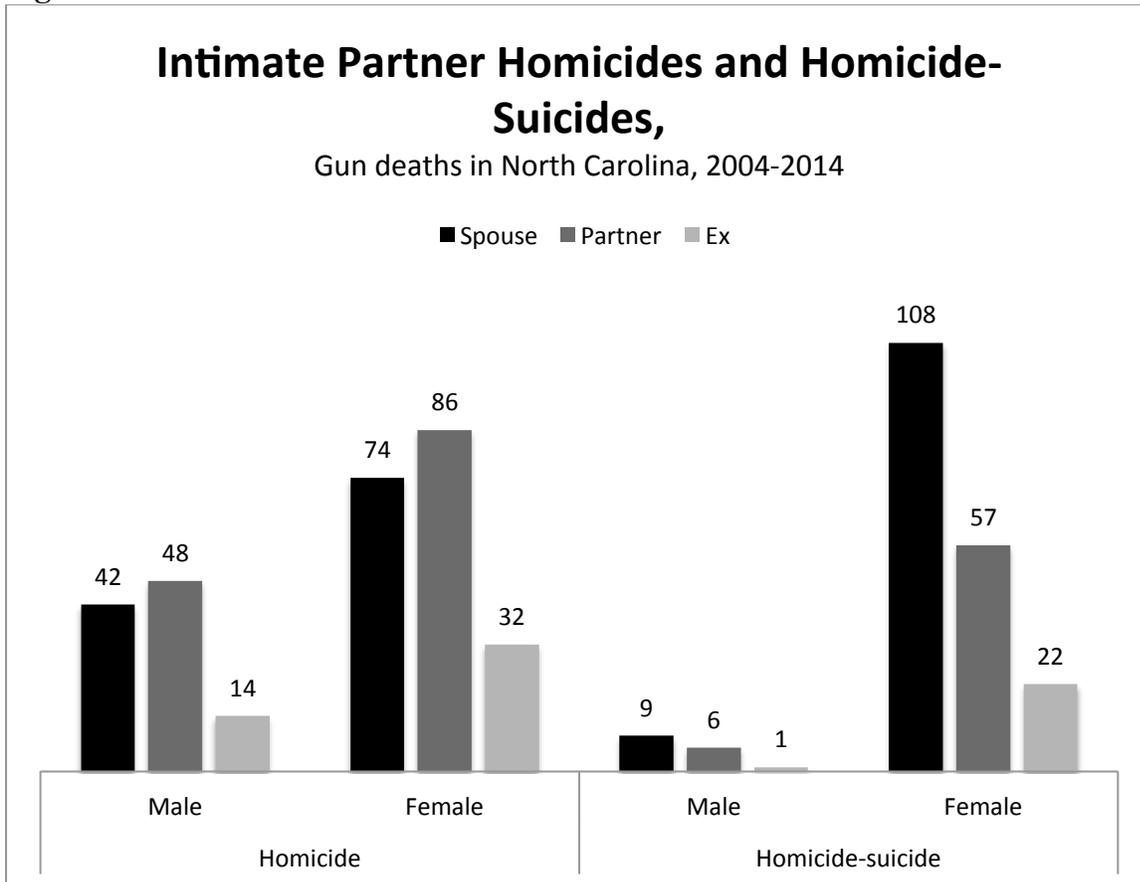


Figure 2



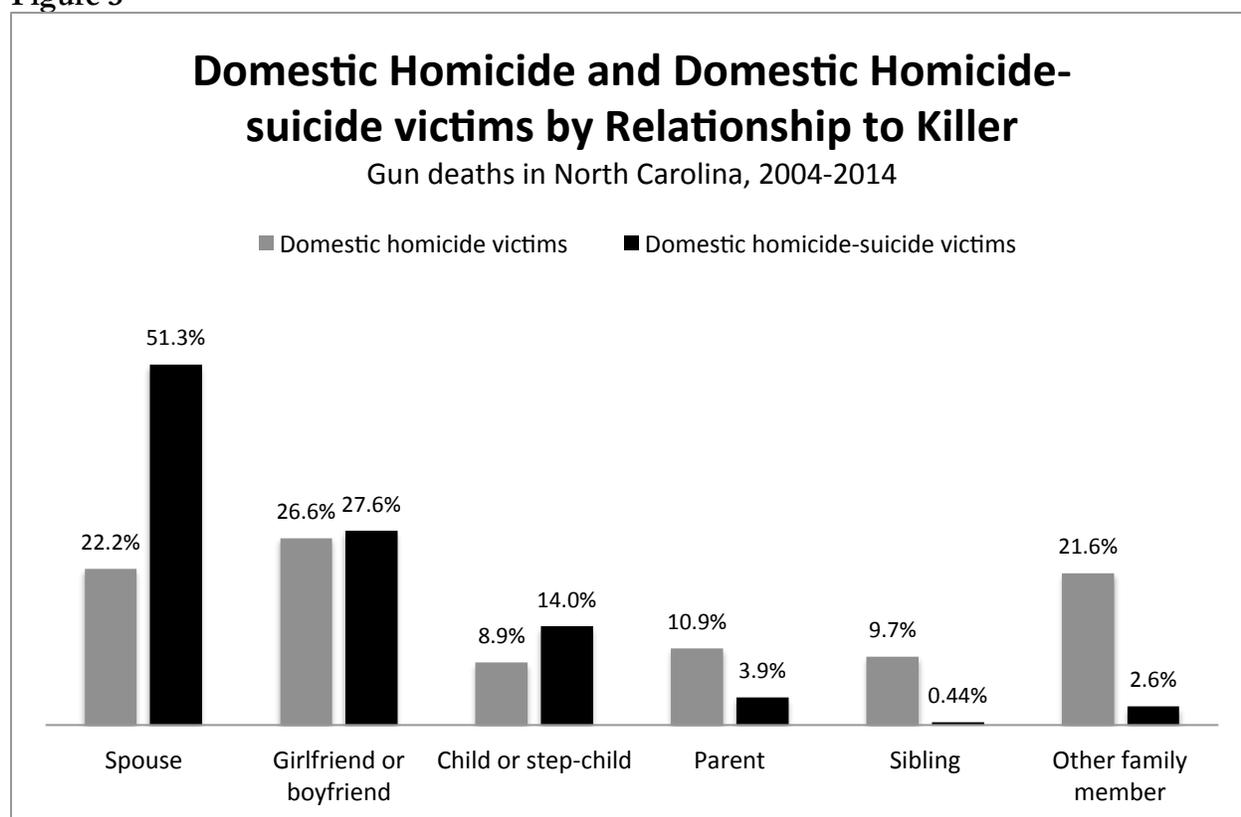
More spouses were killed in homicide-suicides than in simple firearm homicides in North Carolina over a ten-year period. While two in three spouses murdered in a single firearm homicide were female, over nine in ten spouses murdered in a firearm homicide-suicide were female. Fifty-one wives killed their husband. Only 20% of wives who killed their husband went on to kill themselves, compared to 60% of husbands who killed their wife. Murdered wives outnumber murdered husbands by less than two to one in cases of simple homicide, but by twelve to one among those murdered in a homicide-suicide. Half of all firearm femicides were intimate partner homicides—the victim was the current or former wife or girlfriend of the killer.

The male-female pattern is similar for non-marital intimate partners, and for former partners and spouses. While over half of murdered spouses were killed in a homicide-suicide, one third of murdered exes and non-marital intimate partners were killed in homicide-suicides. Female intimate partners outnumber male intimate partners killed in simple homicide by less than two to one, but nearly ten to one in cases of homicide-suicide. Female exes outnumber male exes in cases of simple homicide by just over two one, and by 22 to one in murder-suicides.

Half as many daughters or stepdaughters were murdered by a parent or stepparent as sons or stepsons. However, two-thirds of the female children who were killed by a parent or stepparent died in a murder-suicide, compared to fewer than half of male children killed by a parent or stepparent. Unlike intimate partners and children, the vast majority of murdered parents, siblings, and other family members died in simple homicides, rather than in homicide-suicides (86%, 98%, and 95%, respectively).

Male victims outnumber female victims in cases of simple homicide in all but three relationship categories—spouses, non-marital intimate partners, and former spouses or partners. However, in cases of homicide-suicide, female victims also outnumber male victims among murdered children, parents, and strangers, as well as the three intimate partner categories. Even among domestic homicides—defined here according to relationship, including spouses, current intimate partners, children, parents, siblings, and other family members—there are notable differences between the victims of homicide and homicide-suicide. Spousal victims, intimate partners, and children make up larger percentages of homicide-suicides than single homicides. Siblings, parents, and other family members make up relatively larger proportions of homicide victims than homicide-suicide victims (Figure 3).

Figure 3



The precipitating circumstances show some differences for homicide victims and homicide-suicide victims. Proportionally fewer homicide-suicide victims were involved in an argument at the time of death, involved in another crime at the time of death, were using drugs, or fought back against their killer. Limiting the scope to domestic homicides, the same patterns hold for all circumstances. Three quarters of homicide-suicide victims were noted as having had a violent partner, compared to one in ten homicide victims. However, for victims that were killed by a partner, partner violence is self-evident and these statistics may not give an accurate depiction of pre-homicide partner violence between these two groups.

Looking at Table 4, which presents odds ratios of homicide victims having died in homicide-suicide compared to simple homicide, we can isolate several risk factors for homicide-suicide. Model 3, which accounts for relationships between all murder victims and their killers, shows that females were at five times the odds of males of being killed in a homicide-suicide rather than a homicide. Being white and having a military background each increase the odds of victimization in homicide-suicide over homicide by about 2.3 times relative to other races and civilians, respectively. Being under the age of 21 increased the odds of homicide-suicide over homicide by 65%. Involvement in another crime and fighting back against the killer reduced the odds of homicide-suicide by 61% and 80%, respectively.

	Variable	All homicides: Any relation			Domestic homicides: Spouses, girlfriends, boyfriends, children, parents, siblings, other family members		Intimate Partner Homicides: Spouses, girlfriends, boyfriends, exes	
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
<b>Demographics</b>	White	2.859** (0.462)	2.943** (0.474)	2.231** (0.379)	1.750** (0.365)	1.685* (0.363)	1.689* (0.323)	1.636* (0.348)
	Female	13.393** (2.112)	5.893** (1.079)	4.999** (0.990)	5.888** (1.389)	4.938** (1.241)	6.566** (2.049)	6.934** (2.138)
	Under 21	1.944** (0.444)	2.257** (0.486)	1.657* (0.404)	4.075** (1.298)	2.230* (0.782)	1.042 (0.428)	
	Military	2.202** (0.579)	2.444** (0.675)	2.239** (0.649)	1.880 (0.646)	2.090* (0.760)	2.176 (0.905)	2.167 (0.899)
	Employed	1.084 (0.195)						
	Hispanic	0.780 (0.196)						
	Married	1.923** (0.298)			1.484 (0.301)			
	<b>Circumstances</b>	Separation or divorce	6.796** (1.719)	5.441** (1.467)	3.612** (0.990)	3.703** (1.144)	3.686** (1.193)	2.813** (0.873)
Restraining order		8.141** (3.442)	4.845** (2.062)	5.017** (2.179)	2.586 (1.470)	2.204 (1.267)	2.517 (1.377)	2.336 (1.240)
Separation + restraining order		0.087** (0.061)	0.124** (0.093)	0.118** (0.085)	0.083** (0.073)	0.078** (0.070)	0.141* (0.115)	0.158* (0.127)
Argument			1.619* (0.307)		0.586* (0.132)		1.347 (0.461)	
Part of other crime			0.381** (0.098)	0.387** (0.103)	0.346** (0.132)	0.396* (0.158)	0.599 (0.257)	
Fought Back			0.292* (0.177)	0.204** (0.126)	0.410 (0.318)	0.305 (0.238)	0.524 (0.428)	
Intimate Partner Homicide			7.089** (1.423)					
<b>Relationship of victim to killer</b>		Spouse			68.734** (33.639)		7.194** (3.401)	
	Girlfriend or boyfriend			47.820** (23.474)		4.375** (2.099)		
	Child			111.432** (58.980)		8.540** (4.598)		
	Parent			19.645** (11.754)		1.955 (1.141)		
	Sibling			4.348 (4.875)		0.372 (0.416)		
	Other family member			10.686** (6.767)		Omitted		
	Ex spouse or partner			36.346** (19.903)				
	Friend or acquaintance			9.371** (4.501)				
	Law enforcement			160.503** (110.481)				
	Stranger			Omitted				
	Constant	0.007** (0.002)	0.008** (0.002)	0.002** (0.001)	0.070** (0.021)	0.020** (0.010)	0.086** (0.030)	0.084** (0.028)
	Pseudo R2	0.335	0.403	0.470	0.207	0.248	0.116	0.112
	N	4241	4241	4241	732	732	495	495

\* denotes significance at 5% level \*\*denotes significance at 1% level

In Model 2, we see that if the homicide victim was a current or former intimate partner of their killer, the odds that the incident ended with the killer's suicide were seven times higher.

Looking back to Model 3, if the victim had initiated divorce, separation, or was in the process of breaking up with the killer, the odds of being killed in a homicide-suicide rather than a homicide more than tripled. Importantly, if the victim had ever taken out a restraining order or any type of order of protection against the killer, the odds of having died in a homicide-suicide rather than a homicide were 5 times higher. However, the combined effect of a current separation and a

restraining order also had a significant effect. Multiplying the odds ratios for separation and a restraining order by the odds ratio for the interaction yields a combined effect of 2.138, meaning that victims who had both a restraining order and were separating from the killer were over two times as likely to have died in a homicide-suicide than in a homicide, but less likely than either the separation without restraint or restraint without separation groups to have died in a homicide-suicide.

While these are significant factors in determining whether an act of fatal violence ends with homicide or culminates in the killer's suicide, these results do not directly tell us anything about the efficacy of restraining orders, since the entire sample died of homicide (although that fact alone indicates there is substantial room for improvement in their enforcement). However, these results indicate that the particular type of violence leading to a homicide-suicide may either be more likely to cause a victim to request a restraining order against an abusive partner, or that the presence of a restraining order is more likely to inspire suicidal behavior in the killer than in other homicides. In the former scenario, victims may be well equipped to recognize an escalating pattern of abuse that is more characteristic of homicide-suicide than homicide. If so, their interactions with law enforcement and the court system are key opportunities for intervention.

Both separation and restraining orders are far more common in incidents of homicide-suicide than in incidents of either homicide or suicide (Figure 4). One in five homicide-suicides involves a current separation, break-up, or divorce, compared to fewer than one in ten suicides and just over one in one-hundred homicides. Restraining orders are quite rare in instances of homicide and suicide, but are present in 7% of homicide-suicides. Roughly half of the victims who initiated a restraining order were currently separating from their abuser at the time of their death. Even among the victims of intimate partner homicides, proportionally more victims of homicide-suicide had initiated a restraining order against their partner (Figure 5). Of the IPH homicide-suicide victims, nearly one in four was separating from their abuser, compared to one in ten of the other IPH victims. About 3% of each group had initiated both separation and had petitioned for a restraining order.

**Figure 4**

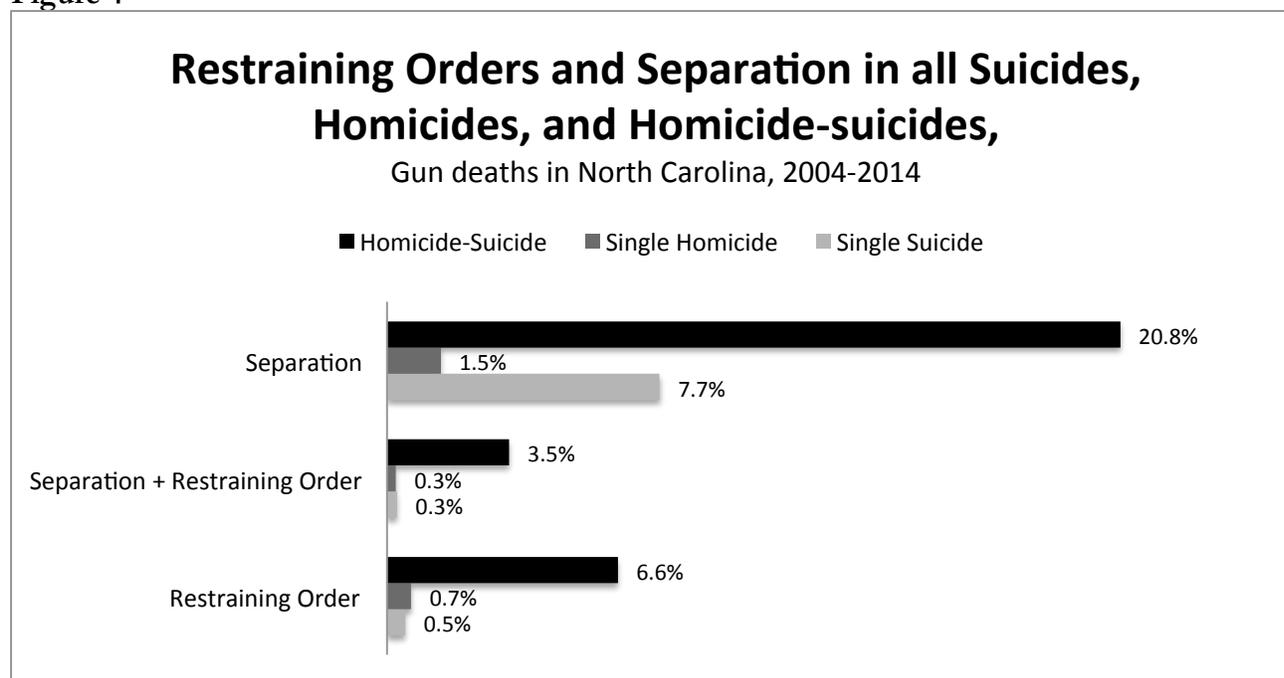


Figure 5



Table 4, Models 6 and 7 provide odds ratios for IPH victims having died in a homicide-suicide rather than a homicide. Even when the analysis is limited to IPH, a few factors are still significant in differentiating homicide-suicide victims from homicide victims. First, females had seven times the odds of males of being victims of homicide-suicide compared to other IPH victims. One might expect that because the vast majority of IPH victims are female, the effect of being female would cease to be important when comparing homicide-suicide victims to homicide victims. However, the victim being female seems to have a strong effect on the likelihood of suicide following homicide, even when the sample is restricted only to IPH victims. Next, separation continues to be a strong predictor of homicide-suicide, but having a restraining order ceases to be significantly predictive of homicide-suicide, although the interaction remains significant. However, multiplying the interaction by the odds ratios of separation and having a restraining order produces an odds ratio for the interaction of 0.99, predicting approximately equal odds of homicide and homicide-suicide.

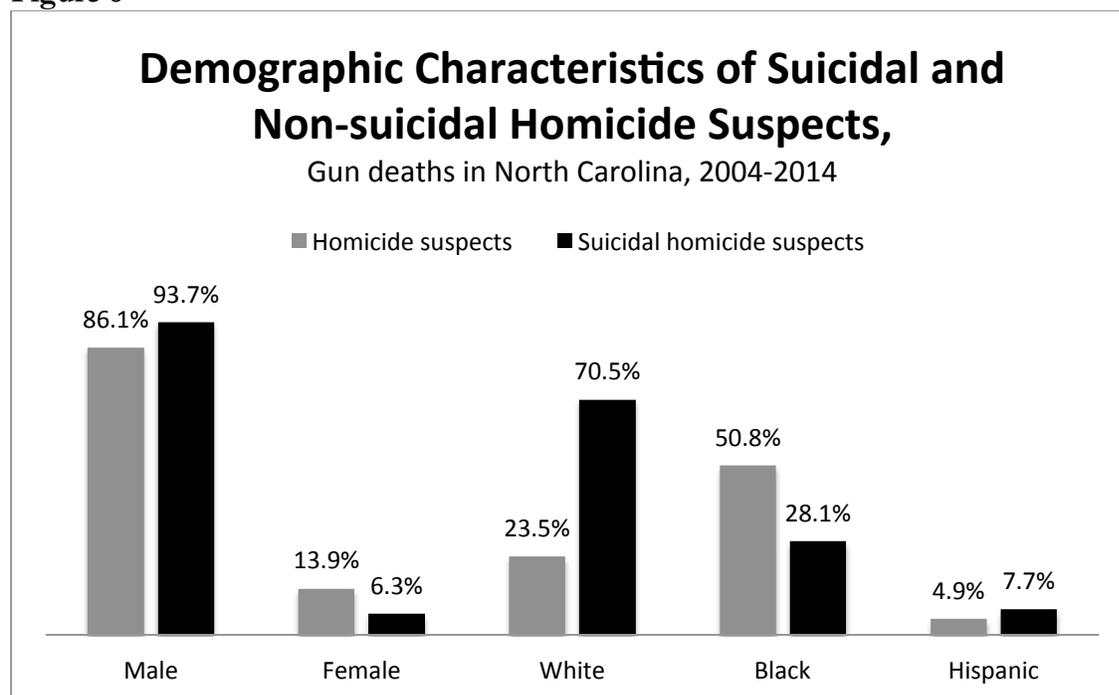
### **B. Comparing homicide-suicide perpetrators to other perpetrators of firearm homicides**

Restraining order and separation frequency among firearm homicide perpetrators mirrors the frequency of these events among victims. Comparing perpetrators of firearm homicide and firearm homicide-suicide offers other insights, however. Of over 3,500 identified homicide suspects in North Carolina gun deaths between 2004 and 2014, 285 perpetrators were suicidal. Of the suicidal individuals, 258 succeeded in the suicide attempt, and 27 attempted an incomplete suicide. Because

these individuals made a suicide attempt with a gun, which is especially likely to be fatal, these efforts can reasonably be considered to have been earnest attempts at suicide and therefore can be considered alongside the cases of completed suicides in certain analyses. However, there are some important differences between the successful and unsuccessful suicide groups. Among the unsuccessful suicides, none were separating from their partners and only five killed a family member. Based on the successful suicide group, we would have expected that about five were separating, and that about 22 would have killed a family member. Also, women make up 15% of the failed suicide attempts following homicide, compared to just over 5% of the successful suicides. There were also proportionally more cases of mental illness among the failed suicides, but there were so few cases of documented mental illness in the entire sample that this may be purely by chance. Compared to other homicide suspects, a larger proportion of the suicidal homicide perpetrators were male, white, and Hispanic (Figure 6).

In about 30% of domestic homicides, the killer attempted suicide afterward. Three quarters of suicide attempts among homicide perpetrators followed a domestic homicide. Domestic homicide perpetrators are more likely to have been apprehended or known to law enforcement than perpetrators in an extra-familial homicide. As with domestic homicide victims, domestic homicide perpetrators are a good comparison group for domestic homicide-suicide perpetrators because most homicide-suicides are domestic. Another advantage of a comparison with other domestic homicides is that there is more complete data on the identity of the suspects involved than in other homicides. Models 3 and 6 in Table 1 have been limited to domestic homicide perpetrators.

**Figure 6**



In about 15% of both homicides and homicide-suicides, more than one victim other than the perpetrator was killed. Larger proportions of homicide-suicide perpetrators had an abuse history, were caregivers, had a documented mental illness, were separating from their partner, had a restraining order, a history of domestic violence, or were involved in a custody battle (Figure 7). Abuse history and domestic violence capture similar behavior. Abuse history had been recorded by NC-VDRS and was included in the initial data set. Domestic violence captures incidents with

descriptions that specifically included the terms “domestic violence” or “domestic abuse” and largely includes incidents known to law enforcement prior to the homicidal incident.

**Figure 7**

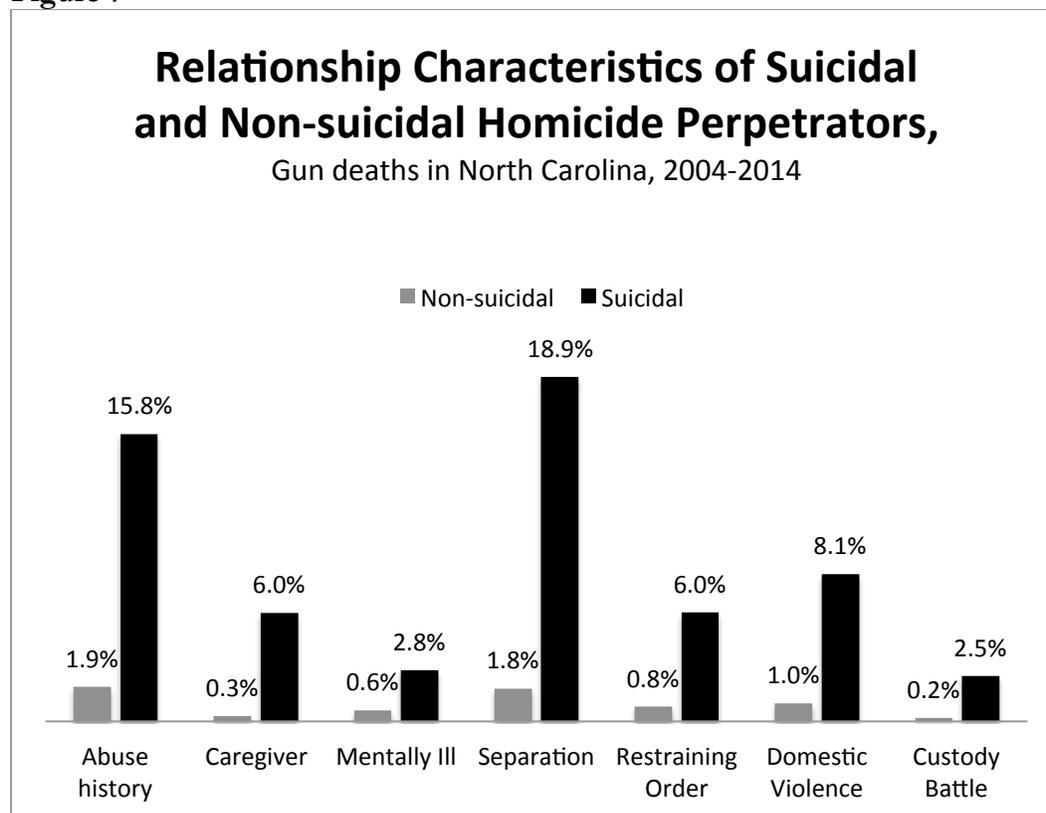


Table 5, Model 2 presents odds ratios that a person who perpetrated a homicide successfully committed suicide. Killers who were white had eight times the odds of committing suicide as non-white killers, and male killers had four times the odds of committing suicide as female killers. Neither being Hispanic nor having a mental health problem had a significant effect. It seems likely that mental health problems have been underreported for homicide suspects, given that only 28 of 3,500 (less than 1%) individuals had a recorded mental illness, when overall rates of mental illness are estimated to be as high as 20% among the general population (NAMI).

		Dependent Variable: Committed suicide following homicide			Dependent variable: Attempted suicide following homicide *Includes 27 failed suicide attempts		
		All Homicides		Domestic Homicides	All Homicides		Domestic Homicides
Category	Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Demographics</b>	White	8.733** (1.527)	7.670** (1.316)	9.461** (2.045)	8.476** (1.367)	7.928** (1.302)	9.713** (2.087)
	Male	3.823** (1.395)	3.783** (1.379)	4.277** (1.894)	2.304** (0.673)	3.117** (1.012)	4.120** (1.788)
	Hispanic	0.569 (0.177)		0.595 (0.234)	0.551* (0.158)	0.547* (0.162)	0.565 (0.222)
	Current mental health problem	1.689 (1.170)		0.956 (0.893)	4.287** (2.412)	3.390* (1.981)	6.290 (7.432)
<b>Incident Characteristics</b>	Multiple Victims	1.466 (0.343)	1.551 (0.362)	1.312 (0.428)	1.293 (0.279)	1.191 (0.269)	1.237 (0.404)
	Killed family member	18.045** (3.221)	18.683** (3.369)		12.967** (2.061)	13.115** (2.121)	
<b>Relationship Characteristics</b>	History of Domestic Violence	2.489* (0.983)			2.982** (1.154)		
	Abusive		5.157** (1.491)	11.773** (5.017)		5.006** (1.379)	11.154** (4.770)
	Restraining Order	2.789 (1.673)	2.459 (1.393)	1.425 (1.126)	1.094 (0.534)	2.372 (1.322)	1.423 (1.118)
	Separation or Divorce	8.255** (2.497)	8.007** (2.438)	5.246** (1.878)	6.244** (1.706)	6.729** (1.990)	5.033** (1.798)
	Separation + Restraining Order	0.167* (0.142)	0.157* (0.136)	0.066** (0.074)		0.178* (0.152)	0.069* (0.077)
	Caregiver	8.350** (5.068)	9.388** (5.533)	27.344** (26.767)		13.556** (7.718)	19.152** (17.893)
	Custody Battle	3.367 (2.844)	3.823 (3.254)	5.060 (5.471)		2.950 (2.504)	4.842 (5.223)
	Constant	0.002** (0.001)	0.001** (0.001)	0.024** (0.011)	0.004** (0.001)	0.003** (0.001)	0.026** (0.012)
	Pseudo R2	0.412	0.424	0.296	0.362	0.389	0.299
	N	3509	3509	721	3509	3509	721

\* denotes significance at 5% level \*\*denotes significance at 1% level

The odds of suicide following the homicide were 18 times greater if the perpetrator had killed a family member. If the killer was going through a separation or divorce, the odds of suicide were eight times higher following homicide. If the killer was the victim's caregiver, the odds of suicide following homicide were over nine times higher.

Neither a custody battle nor a restraining order had a significant effect on suicidal behavior among homicide perpetrators. The interaction of a restraining order and a separation was significant, and produces an odds ratio of 3.09 when multiplied by the odds estimates for the two variables.

When failed suicides are included in Model 5, mental illness becomes significantly predictive of suicidal behavior following homicide. Being Hispanic also becomes significant—Hispanic perpetrators had 45% lower odds of attempting suicide following homicide than non-Hispanic perpetrators.

Models 3 and 6 show odds ratios for suicide among homicide suspects in 721 domestic homicides. Within domestic homicides, a perpetrator with a history of being abusive was at over 11 times the odds of committing suicide following homicide. Caregivers had odds 27 times as high for a

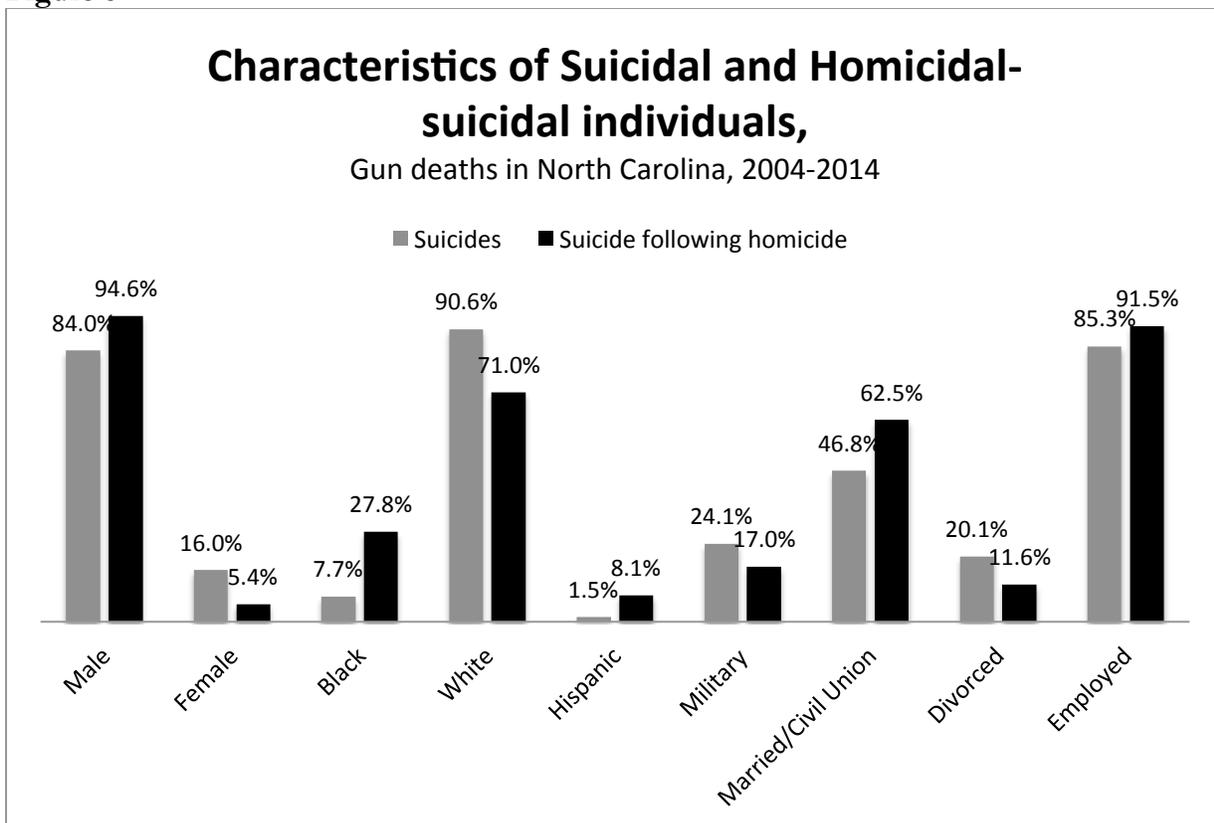
successful suicide attempt following homicide, and 19 times the odds of attempting suicide following homicide. However, while separation raised the odds of suicide following a domestic homicide by a factor of five, the odds that suicide followed homicide were halved if the victim had separated from the perpetrator and had a restraining order.

### C. Comparing Homicide-suicide perpetrators to other victims of firearm suicide

Having established some key differences between solely homicidal individuals and homicidal-suicidal individuals, the analysis would not be complete without a comparison to solely suicidal individuals.

More than nine in ten solely suicidal individuals that committed suicide with a gun were white, and more than eight in ten were male. Of the homicidal-suicidal individuals, seven in ten were white, nearly three in ten were black, and nineteen in twenty were male. Proportionally fewer perpetrators of homicide-suicide were either over 65 or under 21 compared to other firearm suicides. Proportionally fewer firearm suicide victims were married or employed compared to perpetrators of homicide-suicide. Military members and divorced people were proportionally more frequent among firearm suicides than homicide-suicides (Figure 8).

**Figure 8**



Compared to other suicidal individuals, homicidal-suicidal individuals were less likely to have any current or prior record of mental illness or mental health treatment (Figure 9). They were also less likely to have displayed any type of suicidal behavior compared to other suicidal individuals, including having left a note, expressed suicidal thoughts, made previous suicide attempts, or disclosed their suicidal intent in any way (Figure 10).

Figure 9

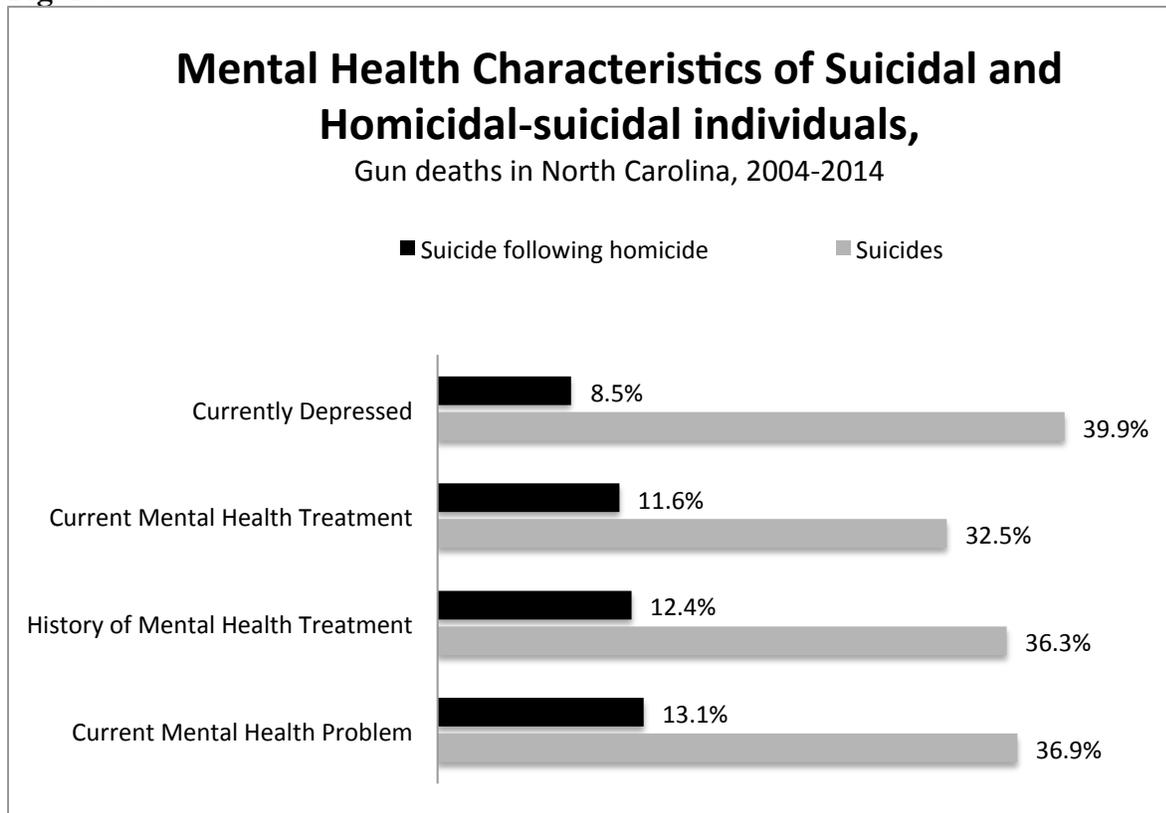
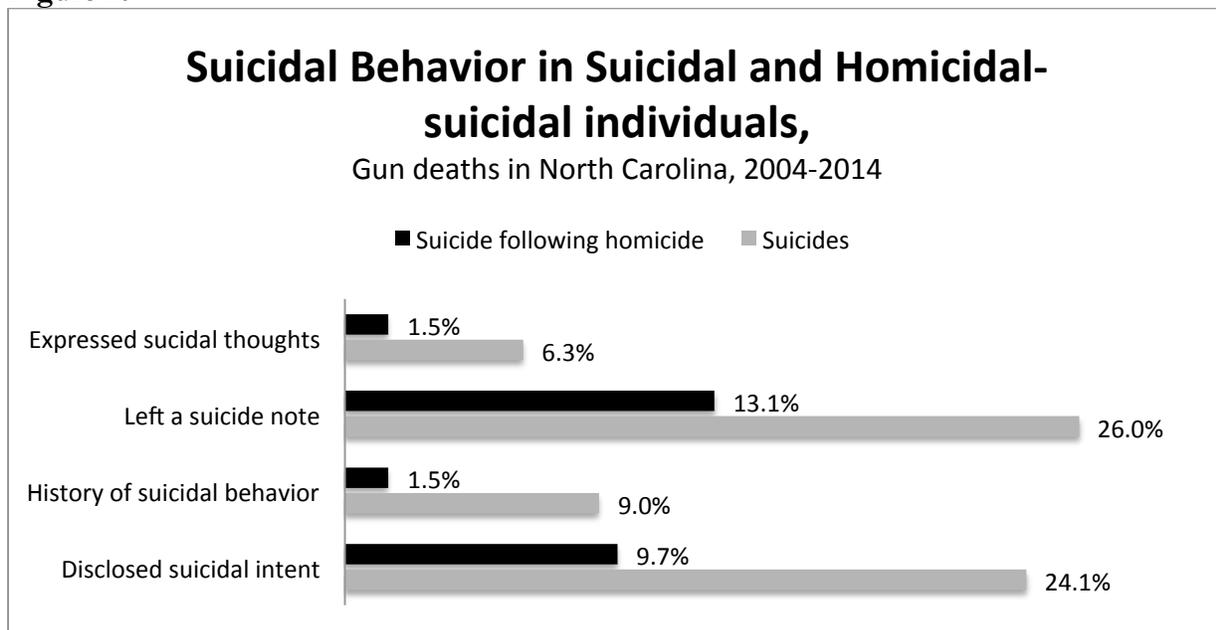


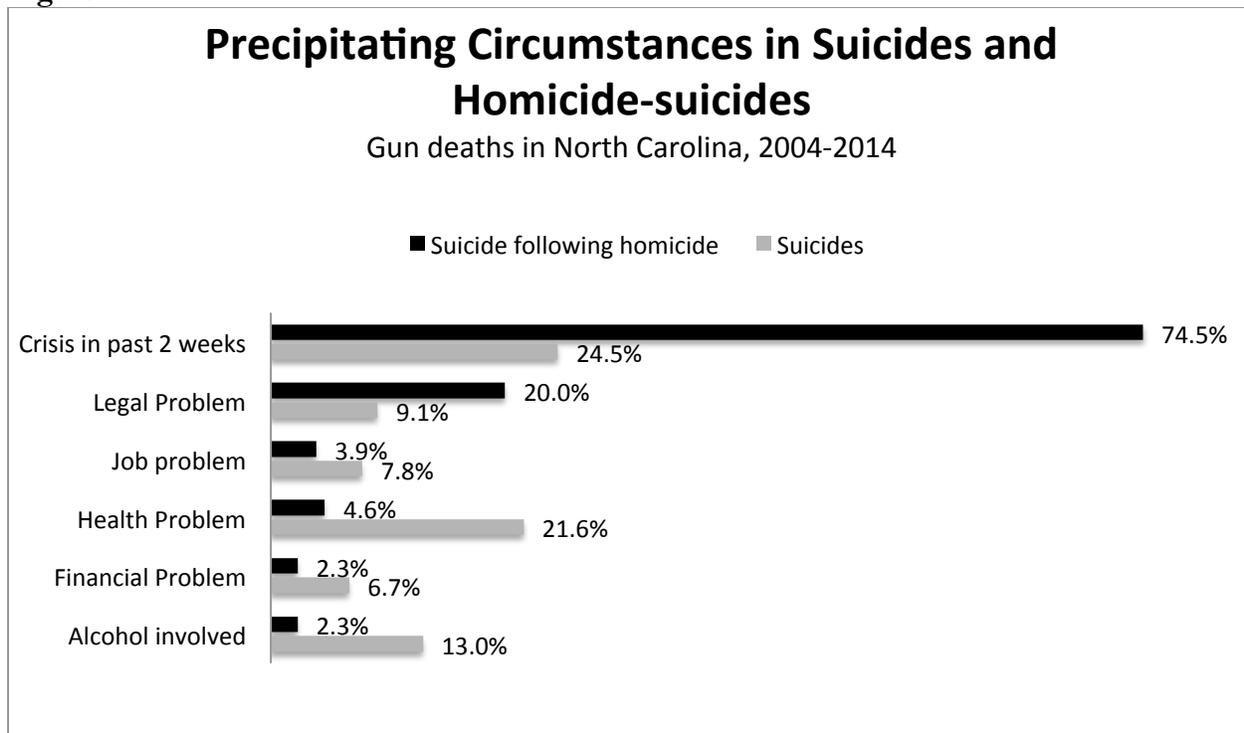
Figure 10



Compared to other suicidal individuals, homicidal-suicidal individuals were more likely to have had a crisis in the two weeks preceding the incident or have a legal problem, but less likely to have a job problem, health problem, financial problem or have been using alcohol at the time of the incident (Figure 11). However, perpetrators of homicidal-suicide were proportionally far more likely to have an interpersonal problem, including a history of violence toward an intimate partner, a

current problem with an intimate partner, a current family problem, or another relationship problem (Figure 12).

**Figure 11**



**Figure 12**

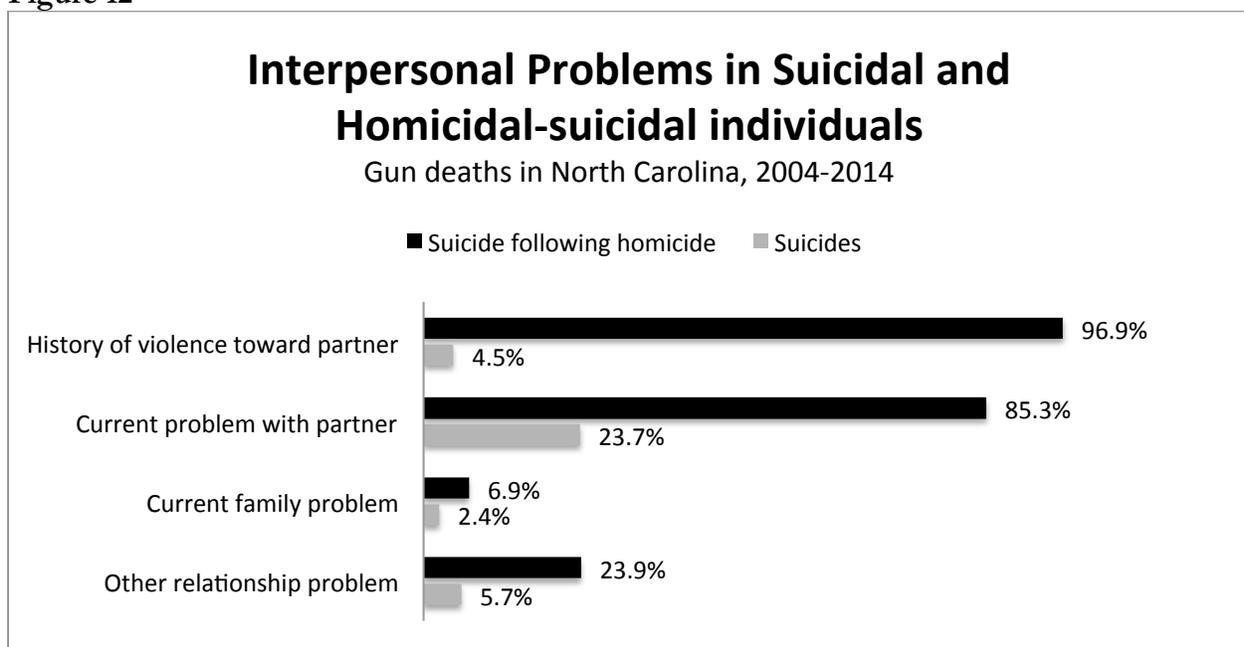


Table 6 presents odds ratios of a suicidal person having committed homicide.

<b>Table 6: Odds ratios of a suicidal person having committed homicide</b>						
Gun deaths in North Carolina, 2004-2014						
	Variable	Model 1	Model 2	Model 3	Model 4	Model 5
<b>Demographics</b>	White	0.268** (0.040)		0.356** (0.060)	0.425** (0.072)	
	Black		2.688** (0.466)			2.619** (0.462)
	Male	2.683** (0.765)	2.602** (0.781)	2.553** (0.763)	2.841** (0.840)	2.670** (0.795)
	Under 21	0.356* (0.146)	0.391* (0.164)	0.486 (0.206)	0.361* (0.146)	0.338** (0.137)
	Military	0.619** (0.108)	0.734 (0.140)	0.676* (0.127)	0.766 (0.145)	0.780 (0.149)
	Employed	1.387 (0.337)	1.427 (0.371)	1.352 (0.348)		
	Hispanic	5.192** (1.380)	3.386** (1.039)	3.325** (0.985)	3.366** (1.042)	3.216** (1.000)
	Married			1.462* (0.224)		
<b>Mental Health</b>	Current mental health problem	0.341** (0.065)		0.551** (0.111)		0.775 (0.162)
	Depression		0.178** (0.043)	0.191** (0.046)	0.194** (0.045)	0.197** (0.048)
<b>Suicidal Behavior</b>	Suicide note			0.686 (0.138)		
	History of suicidal behavior		0.225** (0.122)	0.262** (0.137)	0.221** (0.121)	0.239** (0.131)
	Expressed suicidal intent		0.394** (0.092)		0.364** (0.085)	0.374** (0.088)
<b>Precipitating Circumstances</b>	Crisis in past 2 weeks		3.787** (1.039)		3.732** (0.645)	3.727** (0.657)
	Close death in past 5 years		2.283 (1.163)			2.236 (1.133)
	Alcohol use		0.167** (0.071)		0.168** (0.072)	0.170** (0.073)
	Bad health		0.625 (0.204)	0.663 (0.211)		0.662 (0.218)
	Job problem			0.872 (0.310)		
	Financial problem		0.311** (0.138)	0.338* (0.149)	0.351* (0.155)	0.347* (0.154)
	Any legal problem	1.253 (0.232)	7.748** (5.482)			1.012 (0.215)
<b>Relationship Problems</b>	Restraining order	6.296** (2.194)		3.478** (1.211)	4.401** (1.624)	4.187** (1.631)
	Separation or divorce	2.486** (0.434)		0.920 (0.172)		
	Family problem		7.323** (2.270)	4.243** (1.305)	7.357** (2.274)	7.600** (2.352)
	Partner problem		9.853** (2.021)	14.114** (2.727)	10.188** (2.016)	9.445** (1.964)
	Constant	0.039** (0.014)	0.003** (0.001)	0.011** (0.004)	0.008** (0.003)	0.004** (0.001)
	Pseudo R2	0.123	0.367	0.320	0.364	0.370
	N	7214	7214	7214	7214	7214

\* denotes significance at 5% level \*\*denotes significance at 1% level

Model 5 shows that a suicidal person who is black has 2.6 times the odds of having committed homicide as well as suicide. Similarly, being Hispanic raises the odds of having committed homicide prior to suicide by over three times. Because firearm suicide is rare among minorities in North Carolina, and over 90% of firearm suicides during this time period were committed by whites, this finding makes sense. While men represented 85% of firearm suicides, they made up 95% of homicide-suicides. Suicidal males had 2.7 times the odds of suicidal females of having committed homicide. Suicidal individuals under the age of 21 had 66% lower odds of being homicidal, compared to suicidal people over 21. The odds of homicide among suicidal people with a diagnosis of depression were 80% lower. A history of suicidal behavior, and the expression of suicidal intent both lowered the odds of homicide prior to suicide, by 77% and 63% respectively.

Suicidal people using alcohol at the time of death had 83% lower odds of having also been homicidal and suicidal people with financial problems had 65% lower of having committed homicide.

A crisis in the two weeks prior to death raised the odds that homicide preceded suicide by 3.7. The presence of a restraining order at the time of death raised the odds of homicide within suicide by a factor of four. Having a partner problem, which includes a current separation or divorce, produced an odds ratio of a homicidal suicide by 9.5 times relative to suicide. Having a family problem raised the odds of homicide preceding suicide by 7.6 times.

## V. Conclusion

The vast majority (88%) of homicide-suicides targeted family members or current or former intimate partners. Approximately 12% of homicide-suicides targeted at least one person that was not an intimate partner or member of the perpetrator's family.

A large portion (42%) of IPH cases ended in the perpetrator's suicide. Three quarters of homicide-suicides were IPH, and the majority of IPH cases that ended in the killer's suicide targeted a spouse (58%). In fact, more spouses were killed in homicide-suicides than in simple homicides.

In 44 homicides, the perpetrator violated a restraining order. As a result, 55 people were murdered who should have been protected by a restraining order. Just over half of these victims (28) were killed in murder-suicides.

Homicide-suicide cases could be considered primarily suicides or primarily homicides. To consider these cases as a particular type of suicide, we would expect that suicidal killers have more in common with other suicidal individuals than with other homicidal individuals, particularly when considering suicidal behaviors and mental illness. To consider these cases primarily a type of homicide, we would expect that the suicide is incidental to the homicide, upon realization of consequences after the homicidal act. As indication that homicide-suicides are primarily homicidal, we might expect certain abusive patterns of behavior toward the victim to be an indication that murder was the primary intent.

The policy implications differ depending on whether homicide-suicides are primarily suicidal or primarily homicidal. If they are primarily suicidal, then the policy focus should be on treating mental illness effectively, and removing guns from depressed people and people with histories of suicidal behavior. If they are primarily homicidal, the policy focus should be on identifying abuse victims most at risk of homicide-suicide based on interactions with law enforcement, family court, and domestic violence shelters. Measures designed to prevent abusive individuals from possession or purchase of firearms would be especially helpful for the prevention of homicide-suicides if they are primarily homicidal.

The evidence here suggests that while homicide-suicides share elements with both homicide and suicide, they are distinct from either, but primarily motivated by homicidal intent. Perpetrators of homicide-suicide are less likely to have any history of mental illness or suicidal behavior than

other suicidal individuals. If homicide-suicides were primarily suicidal, we would not expect to see such substantial differences along those lines. Homicidal-suicide perpetrators are less likely than other suicidal people to have financial problems, alcohol abuse or health problems. However, when comparing homicide-suicide perpetrators to both other homicide perpetrators and other suicidal individuals, homicidal-suicidal individuals are at far higher risk of having a serious interpersonal problem with the victim(s). These problems include separation or divorce, an abusive relationship, a restraining order, a custody battle, a caregiving relationship and a recent crisis.

Because the key predictors of homicide-suicide are characteristics of dysfunctional relationships between victim and perpetrator rather than characteristics that primarily reflect the perpetrator's personal problems, homicide-suicides can be understood as the culmination of toxic relationships. These crimes are largely determined by the intensity of the relationship between the victim and the killer.

The victim's identity in relationship to the killer plays an important role in homicide-suicide. Suicide is especially likely to follow the homicide of a spouse or child, suggesting that the killer is highly dependent on the victim and is unable to exist without them. This realization may prompt suicide in the aftermath of homicide. The pattern of escalating domestic violence that results in homicide-suicide indicates that homicide-suicides are primarily homicidal due to the intense fixation on the victim.

This analysis adds to evidence from several studies that suggest there are key points of intervention that could prevent domestic violence fatalities. Other studies have found that domestic violence incidents precede the majority of homicide-suicides and that many homicide-suicide victims seek aid from law enforcement in the year before their death. This analysis indicates that the presence of restraining orders in many cases demonstrates that many homicide-suicides are both predictable and preventable. The victims who sought legal recourse were sufficiently attuned to the pattern of escalating violence in their relationships to fear for their safety. Many sought restraining orders at the particularly dangerous moment of separation from their abuser. With better policies to screen for potentially fatal domestic violence scenarios, enforce restraining orders, and remove firearms from abusive individuals, these people might still be alive today.

The finding that restraining orders alone or combined with separation between victim and killer increase the odds of homicide-suicide relative to both homicide and suicide bears further investigation. This may indicate that victims are better at discerning the type of violence that might lead to a homicide-suicide and acting on that knowledge, or it may indicate that the victims of homicide-suicides, most of whom are white females, feel more empowered to avail themselves of legal resources. Conversely, it may indicate that a restraining order has a particular effect on the perpetrator, making them more likely to commit suicide following homicide. It is important to emphasize that nothing in this analysis indicates that a restraining order puts a victim in more danger than they would otherwise be in. However, the fact that over ten years, 55 North Carolinians who were under the protection of a restraining order lost their lives in a homicide is of great concern and suggests that more action could be taken to better enforce protective orders.

Future research should investigate how law enforcement agencies enforce restraining orders, how effectively they manage to separate abusers from guns, and whether ex parte restraining orders reduce homicides and homicide-suicides when considered separately from permanent restraining orders.

This project initially sought to examine homicide-suicides on the basis that the study of mass shootings may benefit from insights gleaned from homicide-suicides, since many mass shootings include domestic violence and culminate in the suicide or death of the shooter. While there is scant evidence on mass shootings in general, and only five incidents that meet the FBI definition of a mass shooting in this data set, one in six murder-suicides in North Carolina between 2004-2014 targeted at least one victim outside of the killer's family. Future research could use NVDRS data

from multiple states to investigate these extra-familial cases to establish risk factors for non-domestic homicide-suicides. These cases may provide more applicable links to mass shootings than studies of homicide-suicide overall, which are largely contained to families.

This analysis adds to the pantheon of evidence that domestic violence and abuse are important risk factors for gun violence, especially for women. Orders of protection ought to be taken seriously and enforced rigorously. Between 2004 and 2014, North Carolina lost over 700 citizens to domestic gun violence, and 500 to intimate partner homicide. Many of these victims had contact with law enforcement before their deaths, and many more had friends or relatives with knowledge of the abuse they suffered. Some cases of fatal gun violence are preventable through strengthening policies that aid victims of domestic violence. North Carolina should look to the examples of states like California that have pioneered strict gun laws to protect victims of domestic violence.

Reexamining the Summers case from a policy standpoint yields several points that may improve state policies to prevent homicide-suicides. At the point that Michael Summers shot his wife, Jennifer, before killing himself, there had been multiple points of contact with the legal system. Jennifer had secured a restraining order against Michael, and had subsequently dropped it following Michael's custody suit. As we know from the literature, abusers use custody disputes to pressure their victims to drop restraining orders and force contact. This is a pattern that ought to raise a particular red flag to law enforcement as being an indication of an abusive relationship that should be monitored. Cases that follow this pattern should receive particular screening, follow-up from law enforcement, or case management. Custody court should not require both parties to be present if one has a restraining order against the other. In cases where one parent is under a restraining order protecting the other, child custody should be assigned to the parent under the protective order.

Jennifer's restraining order petition also noted the presence of guns in the home. Certain states require law enforcement to confiscate the firearms of people barred from purchase or possession due to a restraining order. If North Carolina had a similar law in place, Michael might have been separated from his guns. With a law that did not require Jennifer's presence in custody court, perhaps she would not have dropped the restraining order and Michael would not have regained access to his guns. While these hypothetical scenarios cannot help the Summers', it is not difficult to imagine that such laws could prevent other violent deaths. The Summers case provides a good illustration of several key patterns of violence that are typical of homicide-suicides, some of which are amenable to policy action.

Based on the findings of this analysis and others, North Carolina could consider passing legislation to: protect dating partners and family members under permanent and ex parte domestic violence restraining orders, prohibit convicted stalkers and abusers from possession and purchase of firearms, require the confiscation of guns present at the scene of domestic violence calls, enable law enforcement to confiscate guns from those prohibited from having them, and develop a method to screen for and monitor domestic violence cases that have a high risk of fatal escalation.

## Appendix 1: Descriptive Tables

Table 7: Homicide victims in single homicides and homicide-suicides by sex					
Gun deaths in North Carolina, 2004-2014					
Relationship	Sex	Total	Homicides	Homicide-suicides	
All	Total	4241	3940	301	
	Male	3478 82.01%	3404 86.40%	74 24.58%	
	Female	763 17.99%	536 13.60%	227 75.42%	
Spouses	Total	229 5.40%	112 48.91%	117 51.09%	
	Husband	51 22.27%	42 36.21%	9 7.69%	
	Wife	182 79.48%	74 66.07%	108 92.31%	
Intimate partner	Total	197 4.79%	134 68.02%	63 31.98%	
	Boyfriend	54 27.41%	48 35.82%	6 9.52%	
	Girlfriend	143 72.59%	86 61.43%	57 90.48%	
Child or step-child	Total	77 1.82%	45 58.44%	32 41.56%	
	Son	50 64.94%	36 80.00%	14 43.75%	
	Daughter	27 35.06%	9 20.00%	18 56.25%	
Parent	Total	64 1.51%	55 85.94%	9 14.06%	
	Father	34 53.13%	30 54.55%	4 44.44%	
	Mother	30 46.88%	25 45.45%	5 55.56%	
Sibling	Total	50 1.18%	49 98.00%	1 2.00%	
	Brother	42 84.00%	41 83.67%	1 100.00%	
	Sister	8 16.00%	8 16.33%	0 0.00%	
Other family member	Total	115 2.71%	109 94.78%	6 5.22%	
	Male	98 85.22%	94 86.24%	4 66.67%	
	Female	17 14.78%	15 13.76%	2 33.33%	
Former spouse or partner	Total	69 1.63%	46 66.67%	23 33.33%	
	Male	15 21.74%	14 30.43%	1 4.35%	
	Female	54 78.26%	32 69.57%	22 95.65%	
Friend or acquaintance	Total	1586 37.40%	1547 97.54%	39 2.46%	
	Male	1461 92.12%	1431 92.50%	30 76.92%	
	Female	125 7.88%	116 7.50%	9 23.08%	
Stranger	Total	427 10.07%	423 99.06%	4 0.94%	
	Male	381 89.23%	380 89.83%	1 25.00%	
	Female	46 10.77%	43 10.17%	3 75.00%	
Law Enforcement	Total	27 0.64%	21 77.78%	6 22.22%	
	Male	24 88.89%	20 95.24%	4 66.67%	
	Female	3 11.11%	1 4.76%	2 33.33%	
Unknown relationship	Total	607 14.31%	606 99.84%	1 0.16%	
	Male	558 91.93%	558 92.08%	0 0.00%	
	Female	49 8.07%	48 7.92%	1 100.00%	

Table 8: Descriptive comparisons of homicide victims and homicide-suicide victims								
Gun deaths in North Carolina, 2004-2014								
Variable	All Homicides			Domestic Homicides		Intimate partner homicides		
	All homicide victims	All homicide-suicide victims	Domestic homicide victims	Domestic homicide-suicide victims	Intimate Partner homicide victims	Intimate Partner homicide-suicide victims		
Total	4241			732		495		
	100%			17.3%		11.7%		
	3934	307	504	228	292	203		
	92.8%	7.2%	68.9%	31.1%	59.0%	41.0%		
Precipitating Incident*	Argument	1641	80	231	47	26	19	
		41.7%	26.1%	45.8%	20.6%	8.9%	9.4%	
	Incident was part of other crime	1253	26	62	11	24	11	
		31.9%	8.5%	12.3%	4.8%	8.2%	5.4%	
	In a gang	368	5	42	3	12	3	
		9.4%	1.6%	8.3%	1.3%	4.1%	1.5%	
	Drugs involved	578	7	34	3	12	6	
		14.7%	2.3%	6.7%	1.3%	4.1%	3.0%	
	Partner was violent	429	228	281	193	291	199	
		10.9%	74.3%	55.8%	84.6%	99.7%	98.0%	
	Jealousy	129	16	14	6	16	7	
		3.3%	5.2%	2.8%	2.6%	5.5%	3.4%	
	Fought back	409	4	31	2	13	2	
		10.4%	1.3%	6.2%	0.9%	4.5%	1.0%	
*not mutually exclusive								
Relationship of Victim to Killer*	Spouse	112	117	112	117	112	117	
		2.8%	38.1%	22.2%	51.3%	38.4%	57.6%	
	Girlfriend or boyfriend	134	63	134	63	134	63	
		3.4%	20.5%	26.6%	27.6%	45.9%	31.0%	
	Child or step-child	45	32	45	32			
		1.1%	10.4%	8.9%	14.0%			
	Parent	55	9	55	9			
		1.4%	2.9%	10.9%	3.9%			
	Sibling	49	1	49	1			
		1.2%	0.33%	9.7%	0.44%			
	Other family member	109	6	109	6			
		2.8%	2.0%	21.6%	2.6%			
	Ex-spouse or partner	46	23			46	23	
		1.2%	7.5%			15.8%	11.3%	
	Friend, colleague, acquaintance	1547	39					
		39.3%	13.7%					
	Stranger	423	4					
		10.8%	1.3%					
	Unknown relationship	606	1					
		15.4%	0.33%					
	Law Enforcement Officer	21	6					
		0.53%	2.6%					
	Suspect unknown	775	0					
		19.7%	0.0%					
*mutually exclusive								

<b>Table 9: Characteristics of Non-suicidal and Suicidal Homicide Suspects</b>					
Gun deaths in North Carolina, 2004-2014					
<b>Category</b>	<b>Variable</b>	<b>Non-suicidal homicide suspects</b>		<b>All Suicidal homicide suspects</b>	
	Total	3,224	91.9%	285	8.1%
<b>Demographics</b>	Male	2,777	86.1%	267	93.7%
	Female	447	13.9%	18	6.3%
	White	757	23.5%	201	70.5%
	Black	1637	50.8%	80	28.1%
	American Indian	66	2.0%	0	0%
	Asian	13	0.40%	0	0%
	Race unknown	349	10.8%	0	0%
	Other race	2	0.09%	1	0.4%
	Hispanic	156	4.9%	22	7.7%
	<b>Incident Characteristics</b>	Killed multiple victims	507	15.7%	43
Killed family member(s)		511	15.8%	210	73.7%
<b>Relationship Characteristics</b>	Abuse history	61	1.9%	45	15.8%
	Caregiver	8	0.3%	17	6.0%
	Current mental health problem	20	0.6%	8	2.8%
	Separation or divorce	57	1.8%	54	18.9%
	Restraining order	27	0.8%	17	6.0%
	Domestic Violence	32	1.0%	23	8.1%
	Custody Battle	7	0.2%	7	2.5%

<b>Table 10: Characteristics of Suicidal Homicide Suspects</b>						
Gun deaths in North Carolina, 2004-2014						
<b>Category</b>	<b>Variable</b>	<b>Suicidal homicide suspects that completed suicide</b>		<b>Homicide suspects that made an unsuccessful suicide attempt</b>		
	Total	258	7.4%	27	0.8%	
<b>Demographics</b>	Male	244	94.6%	23	85.2%	
	Female	14	5.4%	4	14.8%	
	White	183	70.9%	18	66.7%	
	Black	72	27.9%	8	29.6%	
	American Indian	0	0.0%	0	0%	
	Asian	2	0.78%	0	0%	
	Race unknown	0	0.0%	0	0%	
	Other race	0	0.00%	1	3.7%	
	Hispanic	21	8.1%	1	3.7%	
	<b>Incident Characteristics</b>	Killed multiple victims	43	16.7%	0	0.0%
		Killed family member(s)	205	79.5%	5	18.5%
<b>Relationship Characteristics</b>	Abuse history	42	16.3%	3	11.1%	
	Caregiver	15	5.8%	2	7.4%	
	Current mental health problem	5	1.9%	3	11.1%	
	Separation or divorce	54	20.9%	0	0.0%	
	Restraining order	17	6.6%	0	0.0%	
	Domestic Violence	22	8.5%	1	3.7%	
	Custody Battle	7	2.7%	0	0.0%	

<b>Table 11: Demographic characteristics of suicide victims, homicide victims, and homicide-suicide victims and perpetrators</b>							
Gun deaths in North Carolina, 2004-2014							
Category	Variable	Suicides only	Suicide Following Murder	Murders only	Murder Followed by Suicide	Domestic Murder	Domestic Murder Followed by Suicide
	Total	6955	259	3934	307	552	228
	Of total cases	60.7%	2.3%	34.3%	2.7%	14.0%	74.3%
Sex	Male	5842	245	3398	80	287	38
	Female	1113	14	536	227	217	190
		84.0%	94.6%	86.4%	26.1%	52.0%	16.7%
		16.0%	5.4%	13.6%	73.9%	39.3%	83.3%
Ethnicity	Hispanic	101	21	387	28	37	19
		1.5%	8.1%	9.8%	9.1%	6.7%	8.3%
Race	Black	539	72	2324	78	181	52
	White	6300	184	1405	224	341	172
	American Indian	62	0	144	3	23	2
	Asian	33	2	53	2	7	2
	Other race	21	1	8	0	0	0
			0.30%	0.39%	0.20%	0.00%	0%
Age	Under 21	378	7	621	50	75	34
	Over 65	1491	25	128	27	48	24
		5.4%	2.7%	15.8%	16.3%	13.6%	14.9%
		21.4%	9.7%	3.3%	8.8%	8.7%	10.5%
Background	Military Background	1677	44	271	30	52	20
	Employed	5932	237	2959	220	418	161
	Married/relationship	3252	162	941	167	241	141
	Divorced	1399	30	388	30	82	21
	Widowed	523	2	29	1	9	1
			7.5%	0.8%	9.9%	0.3%	1.6%

<b>Table 12: Personal characteristics and precipitating incidents in suicide and homicide-suicide</b>					
Gun deaths in North Carolina, 2004-2014					
<b>Problem Category</b>	<b>Variable</b>	<b>Single suicide</b>		<b>Suicide following murder</b>	
	Total	6955		259	
Mental Health History	Current Mental Health Problem	2569	36.9%	34	13.1%
	History of MH treatment	2522	36.3%	32	12.4%
	Current MH treatment	2257	32.5%	30	11.6%
	Depressed	2778	39.9%	22	8.5%
Suicide History	Disclosed suicidal intent	1679	24.1%	25	9.7%
	Someone close committed suicide in past 5 years	84	1.2%	1	0.39%
	History of suicidal behavior	626	9.0%	4	1.5%
	Left a suicide note	1809	26.0%	34	13.1%
	Expressed suicidal thoughts	440	6.3%	4	1.5%
Relationship problems	Intimate partner problem	1650	23.7%	221	85.3%
	Family Problem	166	2.4%	18	6.9%
	Other Relationship Problem	397	5.7%	62	23.9%
	Is a violent partner	314	4.5%	251	96.9%
Precipitating circumstances	Crisis in past 2 weeks	1704	24.5%	193	74.5%
	Argument	125	1.8%	12	4.6%
	Incident was part of other crime	53	0.76%	8	3.1%
	Someone close died in last 5 years, other than suicide	316	4.5%	5	1.9%
	Alcohol involved	905	13.0%	6	2.3%
	Facing eviction	78	1.1%	2	0.77%
	Financial Problem	465	6.7%	6	2.3%
	In a gang	681	9.8%	8	3.1%
	In poor health	1504	21.6%	12	4.6%
	Job problem	545	7.8%	10	3.9%
	Legal Problem- criminal	493	7.1%	40	15.4%
	Other legal problem	140	2.0%	12	4.6%

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