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Tracking the Accuracy of Assessing High Risk Offenders for Intimate Partner Violence: A Ten-Year Analysis

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Tracking the Accuracy of Assessing High Risk Offenders For Intimate Partner Violence: A Ten Year Analysis

Research question and sub-questions

Key Research Question**:** How accurate is the current process of predicting Intimate Partner Violence (IPV) high risk offending in London Ontario in a list of 1,314 identified offenders?

What other possible predictors of the false negatives could be used to enhance the accuracy of targeting high risk IPV?

Sub Questions:

1. How were the 1,314 persons identified as high risk (HR)—by whom, with what pipeline of candidates to assess, with what assessment procedures?

2. Among HR offenders, in the 730 days after their identification as HR, how many were :
   - Not charged for any crime category [*false positive 1*]
   - Not charged for IPV but for some other category *[false positive 2*]
   - Charged for IPV but not in a high-harm category [*false positive 3*]
   - Charged for IPV in a high-harm category [*true positives*]
   - How many were flagged in each category as having suicidal tendencies?

3. Among all perpetrators of the highest high-harm IPV in 2009-19, how many were *not* on the list of 1,314? How many of these individuals were flagged as having suicidal tendencies? *(false negatives)*

4. Among all perpetrators of IPV in 2009-2019, how many were not on the forecasted list of 1,314 offenders and did not commit a high harm offence? *(true negatives)*

Research design

This research is primarily quantitative in nature with a small section that is qualitative in order to provide a descriptive analysis of the risk assessment process. Qualitative design is used to provide a fulsome account of targeting and tracking procedures in IPV cases in London, Ontario

Canada. Quantitative methods are used to track the accuracy of forecasting high risk IPV offenders.

Data and methodology

The unit of analysis in this study is IPV offenders taken from a data set 1,314 classified high risk offenders and a total population of 9,035 IPV offenders that were charged for IPV crimes in London Ontario between 2009 and 2019.

The following definitions are key terms to be understood in this research:

"High Risk" – refers to an individual that has been predicted to be at a high likelihood of reoffending and increased severity of injury.

"High harm crimes" – refers to a list of identified crimes that cause or likely to cause severe injury or harm in IPV occurrences. The list of crimes is as follows; murder, attempted murder, sexual assault, aggravated assault, assault causing bodily harm, choking, assault by suffocation, assault with a weapon, forcible confinement, robbery, break and enter, point firearm, use firearm, break and enter to commit assault, and forcible entry. The high harm crimes were identified using professional judgment and the Canadian Crime Severity Index.

In order to measure the false negative and true negatives the list of identified high harm offenders and non-high harm offenders between 2009 and 2019 was examined in relation to the list of 1314 classified offenders.

Analytic Methods

The methods used to conduct the analysis involve a descriptive analysis and assessment of the current vs possible risk assessment methods of targeting high risk IPV offenders.

Sub question 1 is a descriptive analysis of the history of IPV Unit in London, Ontario. Qualitative research in the form of interviews with five current and former members of the IPV Unit was conducted to provide a narrative description.

The remaining sub questions utilize descriptive statistics. Sub question 2 measures a number of variables in a 730 day follow up period for offenders identified in a list of forecasted high risk offenders.

Sub question 4 measures the total number of IPV offenders for the time period of 2009-2019. True negatives were identified if they did not commit a high harm crime and were not on the list of flagged high risk offenders.

Findings

- The IPV Unit has evolved during the study time frame of 2009-2019. Offenders are assessed after being charged with an IPV crime using primarily the ODARA risk

assessment tool and using professional judgment. In both strategies the definition of high risk is not clearly defined.

- The False negative rate is 71% in forecasting high harm IPV offenders.
- The current process of assessing offenders results in successfully predicting general recidivism in 65% of cases.
- In 11% of cases offenders that are assessed as high risk commit a high harm crime within 730 days.
- True negative rate of correctly identifying offenders that are not high risk is 91%.
- The suicidal tendencies flag is under-utilized but is twice as likely to be present in offenders that re-offend in IPV categories in both low and high harm categories compared to offenders that do not re-offend.

Policy implications

Based on these findings, this thesis proposes the following high priority implications for IPV policy in the London Police Service:

1. Ability to improve forecasting high risk offenders due to the fact that 71% of high harm offenders are not captured in this process. Enhancements must be explored to improve targeting of high harm offenders.

2. Introduction of procedures to increase the utilization of the suicidal tendencies flag with criteria identified that automates the process. The suicidal tendencies flag should be considered as method to enhance targeting of high risk offenders and their victims.

3. Improving the processes in place to identify why an offender has been flagged as high risk. A digital system should be used that prompts IPVU auditors to indicate what led to a high risk flag.

4. Instituting a digital tracking mechanism of the high risk offenders as a population. A digital tracking system should automatically track all flagged offenders and post flag offending to monitor the targeting process.

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Chapter 1: Introduction

Intimate partner violence (IPV) is a global issue that affects individuals, primarily women, from all walks of life. According to the World Health Organization, male intimate or former intimate partners are the most common perpetrators of violence against women (WHO, 2012). IPV is wide-reaching and manifests far beyond physical injuries. Women who are victims of IPV are at increased risk of emotional distress, suicide, and sexual and reproductive health concerns (WHO, 2012). Canadian women are not exempt from the harm of IPV. Violence against girls and young women in Canada is most often perpetrated by men and is most likely to occur in the female's own home (Conroy, 2018).

In 2003, following two coroner's inquests in Ontario involving cases of intimate partner homicide, the Ontario Domestic Violence Death Review Committee (DVDRC) was established (Office of the Chief Coroner, 2019). The mandate of the Committee is to review deaths involving domestic violence and make recommendations to prevent fatalities (Office of the Chief Coroner, 2019). As result of recommendations of the DVDRC, the provincial and municipal governments, and consequently police services, began to focus resources on predicting and preventing IPV. The Canadian federal government allocated funds to the Ontario Provincial Police and researchers at Waypoint Centre for Mental Health Care to develop risk assessments for IPV recidivism (Hilton et al., 2004). As a result of this collaboration the Ontario Domestic Abuse Risk Assessment (ODARA) was born.

In 2009, the London Police Service, in London, Ontario, established a Domestic Violence Unit, that has since been renamed the Intimate Partner Violence Unit. The officers assigned to this unit are tasked with auditing occurrences as well as identifying and tracking perpetrators at

high risk of committing serious IPV crimes. In 2012, the London Police IPV Unit began using ODARA as a method to identify high risk offenders in order to target their victims for safety planning and additional resources. The process of forecasting high risk offenders has continued to this day with minimal tracking of the overall outcomes.

Discriminating Risk: Escalation or Desistance?

Examining the issue of forecasting high harm offending in IPV cases and whether policing agencies are accurately performing this function has been a focus of recent IPV research. The ODARA tool is comprised of 13 questions that were found to be predictive of future violence based on research on 600 cases from various police agencies in Ontario (Hilton et al., 2004; Hilton et al., 2014; Hilton & Harris, 2009). The 13 'yes or no' questions are related to the offender's criminal history, anti-social behaviour, and the victim's level of fear and individual circumstances. The ODARA provides a rank ordered score for each offender that is assessed but does not claim to predict lethal offending (Hilton et al., 2004). Granted, trying to predict the 23 IPV murder or attempted murder cases that took place between 2009 and 2019 in London, Ontario in a population of nearly 400,000 people, is a difficult task. However, the ability to identify and predict these cases and discriminate risk is imperative in order to operationalize the recommendation by the DVDRC to prevent further fatalities.

In order to utilize the ODARA tool or for police to engage in any form of risk assessment there must be existing information or data to examine. For this to occur in the current environment where there is little information sharing from outside agencies such as healthcare, education, and social services, police must rely on their own data. The process of utilizing a risk assessment tools such as ODARA *after* an offence has been committed suggests that escalation

and/or repeated violence is expected. However, one must consider the notion that offenders are desisting in criminal behaviour and that the assessment is potentially taking place *after* the individual has already committed their most egregious act. The theoretical principle of escalation of IPV has been brought into question by recent research using police data in the United Kingdom and Australia (Bland & Ariel 2015; 2020; Kerr et al., 2017). Given this evidence, police agencies should not take for granted that escalation is the norm. Furthermore, it should be understood that an assessment that takes place after an offence based on questions posed to a victim may result in flagging of offenders that are not going to reoffend.

Arguably, based on interviews with members of the London Police IPV Unit, the ODARA tool is being utilized with the hope of identifying the harmful 'needle in the haystack' (Sherman, 2007). There is research to suggest that in *retrospect,* lethal IPV offenders would have scored as high risk on ODARA (Eke et al., 2011). However, there is nothing to suggest that they were actually flagged prior to the crime. This information may provide some value in understanding lethal IPV, however, when attempting to prevent harmful IPV crimes, a hindsight analysis provides little comfort to those affected. By expanding and exploring the utilization of police data in risk assessments there may be methods to identify lethal IPV offenders prior to an offence rather than in hindsight.

Recent research in the United Kingdom has pointed to benefits of utilizing police data to identify what risk factors distinguish high harm IPV from less lethal IPV crimes (Bridger et al., 2017; Button et al., 2017; Chalkley & Strang. 2017; Thornton, 2011). In light of this research, efforts to discriminate risk and to target high harm IPV utilizing suicidal tendencies as part of a risk assessment should be considered. Little research has been conducted in Canada to examine

the validity of risk assessments to identify high harm IPV or examining suicide as an indicator of high harm IPV.

Purpose and Structure of this Research

This thesis will seek to add to the existing body of research in terms of tracking the criminal behaviour of offenders that have been forecasted by the police to be at risk of committing high harm IPV. It will pose the question of whether or not these assessments of risk are valid or if there should be enhancements made to that may help identify the 'power few' (Sherman, 2007) high harm offenders for interventions. One may argue, based on the research to date, that the ODARA tool has been validated to predict recidivism (Eke et al., 2011; Hilton et al., 2004; Hilton & Eke 2016; Lauria et al., 2017). This thesis does not challenge that the ODARA is a valid tool to predict recidivism in general. This thesis aims to challenge the notion that the ODARA is a valid instrument to identity and predict the *highest harm* offenders. This thesis aims to spark efforts to improve the accuracy of forecasting *high harm* IPV and potentially save lives and reduce crime harm. This research will illuminate the need for police services to carefully examine the accuracy of their forecasting models and begin using police data more effectively to identify high harm IPV in the name of public safety.

This research examines the 1,314 perpetrators of intimate partner violence that were forecasted as being high risk in the city of London, Ontario between 2009 and 2019. More precisely, this research poses the question of how accurate is the current process of predicting IPV high risk offending in London, Ontario. Additionally, what other possible predictors of high harm cases that were missed (the 'false negatives' in forecasting terminology) could be used

to enhance the accuracy of targeting high risk IPV? This research question will be broken down into a number of sub-questions as follows:

1. How were the 1,314 persons identified as high risk (HR)—by whom, with what pipeline of candidates to assess, with what assessment procedures?
2. Among the 1,314 HR offenders with a completed 730-day period after their identification as HR, how many were:
    a) not arrested for any crime category
    b) not arrested for IPV but for some other category
    c) arrested for IPV but not in a high-harm category
    d) arrested for IPV in a high-harm category
    e) arrested for IPV in a high-harm category after the 730 days
    f) how many offenders in each category were flagged as having suicidal tendencies
3. Among all perpetrators of the highest high-harm IPV in 2009-19, how many were *not* on the list of 1,314 at the time they committed the offence? How many of these individuals were flagged as having suicidal tendencies?
4. Among all perpetrators of IPV in 2009-2019, how many were not on the forecasted list of 1,314 offenders and did not commit a high harm offence?

In the *Literature Review* chapter, research is discussed that is relevant to targeting and tracking of high harm IPV offending. The topics examined are in the areas of repeat victimization, escalation and severity of abuse, risk factors, risk assessment tools for intimate partner violence, and validations studies in relation to the ODARA risk assessment tool.

The *Methodology* chapter describes the above-mentioned research questions in more detail and provides an explanation on definitions and sources of data that were utilized in this research. Each question is broken down in more detail as to how these questions were answered and structured for analysis. The chapter also documents the limitations and challenges involved.

The *Results* chapter provides specific findings in regard to each sub-question, for ease of understanding. The discussion chapter examines the overall implications of this research and opportunities for continued development and refined targeting of high harm IPV for both police and policymakers. In the penultimate chapter, *Discussion*, the results are discussed in the context of the existing literature and provides insights into theory and policy implications. The final chapter, *Conclusion*, will discuss areas that will practically impact the targeting and tracking harmful IPV offenders.

Chapter 2: Literature Review

Intimate partner violence has been recognized as a global concern and has been studied at length in academia. In recent years the use of police data in research has added to the field and has begun to shape new ideas and expand the collective knowledge in this area.

This chapter will examine the literature on intimate partner violence in relation to both qualitative and quantitative studies in the areas of repeat victimization, escalation and severity of abuse, risk factors, and risk assessment tools for intimate partner violence. The chapter will conclude with a review of validation studies in relation to the Ontario Domestic Abuse Risk Assessment (ODARA) tool.

Evidence of Prevalence and Repeated Intimate Partner Violence

The overall prevalence of intimate partner violence is widespread and rarely contested in domestic abuse literature. A systematic review including studies of 118 articles from 66 countries found that one-third of female victims of homicide are killed by intimate partners which equates to one in seven global homicides (Stokl et al., 2013). This particular systematic review also found that 13.5% of homicides throughout the world are committed by the victim's intimate partner and this was six times more likely in cases involving female victims. In the province of Ontario Canada, the Domestic Violence Death Review Committee (DVDRC) examined 470 deaths between 2003 and 2018. Of these cases, 66% were homicides and 34% were murder-suicides (DVDRC Annual Report, 2018). In the jurisdiction of this study, London, Ontario Canada, between 2009 and 2019 the London Police Service filed over 45,000 criminal charges in relation to intimate partner violence with a growing population of over 400,000

residents (Unpublished, London Police Service Statistics. London, Ontario). It should also be noted that when considering the overall prevalence of domestic abuse one must also consider the evidence that police statistics do not represent a complete picture of the problem because research consistently indicates that intimate partner violence is under-reported compared to victim surveys (Felson & Pare, 2005; Pagelow, 1981). With this in mind one must take into consideration that the likelihood that domestic violence is more prevalent than what is represented in police data, however, a large gap between harmful and lethal domestic violence and police reports is unlikely (Ariel & Bland, 2019; Bland & Ariel, 2020).

In a 2005 study Felson and Pare examined the rate at which victims and third parties report domestic violence to the authorities. Overall, the findings indicate that victims of intimate partner violence are five times less likely to make a police report in cases that involve a family member compared to a stranger. Not surprisingly, police were more likely to be notified in cases of domestic abuse that were more serious in nature, for example if a weapon was involved or if the victim was injured (Felson & Pare, 2005). The under-reporting of less serious violence, has been highlighted in a number of other dated studies as well. Feld and Straus (1990) found that 14.4% of serious criminal incidents involving intimate partners were reported to police authorities while only 3.2% of less serious crimes in this category were reported. Serious incidents were defined as choking, punching, kicking, hit with an object, threatened with a knife of gun or used a knife or gun. However, some other studies have found that up to 52% of domestic abuse is reported to the police (Hutchison & Hirschel, 1998; Langan & Innes, 1986). Whether the rate of reporting of intimate partner violence is somewhere between 3.2% and 52% there appears to be little debate in academia that there is some under-reporting in domestic abuse cases. Acknowledging the under-reporting of domestic abuse is not to diminish the value of

police data, but rather to provide the reader with a complete picture of the prevalence of domestic abuse.

When contemplating interventions for domestic abuse one must first consider the literature regarding the phenomenon of repeated intimate partner violence. A number of early studies of domestic abuse involved qualitative interviews with victims. While more recent studies have explored quantitative or big data to answer a variety of questions in this area. With the phenomenon of repeated domestic violence, and the knowledge that some IPV may be under-reported, one must also consider the fact that repeated incidents are also under-reported to police. This is especially true after reviewing the literature discussed previously that points to the fact that minor incidents of intimate partner violence are less likely to be reported to authorities.

Early qualitative research that examines repeated intimate partner violence often refers to the work of Walker (1984) and Pagelow (1981). Walker (1984) describes what is now well-known as the 'cycle of violence' which points to a repeating pattern of tension building, followed by violence, followed by a period where the offender makes amends in what is called the 'honeymoon phase'. Pagelow (1981) found, based on victim interviews, that repeated domestic violence was much more common than it was once thought and debunked the myth that cases of domestic violence involves female victims that have psychopathic tendencies. In other survey research in the United States, Feld and Straus (1990) found evidence that domestic violence is repeated in two-thirds of cases after a 12 month follow up period.

In more recent years academic research has looked to examine repeated domestic violence via police-recorded quantitative data. This has been in response to the realization that a great deal of policing is not subject to analysis and the use or value of police data has been ignored and under-utilized (Bland & Ariel, 2020; Sherman, 2013). Police data are a source of

information that is readily available and can assist in answering a number of questions when it comes to targeting intervention strategies for many crimes including domestic violence and assessing the risks (Bland & Ariel 2020).

Quantitative studies involving police records indicate that between 21 and 24% of domestic abuse involves repeat victimization (Chambers-McClellan, 2002; Bland & Ariel, 2015). What is also of interest is that in cases where a victim reported at least one new incident, they were victimized 6.7 times on average after just six months. More recently, Bland & Ariel (2015) conducted research on 36,000 reports of domestic abuse between 2009 and 2014 in Suffolk Constabulary in England. It was found that in 76% of cases there was no reported repeated complaints of domestic violence in the subsequent five years. This in turn suggests that in 24% of cases there was repeated domestic abuse and 35% were tied to more than one police reported event. Similarly Sherman & Berk (1984) found that 63% of offenders did not assault their partner again in a six month follow up after an initial report to police. The fascinating part of this quantitative data approach is that it suggest that many cases of domestic abuse are not part of a cycle of repeated violence. However, when reviewing studies involving both qualitative interviews with victims as well as quantitative data analyses of police records it is clear from the research that intimate partner violence involves repeated victimization.

Escalation and Increased Severity of IPV

Given the research that supports the claim that domestic abuse is likely to be repeated, academic research has looked to answer the question of whether there is escalation and increased severity of intimate partner violence over time. It seems intuitive to believe that intimate partner violence occurs on a continuum or cycle beginning with non-physical violence, minor assaults,

and culminates in serious physical violence. One may believe in a continuum of violence due to a cultural lack of understanding as to why a relationship would continue after a serious assault. A study dating back to the 1970s conducted in London Ontario appears to be the beginning of research that supports the long-standing belief that victims of intimate partner violence suffer an average of 35 incidents of domestic violence before making a report to police (Jaffe & Burris, 1984). In 2014, this study was reviewed, and the methodology used in this study was brought into question and no further research was found to support this claim (Strang et al, 2014). The belief that intimate partner violence escalates in frequency and severity over time has been supported with the theory of escalation in violence as described by Pagelow (1981) and Walker (1984). The escalation theory predicts that the time between violent episodes will decrease as violence escalates and that severity will increase.

A later study conducted by Feld and Straus (1990) examined the theory of escalation by examining a sample of 380 people who reported some violence in their marriage in 1985 and then interviewed them again in 1986. The results indicated that violence in the marriage is not consistent and supports the notion that desistance is common in intimate partner violence. An interesting finding, however, was evidence supporting theories of escalation. It was found that less serious assaults and assaults committed by the female partner were associated with a subsequent serious assault. As interesting as this may be, it should not be interpreted that minor assaults directly cause major assaults as there may be alternative explanations or confounding variables such as stress in the marriage or unemployment that may account for this. It would be prudent to following these couples for a lengthier time in order to determine whether they are experiencing escalation and or a cycle of violence.

In 2002, a study in Georgia USA also found evidence of escalation after examining over 19,000 calls to police over twelve months by examining both households and neighbourhoods (Chambers-McLellan, 2002). Increased frequency was demonstrated in the finding that with each additional violent incident the number of days between incidents decreased on average by approximately 11 days. Evidence of escalation was demonstrated in this study with the finding that the severity of incidents, using the Conflict Tactics Scale (CTS), increased as the number of episodes of violence increased (Chambers-McLellan, 2002). Escalation was only significant, however, when examining the total number of calls from each home.

The escalation theory has been questioned by a number of more recent studies that have demonstrated that there is not an escalation in violence in domestic abuse incidents or even a high likelihood repeated incidents (Barnham et al., 2017; Bland & Ariel, 2015, 2020; Kerr et al., 2017). The UK study conducted by Bland & Ariel (2015) described previously, examined 36,000 calls to police regarding domestic violence in Suffolk Constabulary in England. Using this large data set and the Cambridge Crime Harm Index (CCHI) evidence of escalation in severity of violence was not found. This study examined escalation by studying 727 dyads that had five or more incidents reported to police in three years (Bland & Ariel, 2015). This particular study was unique in that it utilized the CCHI which attaches a weight based on sentencing guidelines for each crime type and provides an opportunity to determine whether crime is increasing in harm (Sherman et al., 2016). Using the CCHI, Bland & Ariel found that 3% of dyads accounted for 80% of the crime harm. This is significant in that it provides insight into how police agencies might more accurately identify and target harmful offenders rather than relying on the premise that all domestic abuse incidents escalate over time.

Barnham et al 2017, studied the question of whether domestic abuse increases in severity and frequency over a 731 day follow up period after a couple first has contact with police. This study found that 77% had no further crimes. However, those involved in a fifth crime were 53% more likely to become involved in another incident. The probability peaked after being involved in 14 crimes. However, the majority of individuals had only one incident and there was no overall evidence of increased frequency over time. Similar to Bland & Ariel (2015), Barnham and his colleagues utilized the CCHI and did not find evidence of escalation in harm in cases of repeat incidents. It was also found that the most harmful offences were committed by a concentrated group of offenders and these individuals changed over time.

The only exception in these three recent studies is in an Aboriginal population in Australia who experienced escalation in violence in chronic cases (Kerr et al., 2017). In this case over 23,000 couples were studied between 2010 and 2014. Utilizing scores from the CCHI, the study examined frequency and escalation of harm in domestic abuse cases. Similar to the previous studies, it was found that many of the couples experienced desistance. In this case, 43% of the dyads only had one domestic abuse incident in the four-year time frame. However, for those that did have three or more incidents, there was a pattern of escalation in both aboriginal and non-aboriginal populations. However, the rate at which Aboriginal couples experienced three or more incidents is much higher than the non-Aboriginal population – 32% versus 2%. It is clear, based on the recent studies, that the theory of increasing severity and frequency over time in cases of intimate partner violence should be questioned by police services in developing policies when targeting intimate partner violence.

Risk Factors

When attempting to evaluate risk assessment tools or engage in prevention efforts, one must first consider what risk factors are associated with a particular crime type. Research involving risk factors associated with intimate partner homicide has been examined at length in academia and is often conducted in the form of a retrospective analysis. When examining research in this area the work of Jacqueline Campbell and others in the United States is often discussed. In 2003, Campbell et al conducted an 11-city case control study to identify risk factors for female victims of intimate partner homicide. The study involved 220 female victims of intimate partner homicide between 1994 and 2000, with a control group of 343 abused women in the same geographical areas. The study identified specific risk factors for intimate partner homicide including the offender's access to firearms, previous threat with a weapon, offender's step-child in the home, and estrangement (Campbell et al., 2003). The primary factor, however, that places women at risk of intimate partner homicide compared to the control group was previous physical violence against the female victim (Campbell et al., 2003).

A review of research conducted in 2007 pointed to a number of studies that identified risk factors associated with intimate partner homicide which included the offender's access to firearms, previous threats with weapons, estrangement, strangulation, forced sex, and the presence of an offender's step-child in the residence (Campbell et al., 2007). The main finding of this review is that the most common factor associated with intimate partner homicide is previous domestic violence toward the female victim by the offender prior to the homicide (Campbell et al., 2007).

In 2011, a Canadian study explored 146 cases of either attempted or committed intimate partner homicides that occurred between 1996 and 1998 in the province of Ontario (Eke et al., 2011). Similar to research conducted by Campbell et al, this study found that in 43% of cases where extensive information was obtained, the offender had committed a previous assault against the victim that was documented by an agency such as police, doctors, or social services. However, for the overall sample of 146 offenders, 24% did not have prior contact with mental health care professionals or police. This study also found that in cases of intimate partner homicide, the offender was more likely to commit suicide compared to cases where intimate partner homicide was attempted (Eke et al., 2011).

In recent years it has become clear that an offender's suicidal tendencies is an important risk factor to consider in efforts to prevent intimate partner homicide. A study published in 2017 by Bridger et al., examined 188 cases of intimate partner homicide that occurred in England and Wales between 2011 and 2013. When taking into account a full review of cases beyond police data it was found that 40% of the male perpetrators had some form of suicidal or self-harm indicators.

Given this information the suicidal tendencies of the population as a whole must be considered in relation to perpetrators of intimate partner homicide. In an effort determine whether or not suicidal ideations are more prevalent amongst perpetrators of intimate partner homicide, Button et al 2017 examined recorded entries of early warnings of suicidal tendencies. It was found that the early warnings of suicidal ideations were five times more likely to be present in offenders charged with murder, attempted murder or manslaughter than in offenders not charged with these crimes. The rate of suicidal ideations of offenders who commit intimate partner homicide compared to control groups of less harmful offenders was also examined by

Thonton (2011) and Chalkley & Strang (2017). In both cases it was found that the deadly offenders were significantly more likely to have self-harm indicators than the control samples of less deadly offenders.

In consideration of risk factors for intimate partner homicide it is also pertinent to examine risk factors associated with the victims in addition to the offenders. In a Canadian context, two recent studies in Ontario have examined the victims of intimate partner homicide that were included in the Ontario Domestic Violence Death Review Committee (DVDRC). The DVDRC is a review body established in Ontario, Canada that assists the Coroner's Officer in conducting full reviews of all cases of intimate partner homicide in order to identify areas where improvements can be made to prevent further incidents (DVDRC Annual Report, 2018). In 2018, Kalaichandran et al conducted a retrospective analysis of immigrant victims versus Canadian born victims of intimate partner homicide with a hypothesis that immigrant victims have unique challenges and barriers that may precipitate violence. It was found that immigrant victims had less contacts with police than Canadian-born victims and more social isolation. However, it was found that the immigrant born victims did not experience any greater risk in other identified areas.

Musielak et al 2020 reviewed data from 183 deaths examined by the DVDRC between 2002 and 2012 to determine the barriers that victims face. The study revealed that victims suffer a number of barriers to safety that center around social isolation, mental health, and fear (Musielak et al., 2020). Although no causal relationships can be determined from any of identified risk factors for intimate partner homicide it is relevant to identify these areas in order to establish means to prevent and forecast potential incidents.

Risk Assessment Tools

After reviewing the literature in the previously mentioned topics and accepting the notion that there are specific risks associated with intimate partner homicide there is a logical step to identify methods for police and other social agencies to prevent these incidents from occurring. A risk assessment in terms of intimate partner violence is often described as a method of determining the likelihood of violence re-occurring. The assessment can take the form of a professional judgement or based on a checklist of risk factors in order to provide safety planning to victims and is meant to successfully identify the appropriate at-risk individuals (Campbell et al., 2003; 2007).

In Ontario, police officers are legislated to take arrest actions in all cases of intimate partner violence where there is reasonable grounds to believe that an offence has taken place. However, when making a determination with regards to risk of future incidents, officers may use their professional judgement in addition to the Ontario Domestic Assault Risk Assessment (ODARA). In an Australian setting, a study was conducted that examined the perceptions of police officers in assessing risk in a sample size of 501 cases (Trujillo & Ross, 2008). Consistent with research on the subject, officers believed that there was little risk with a first incident of intimate partner violence but higher risk if it was part of a pattern of behaviour. Police officers also identified a risk of intimate partner homicide in cases where they believed there was an escalation in frequency and severity of violence. Although professional judgments may be made in line with academic research, many police agencies in Canada have attempted to remove personal biases and individual perceptions and have moved to formalized tools in order to assess risk (Government of Canada, 2015).

A number of instruments have been validated to predict recidivism in cases of intimate partner violence, for example, the Domestic Violence Screening Inventory, the Kingston Screening Instrument for Domestic Violence, Domestic Abuse Stalking and Harassment (as cited in Campbell, 2007). The focus of this thesis is the ODARA (Hilton et al., 2004). A recent meta-analysis of 50 studies involving domestic violence risk assessment tools aimed to assess the overall predictive accuracy of the tools (van der Put et al., 2019). The results indicated a moderate predictive accuracy with actuarial tools out-performing clinical judgment tools (van der Put et al., 2019). Many of these tools, however, were not developed specifically to forecast lethal high risk offending and often use softer language such as higher risk offending when describing the purpose of the tools. The 'DASH' tool, that is use in most UK police forces, is comparable to the ODARA tool in that both tools pose a series of questions to the victim of a domestic abuse incident that is then used to assess the future risk to the victim (Bland & Ariel, 2020; Hilton et al; 2004). Many of these tools, specifically the DASH tool, have been criticized as underperforming under scrutiny (Chalkley & Strang, 2017; Grogger et al., 2020; Thornton, 2011; Turner et al., 2019). Retrospective studies suggest that the offender's suicidal tendencies may be the best predictor of intimate partner homicide as opposed to the DASH tool (Bridger, 2017; Chalkley & Strang, 2017; Thornton, 2011). This recent exploration began in 2011 with Thornton et al examining the predictive validity of the DASH in Thames Valley, UK. It was found that the DASH failed to predict 100% of the homicide cases during the 3-year study period (Thornton, 2011). This study was later replicated in Dorset UK where a 99% false negative rate was found in predicting the highest harm cases using the DASH (Chalkley & Strang, 2017). Both studies suggested that suicidal tendencies may be better suited to predict serious intimate partner homicide than the DASH risk assessment tool.

More recent studies have suggested that a machine learning approach using random forest algorithms for risk assessment performs better than traditional risk assessment tools (Grogger et al., 2020; Turner et al., 2019). Grogger et al., 2020 utilized an algorithm that takes into consideration the criminal histories and compared the results to a model that considers the DASH risk factors as well as criminal histories. The results indicated that the random forests model using just criminal histories does not perform any better when also considering DASH risk factors (Grogger et al., 2020). Turner et al., 2019 found that the DASH risk assessment tool is under-predicting cases of re-victimization and the officer focuses only on the immediate incident when engaging in risk assessment. This particular study found that an officer's prediction outcomes using DASH was slightly better than random and a logistic regression model using DASH was only slightly better. The authors concluded that there is potential for increased use of a machine learning approach, but it can also be fraught with problems if data that is included is faulty or inaccurate.

History of ODARA and Validation Studies

The Ontario Domestic Assault Risk Assessment is marketed as actuarial instrument that was created for front line officers for specific cases involving intimate partner violence with a male perpetrator and female victim (Hilton et al., 2004). The ODARA rank orders offenders into categories of low, medium, and high risk for re-offending. It is claimed that offenders that score in the high-risk category are more likely to commit more assaults, cause more injury, and in a shorter time frame than offenders in other categories (Hilton et al., 2004). The ODARA was created retrospectively by coding 689 cases of intimate partner violence over a five year follow up period and does not claim to specifically predict lethal recidivism.

Much of the research cited in support of the validity of ODARA was conducted by the creators of the tool (Eke et al., 2011; Hilton et al., 2004; Hilton & Eke 2016). In an effort to assess the validity of ODARA in predicting specifically intimate partner homicide the authors calculated ODARA scores for a subset of 30 homicide cases where extensive information was available via death reviews (Eke et al., 2011). It was determined that with all the available details, the ODARA retrospectively scored these offenders in the highest risk category. From a policing perspective, only 26% of this sample had previous incidents that were known to police, which presents an obvious problem for police alone to address preventative efforts in this regard.

In terms of additional research conducted by others not involved in the development of ODARA, there is some research that has been conducted outside of Ontario. In an Australian police setting, a study concluded that ODARA can predict repeat intimate partner violence (Lauria et al., 2017). It was found that ODARA predicted further assault in the 200 of the 854 family violence cases that met the inclusion criteria for the use of ODARA. However, the authors offered a criticism of ODARA because only 23% of all the family violence cases during the time frame of study met the inclusion criteria for ODARA (Lauria et al., 2017). This is relevant for the external validity of the ODARA tool because it was created in response to Ontario-specific needs for intimate partner violence police investigations and recommendations (Hilton et al, 2004). In order to use the ODARA tool the case must involve intimate partner violence and in the case of Australia there is a need for risk assessment for a wider definition of domestic violence (Lauria et al., 2017). A second study, conducted in a Swiss policing setting, demonstrated that ODARA scores correlated with repeat offending (Gerth et al., 2017). A population of male offenders were retrospectively assessed after their offending for a period of five years. The ODARA predicted recidivism in 32% of cases in this study. However, in

doing so over-estimated the actual risk that offenders posed, and the authors concluded that the ODARA was poor in terms of discriminating risk.

In 2013, Messing and Thaler examined the predictive validity of ODARA compared to four other well known risk assessment tools (SARA (Spousal Assault Risk Assessment), DA (Danger Assessment), DVSI (Domestic Violence Screening Inventory), and K-SID (Kingston Screening Instrument for Domestic Violence). Using Receiver Operator Characteristic (ROC) curves it was determined that the ODARA was the most accurate in predicting recidivism with ROC score of .666 and a medium effect size. In a more recent meta-analysis conducted by van der Put et al., (2019) ODARA was identified with a number of studies that presented similar ROC scores of .63 to .71 (Van der Put et al., 2019).

Summary of Literature Review

This review has considered qualitative and quantitative research in relation to whether domestic violence increases in severity and frequency over time and the extent to which risk assessments have been shown to be effective in identifying high risk offenders. This thesis will attempt to add to the literature regarding the validity of ODARA as a risk assessment tool for both low and high harm intimate partner violence over a ten-year period. This thesis will explore the practical application of risk assessments in a police setting and whether additional information held by the police in the form of suicidal tendencies can be integrated in risk assessments. Furthermore, this thesis will add to growing research around whether or not individuals charged with domestic abuse crimes repeat and escalate in their offending in a Canadian context.

Chapter 3: Methodology

Introduction

The methods used to answer each of the research questions described in the introductory chapter are described in this methodology chapter. This chapter first provides definitions of terms in a Canadian context followed by explanations of data sources used to answer each question. Each question is broken down in a procedures section, with data issues and limitations discussed in relation to each specific question.

Setting

The city of London, Ontario is situated in the southwest region of the province of Ontario with a population of just over 383,000 people (2016 Census Population, 2017). In terms of population the city of London is a medium sized Canadian city with a municipal police service. The London Police Service recorded just under 29,000 criminal offences reported in 2019 (London Police Service, Crime Statistics). In terms of external validity, the city of London experienced average reported crime rate and crime severity in 2019 compared to all Canadian cities (Police Reported Crime Statistics in Canada, 2019).

Definitions

Throughout the descriptions in this chapter and the discussion in subsequent chapters, the following terms are frequently referred to:

Versaterm: Versaterm is a Canadian company that develops record management and computer aided dispatch (CAD) systems for police and other public service agencies.

Known Offender Record: Within the Versaterm software, a profile called the Known Offender Record is automatically generated for each individual that is charged with a criminal offence. The profile includes details pertaining to the individual such as physical characteristics, criminal

charges, associated documents, as well as the option to add a flag such as high risk domestic violence or suicidal tendencies. The known offender record generates a unique number for each individual (Versaterm, 2019).

Uniformed Crime Reporting (UCR): UCR was developed by the Canadian Centre for Justice and Community Safety in junction with police services in Canada. Using UCR data police-reported crimes are collected each year and reflects reported crime that has been substantiated by police (Uniform Crime Reporting Survey, 2020). The Versaterm software, used by the London Police Service, codes crimes according to the UCR framework and associated codes to simplify recording and extraction of data. However, less common crime types are captured under a collective umbrella term of "criminal code other" which presents a problem when attempting to analyse particular crimes separately that fall under this umbrella UCR code. An explanation of how this was overcome in this study is explained later in this chapter.

Intimate Partner Violence (IPV): According to the Canadian Criminal Code an intimate partner includes current or former spouse, common-law partner and dating partner. The Criminal Code identifies IPV as a range of offences that may be committed against an intimate partner and does not identify specific offences of IPV. Since the 1980s, police services in Canada have been required to lay criminal charges in investigations involving IPV where there is reasonable grounds to believe an offence has been committed (Statistics Canada, 2015).

High Harm Crimes: The offences listed in Appendix 'A' were chosen before the analysis began and were selected after reviewing all of the possible crimes and determining what crimes were likely to cause significant physical injuries. The identification of these crimes was based on the

author's professional judgement and reviewing the crimes weighted as most severe according to the Canadian Crime Severity Index.

ODARA High Risk: ODARA places offenders in categories from 0-7 with a score of 7 being in the highest risk category. Offenders that are identified in the high risk category are predicted to commit more assaults, commit them sooner, and cause more injury. The ODARA does not claim to predict lethal injury (Hilton et al, 2004).

True Positives: In this study the term true positives represents the total number of forecasted high risk offenders that *did* in fact go on to commit one or more high harm IPV crimes in a 730 day follow up.

False Positives: In this study the term false positives represents the total number of forecasted high risk offenders that *did not* go on to commit a high harm IPV crime in a 730 day follow up.

False Negatives: In this study the term false negatives represents the total number of offenders that *did* commit a high harm IPV crime between 2009 and 2019 that *were not* forecasted to do so.

True Negatives: In this study the term true negatives represents the total number of offenders that *did not* commit a high harm IPV crime between 2009 and 2019 and *were not* forecasted to do so.

Data Sources

The London Police Service uses the Versaterm software for records management purposes and is the primary source of data for this study. When a patrol officer completes a criminal investigation involving intimate partner violence a number of required text pages are completed and must enter a domestic violence 'D' study flag on the Versaterm report. Report auditors

ensure that all investigations and text pages are completed. In cases involving intimate partner violence officers assigned to the Intimate Partner Violence Unit (IPVU) also audit the investigation and are trained to complete the ODARA scoring. The IPVU unit assigns a 'High Risk Domestic' flag to an offender's Known Offender Record to identify individuals that are labelled as such to assist in monitoring efforts. Offenders that receive a high risk domestic flag either reach a score of 7 on the ODARA or in some cases professional judgement is used.

A second source of data for this research is a spreadsheet of all high risk offenders categorized as such by the IPVU since the unit was created in 2009. This spreadsheet essentially duplicates the list of the offenders that have been flagged on the Versaterm system. The Known Offender Record of each high risk offender on the list kept by the IPVU and was examined in detail for this study. The Known Offender Record contains a list of criminal charges including corresponding dates and report numbers that correspond with the charges. The spreadsheet kept by the IPV Unit was compared to all high risk flags on Versaterm and it was found that 40 offenders were mistakenly left off of the spreadsheet. Both sources of data were used to ensure all forecasted high risk offenders were captured.

The final source of data used in this study is data and interviews gathered from police officers assigned to the IPV Unit at the London Police Service. The members have served at various times between 2009 and 2019. This study also considers the changes in procedures in relation to the changes in the IPV Unit.

Procedures

Question 1 - How were the 1,314 persons identified as high risk (HR)—by whom, with what pipeline of candidates to assess, with what assessment procedures?

In order to answer research question one, historical information of the IPV Unit at the London Police Service was obtained via five interviews with current and former officers who have worked in the IPV Unit. Historical documentation regarding the policies and procedures that were instituted when the unit was created in 2009 was also gathered from the police service's research planner analyst who is responsible for maintaining London Police Service policy and procedures.

The methodology involved in answering how individuals received a high risk flag involves a descriptive analysis of the IPV Unit. Qualitative research in the form of interviews with current and former members of the IPV Unit was completed to provide a narrative description and explanation of the processes that have taken place since 2009. The description assists in providing context to how the process of identifying offenders has evolved over time and how the list of high risk offenders was maintained. This method is best suited to answer this question as it provides context to the quantitative data that has been examined to answer the remaining research questions. It is impossible to understand the processes of identifying high risk offenders without interviewing the members that have undertaken this task.

Data Issues & Limitations

The limitations to understanding how offenders were assessed has proven difficult as there was not a definitive date that ODARA was instituted, and officers still have the ability to use their professional judgement. In other words, those cases where officers used professional judgement to classify an offender as high risk cannot be easily identified. As such, the entire population of flagged offenders was examined, with the understanding that prior to 2012 the practice of using ODARA was not the primary method of forecasting high risk offenders. For this reason this

study examines the accuracy of forecasting high risk offenders in London, Ontario which includes both ODARA and professional judgement.

When determining the entire list of offenders that committed an identified high harm IPV crime (the false negatives) during the study period, it was discovered that some offenders were in fact forecasted as high risk by the IPV Unit. In other words, it appears some human error occurred in maintaining the excel spreadsheet of 1,274 offenders because 40 offenders were discovered that did have a high risk flag and were not on the spreadsheet. As such these 40 were added to the 1,274 to have a complete list of 1,314 predicted high risk offenders.

When extracting the total list of all IPV offenders between 2009 and 2019 to determine the true negatives, it was found that 48 offenders that were thought to be true negatives (did not commit a high harm crime and were not predicted to do so) were in fact false positives because they did have a high risk IPV flag attached to their profile and did not commit a high harm crime. Due to time constraints these 48 additional offenders were not assessed in terms of their specific post flag offending. Therefore, there should have been 1362 offenders assessed in question 2 rather than 1314.

Research Question 2 – 959 Offenders had a full 730 days follow up time. Among the 959 offenders, in the 730 days after their identification as HR, how many were

a) *not charged for any crime category*
b) *not charged for IPV but for some other category*
c) *charged for IPV but not in a high-harm category*
d) *charged for IPV in a high-harm category*
e) *charged for IPV in a high-harm category after the 730 days*

f) *how many of the 959 were flagged as having suicidal tendencies? How many of the offenders charged for IPV in a high harm category had a suicidal tendencies flag compared to offenders that were charged for IPV not in a high harm category?*

In order to answer Research Question 2, a crime analyst created a list of 959 offenders which excluded individuals who were added after July 31, 2018 in order to provide adequate follow up time for analysis (730 days). There were 355 offenders that were flagged after July 31, 2018 of the total 1,314 total offenders.

The variables measured in this study are the following: (1) number of total criminal charges between the date of the flag and 730 days post flag, (2) of this number of charges how many were non IPV, (3) how many were high harm offences listed in appendix A, and (4) how many were other IPV crimes. Additional variables are (5) the number of offences listed in Appendix 'A' that were committed after the 730 days for each offender as well as (6) whether or not their Known Offender profile contained a 'suicidal tendencies' flag.

Another important piece of the methodology is determining what IPV offences are high harm as there is not a list identified by ODARA or in any police procedures. As a result, a list was created based on professional judgement on what crimes would cause the most physical harm to a victim. It should also be noted that bail violations and breaches of probation offences that stemmed from IPV crimes were included in the total number of charges, and *not* included in the list of IPV crimes. The reason for this was because violating a bail condition or probation is not IPV and is often administrative in nature.

The analysis of the 959 identified high risk offenders involved the use of descriptive statistics. The date that each offender was flagged was exported from the police data system and

entered on a spreadsheet. Using Excel, the 730 days post flag date was obtained and entered in a separate column. Each offender was then queried on Versaterm, the police data management system, and the unique Known Offender number for each individual on the list was entered on the spreadsheet manually. Following this step, each Known Offender number was manually queried and all of the variables to be measured were manually counted for each offender.

This process of obtaining all values for each variable also involved reviewing reports in cases where it was not clear whether the offence was related to IPV. This process began in February 2020 and concluded in May 2020. Any flags that expired between February 2020 and July 31, 2020 were reviewed to ensure no additional values were added after the first manual calculations. The analysis of the 959 offenders and their subsequent offending provided a description of the true positives and false positives. In other words, an account of how many offenders were predicted to be high risk and were, as well as an account of offenders that were predicted to be high risk and in fact did not commit a high risk offence.

Data Issues and Limitations

The principal limitation of these data for question two is the possibility of errors due to manually counting offences as there was no system in place to extract only IPV offences from each offender's profile. There are also limitations in the suicidal tendencies flag as there is no system in place that dictates when, and under what circumstances, an individual receives this flag. It is also suspected that this flag is under-utilized because there are no specific auditing processes of the use of this flag or procedures that dictate the use of this flag.

A second limitation is that the number of crimes listed on an offender's Known Offender profile are limited to offences that were committed in the jurisdiction of London, Ontario. In

cases where an offender moves and/or commits crimes in another city would not be captured in this analysis. Furthermore, if an offender is in custody or if they had received some form of additional interventions after having committed an offence and their subsequent offending behaviour is mitigated due to this fact, it is not clear from this data. In other words, the individual circumstance of each offender and what may have prevented them from committing a high risk offences is not known.

A third limitation in this dataset is that it only includes offences that are known to the police. That being said, it is clear from the literature that the under-reported IPV crimes are most often less serious in nature and offences that cause significant harm to the victim are often reported to police. It is acknowledged that unreported crimes occur, however, for the purposes of understanding high harm offending we know from the literature that there is less of a gap between police data and under-reported data.

Research Question 3 - Among all perpetrators of the highest high-harm IPV between 2009 and 2019, how many were not on the list of 1,314 at the time they committed the offence? How many of these individuals were flagged as having suicidal tendencies?

In order to answer question three a second list of *all* offenders that have committed offences listed in Appendix 'A' between 2009 and 2019 was obtained by a crime analyst using the Versaterm police data system. The IPV offences were filtered on the Versaterm system by a 'D' study field which is designed to identify 'intimate partner violence'. The variables to be obtained are the total number of offences for each category of offences listed in Appendix 'A', the crime type, and whether or not a suicidal tendencies flag is present.

The analysis of the total number of high harm IPV offenders were identified using the offences listed in Appendix 'A' that were committed between 2009 and 2019 and isolating offenders rather than events in order to ensure that offenders don't appear more than once in the total. Each offender was queried manually on Versaterm to determine whether or not a suicidal tendencies flag was present on their Known Offender profile and to verify that they did not have a high risk domestic violence offender flag.

This list of the total IPV high harm offenders was then analyzed in relation to the list in question two to determine if the offenders were on the list of 1,314 forecasted high harm offenders. This allowed for a determination of the false negatives, meaning the number of offenders that committed an offence in Appendix 'A' that were not forecasted to do so.

Data Issues & Limitations

A limitation in this process is that forcible entry and choking, two of the identified high harm offences, do not have a unique code and are classified as 'criminal code other' with a number of other crimes. Thus it is impossible to isolate those offenders and they would appear in the overall count of all IPV offenders rather than as a high harm offender. If an offender committed forcible entry as well another high harm offence they would be captured in the data set. Among the 959 offenders with 730 days of follow up, 10 offenders committed only forcible entry and 0 committed only choking. These 10 offenders and would be missed in extracting them from Versaterm as high risk offenders. This accounted for 1.04% additional cases that were missed due to the Versaterm process of extracted cases. However, it is acknowledged that this is not an exact number given the time frame for identifying cases is not the same. The 2,398 offenders were identified over the 10 year period (2009-2019) while the identification of the 959 was 6 months less than 10 years to allow for the follow up time. Alternatively, if one were to consider

10 offenders missing out of the total population of 1314 offenders this would result in approximately 0.76% of cases missing. However, there is an error in this method as well because only 959 had 730 days follow up to identify the total crimes. Therefore, it is estimated that between 0.76% and 1.04% of cases would be missed in extracted the high harm offenders that committed only forcible entry or only choking.

This study only considers offenders that were charged with an IPV crime and not all calls involving IPV. This is due to the fact that as mentioned police are obligated to lay criminal charges in cases where there is reasonable grounds to believe an offence has been committed and the ODARA scoring only takes places in these circumstances. All other police involved calls were excluded. It is acknowledged that data involving minor non-criminal incidents is not considered in this study.

Research Question 4 - Among all perpetrators of IPV in 2009-2019, how many were not on the forecasted list of 1,314 offenders and did not commit a high harm offence.

In order to answer question four, a third list of *all* offenders that have committed IPV offences that are *not* offences listed in Appendix 'A' between 2009 and 2019 was obtained by a crime analyst using the Versaterm police data system. The IPV offences were filtered on the Versaterm system by a 'D' study field which is designed to identify 'intimate partner violence'. It should also be noted that offenders that committed *only* bail violations and breaches of probation offences were *not* included in this list of true negatives crimes as they occur in high numbers and the act of violating a bail condition or probation is not IPV. This is believed to be an unlikely event, as the offender's primary IPV offence would result in them being included in

this data set. The purpose of this exclusion is to prevent offenders being added to the list who committed the primary offence prior to 2009.

Data Issues and Limitations:

As mentioned previously, due to the Versaterm coding of offences, offenders that committed an identified high harm offence of *only* forcible entry or *only* choking would appear on this list as 'criminal code other'. Due to this issue these offenders would appear as a true negatives rather than as false negatives. It is estimated that this is a small number of offenders, between 0.76% and 1.04%, would be need to be *removed* from this list to account for those that may have committed only forcible entry or only choking.

Research Question 5

Among the false negatives, what further systems of early warning might be contemplated or tested, especially those that could include predictive information from other organizations in London?

The question is answered as part of a discussion and narrative text. Using the data relating to the use of suicidal tendencies flag, and the findings in relation to the rate false negatives in the current process. Other systems of early warning are explored, as well as what information may be held by other organizations within the city of London that may assist in forecasting harmful intimate partner violence.

Summary of Methodology

The methodology used in this study focuses on both qualitative and quantitative methods and is presented in in the form of descriptive statistics and narrative descriptions. As described above

each question is analysed separately with limitations in each area identified. The qualitative aspect is utilized in order to provide the reader with a fulsome understanding of how offenders are identified for assessment. The quantitative method of analysis is utilized to assess the accuracy of the forecasting model is presented in terms of true positives, true negatives, false positives, and false negatives.

Chapter 4: Results

In this chapter, the results for each research question are illustrated in the form of a narrative description, graphs, and tables. The chapter begins with a narrative of the qualitative interviews and exploration of the history of the IPV Unit and how offenders are identified as high risk and how that process has evolved since 2009. This is followed by a description of the data and the quantitative results of the tracking of the post-identification offending behavior of each forecasted high risk offender in a 730 day follow up period. The results of each area of inquiry are presented in relation to the total population of IPV offenders charged between 2009 and 2019 in London, Ontario and are displayed in terms of true positives, false positives, false negatives, and true negatives. Finally, the findings of the suicidal tendencies flags are displayed as well as a brief summary of the results.

Evolution of Identifying High Risk Offender

This section will provide the results of five interviews with London Police officers and a review of both current and historical London Police procedures. The process for establishing new procedures at the London Police Services is signaled by issuing an internal document called a Routine Order. According to a Routine Order from the Chief of Police the Domestic Violence Unit (DVU) was created on March 22, 2009. When the unit was established, it was comprised of a Domestic Violence Coordinator, who was the rank of Sergeant, and two Detective Constables. According to the Routine Order, the team was responsible for the "auditing of domestic violence occurrences, training of LPS members, community case conferences and community educational initiatives" (London Police Service, Routine Order 09-24). The subsequent job description that was developed for the Detective Constables assigned to the Domestic Violence Unit further

clarified that one of the duties was to "identify and monitor those cases that are designated as high risk" (Position Description, Constable Domestic Violence Unit, 2010). The current procedure that describes the mandate of the IPV Unit describes that an individual is deemed to be 'high risk' when they score seven or above according to the ODARA or upon the professional judgment of the Domestic Violence Coordinator (London Police Service Procedures, Intimate Partner Violence). The procedure does not provide any further clarification of the meaning of high risk.

A member who was initially assigned to the unit in 2009 was interviewed and advised that in 2009 offenders were classified as high risk based on concerning factors when auditing cases. This officer recalled being trained in the use of the ODARA risk assessment tool in 2011. The Domestic Violence Coordinator who was in charge of the unit in 2011 stated the following;

> "Auditors in DVU would identify people of concern and bring them to the committee that was comprised of Crown Attorneys and members of the Children's Aid Society. The problem was there was no way, other than a gut feeling, to determine who was high risk. There was no method of identifying offenders. In 2011 I learned about ODARA and brought it to the attention of the committee."

An officer assigned to the unit after receiving the ODARA training stated:

> "Even when we had ODARA we still based some HR (high risk – definition added) status' on our instincts/experience on various cases. Some of the most concerning cases wouldn't have scored HR but we decided to do it anyways in the name of victim safety."

The Domestic Violence Coordinator in 2012 indicated that the practice of using ODARA was the primary method of identifying High Risk Offenders. However, none of the individuals

interviewed could identify a specific date that the tool was instituted. Rather it was described that officers began receiving the training and the transition took place in early 2012. The Domestic Violence Coordinator that took over in April 2012 stated the following:

> "At that time ODARA was being used to identify high risk offenders. Auditing officers in DVU received certification in using the ODARA tool. In 2013 we had an attempted domestic murder where the offender was not flagged because they didn't meet the criteria with the prior offending and information known to us. Occasionally during my time there offenders would score below the threshold for high risk and the auditing officer would advise me of concerning factors that would prompt us to flag a person as high risk when they did not meet the criteria using ODARA. That being said it was not a common occurrence to add flags based on professional judgment."

A review of the official London Police procedures revealed that the official practice of utilizing the ODARA risk assessment tool was mandated on July 22, 2014 (London Police Service General Order, 14-009). After manually reviewing the reports between 2012 and 2014 and interviewing officers it was clear that the practice of using ODARA was in place in 2012 prior to the official procedure change.

The procedure for an individual to be assessed begins with an offender being charged for a domestic violence crime by a front line patrol officer. As part of their reporting requirements the front line officer is to enter a 'D' for domestic violence in the report in all cases of IPV. The 'D' automatically prompts an audit by officers assigned to the DVU that was recently renamed the IPV Unit. Beginning in early 2012 and to the present day, officers assigned to the IPV Unit audit every case where IPV charges are laid using the ODARA tool. When an offender scores a 7 or higher on the tool the officer will add a "domestic high risk" flag to the offender's known offender profile. All offenders that receive a flag are monitored and additional resources,

referrals, and supports are offered to the victims. Occasionally offenders will be flagged as high risk when officers in the IPV Unit are notified by another police agency that a high risk offender has moved into the jurisdiction of London, Ontario.

Description of Data

The dataset described in the remaining area of the results involve an assessment of all IPV offenders between Jan 1, 2009 and Dec 31, 2019. In total, there were 9,035 offenders who were responsible for a total of 45,426 IPV crimes (as shown in Figure 1). These offenders may have committed any crime under the criminal code that involved a victim as an intimate partner.

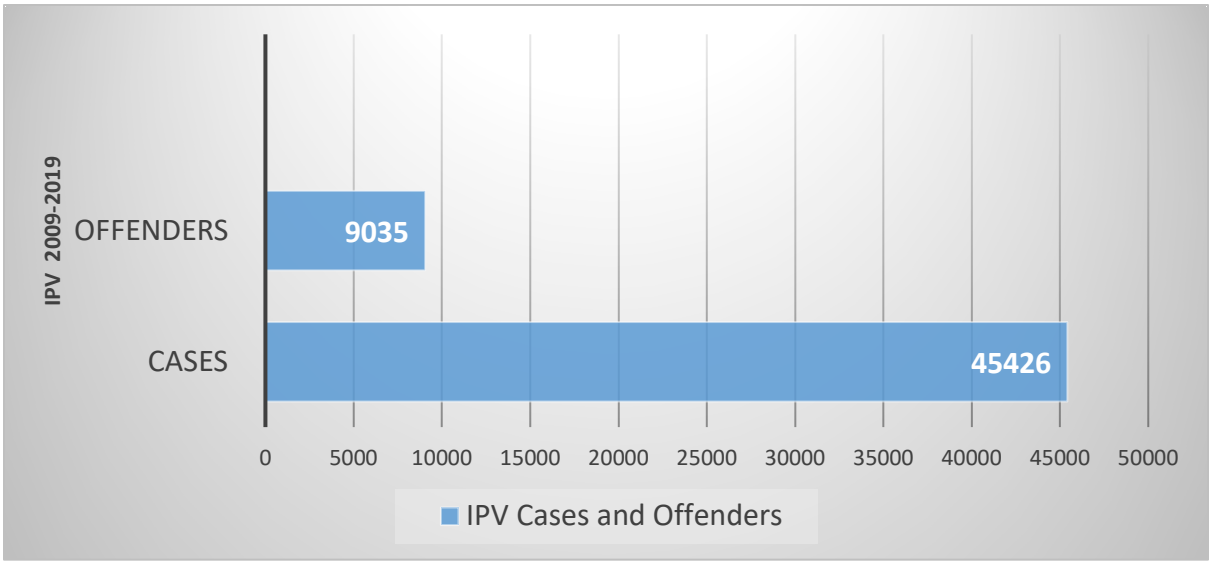

Figure 1: IPV Cases and Offenders 2009-2019

This dataset, as illustrated in figure 1, only considers investigations that resulted in criminal charges and does not consider all the incidents that police respond to of reported IPV.

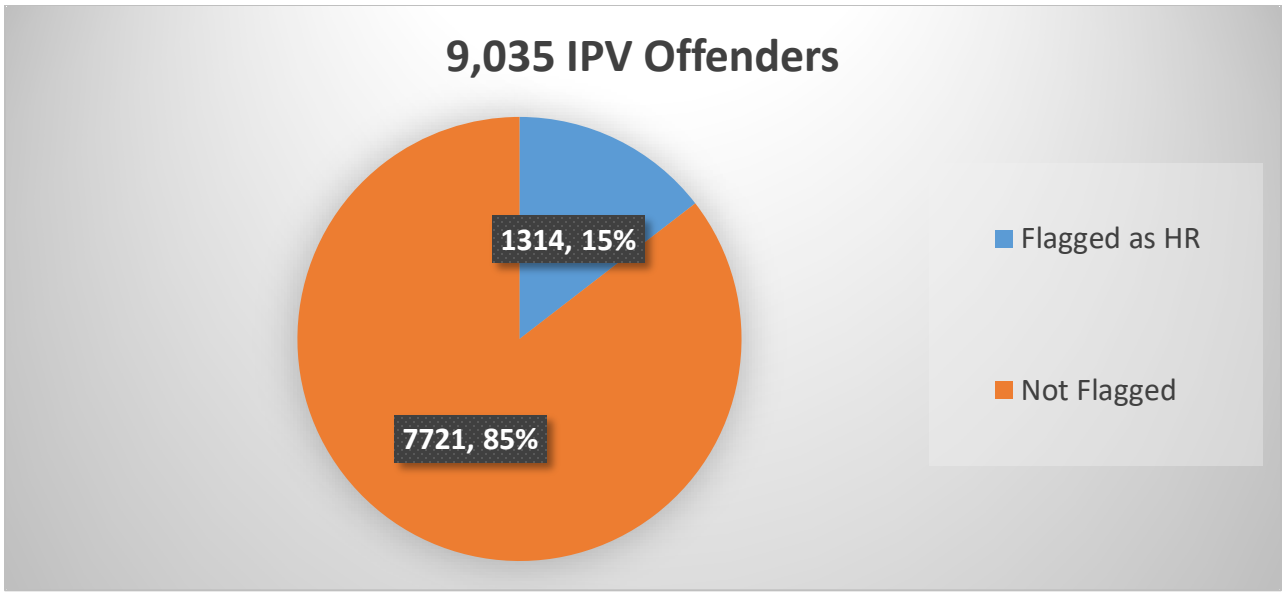

Figure 2: Number of Offenders Flagged as High Risk Vs Not Flagged

Of the 9,035 offenders, 1,314 offenders were classified, after auditing, as high risk for committing further domestic violence and causing more injury in accordance with the ODARA risk assessment tool. This finding is illustrated in figure 2.

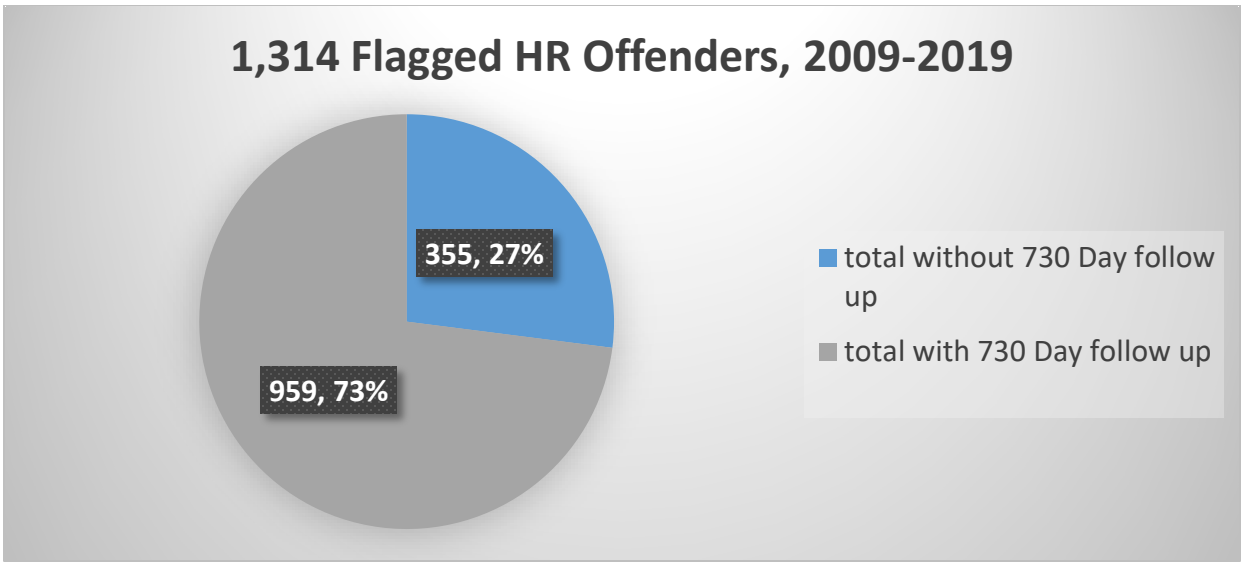

Figure 3: Breakdown of 1,314 Offenders with 730 Days Post Flag Follow Up

Figure 3 illustrates that 959 offenders on the list of 1,314 total offenders flagged between Jan 1, 2009 and December 31, 2019 had a full 730 day post flag time in order to provide a fulsome assessment of their post-flag offending. Offenders that were flagged after July 30, 2018 were not included in the assessment as their flag had not reached 730 days prior to the analysis.

Table 1: Age Description of Flagged Offenders

Mean age when flagged	36
Median age when flagged	34
Youngest age when flagged	16
Oldest age when flagged	85

The age range of offenders that are flagged varies in great detail ranging from 16 to 85 years as illustrated in table 1. Of note the mean age that offender is flagged is 36 years.

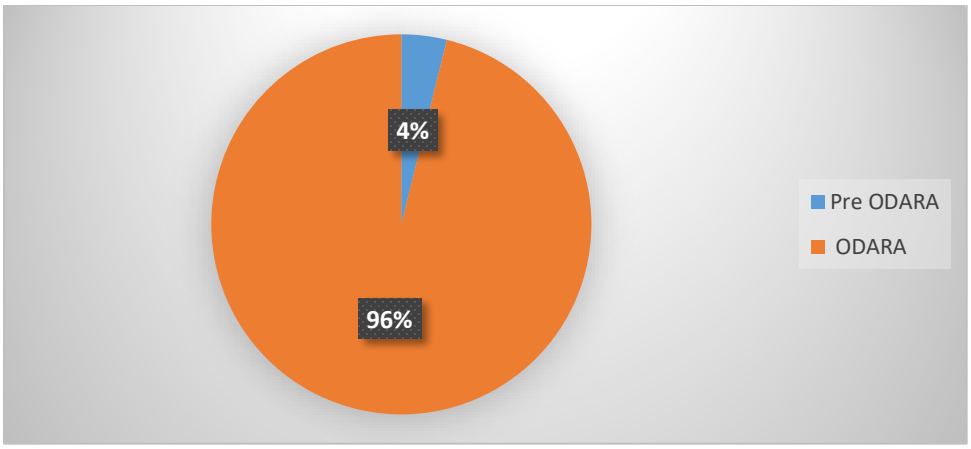

Figure 4: Total Number of Offenders Flagged Before and After ODARA was Introduced

As illustrated in Figure 4, the majority of offenders, 922, were flagged after the IPV Unit began using ODARA as the primary method of assessing offenders as High Risk beginning in 2012. It should be noted that even after ODARA was introduced, on rare occasions offenders were flagged as High Risk using professional judgment due to perceived concerning factors when the offender did not score high risk using the ODARA tool. It was not possible to determine when professional judgment was used as a reason for an offender's flag.

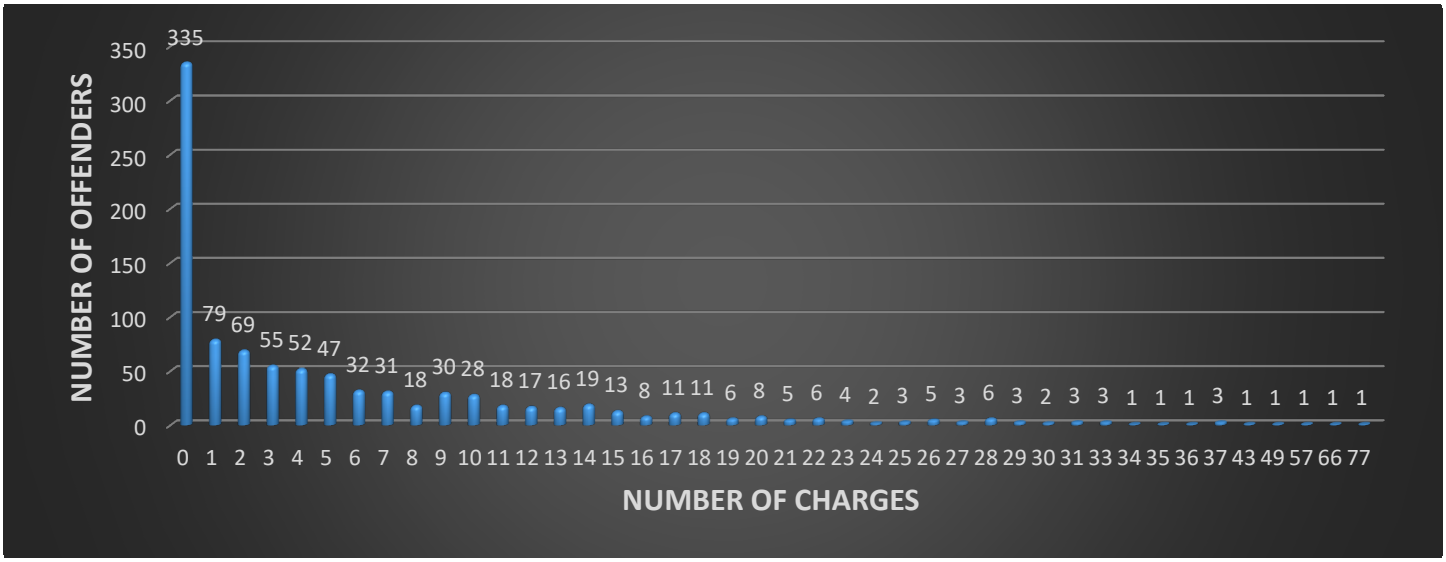

Figure 5: Frequency of Offending in a 730 Day Follow Up

The majority of offenders, 335, committed 0 crimes in the 730 follow up after having been flagged as high risk. This frequency of offending is shown above in figure 5. In contrast, 1 offender was charged with 77 crimes in 730 days.

True Positives

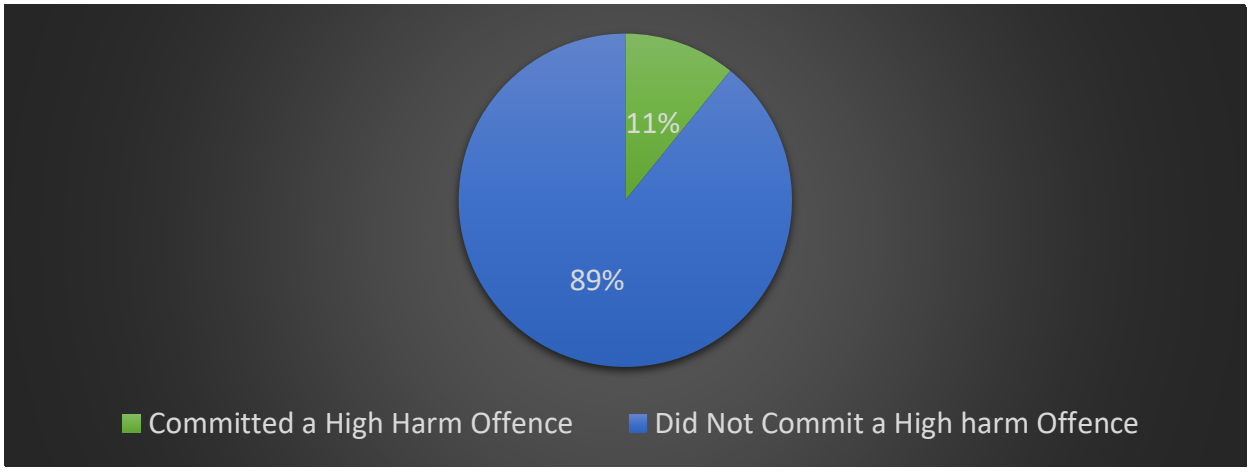

Figure 6: Percentage of Offenders Charged with a High Harm Crime within 730 Days

As displayed in figure 6, the percentage of offenders that were charged with a high harm offence in the 730 days after being flagged as high risk was just 11%. The 11% equated to 104 offenders of the 959 total offenders that experienced a full 730 day follow up period.

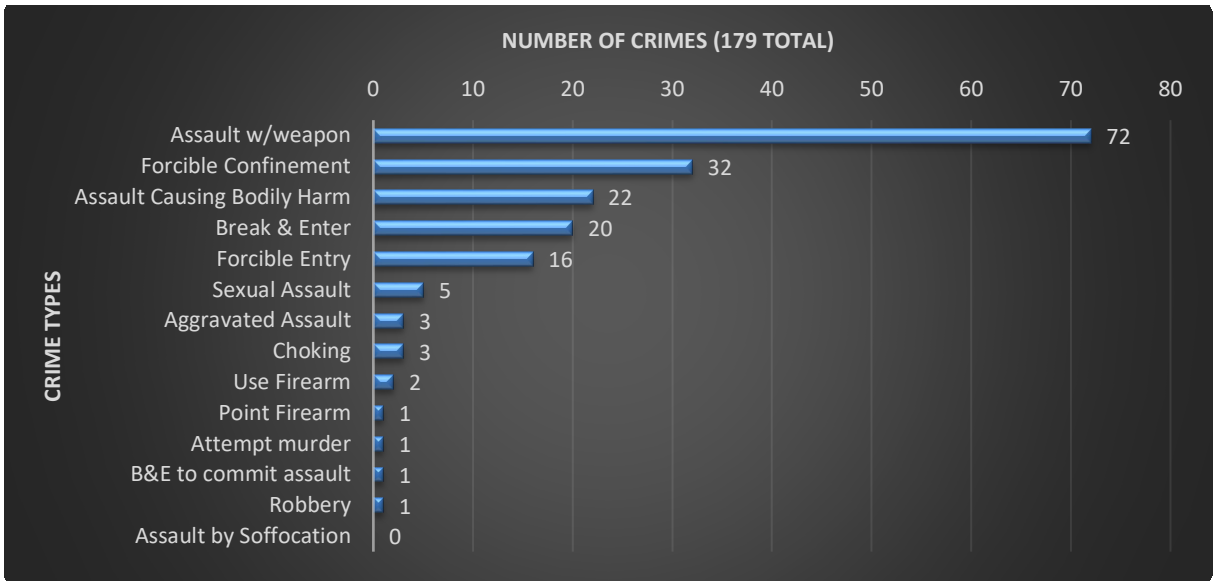

Figure 7: High Harm Crimes Committed by Forecasted High Risk Offenders in a 730 Day Follow Up

Figure 7 breaks down the number and types of high harm crimes that were committed by the 104 offenders that were correctly forecasted to be high risk. Of interest is that in figure 6 the total crimes was 179 which was committed by the 104 'true positive' offenders. On average, each offender was charged with 1.72 high harm crimes. Also of note was that that assault with a weapon accounted for 40% of these crimes and there were no lethal offenders predicted. For clarification, this is offending behaviour, only within 730 days after having received a flag. Some offenders may have committed additional crimes preceding the flag or after 730 days expired.

False Positives Among the Forecasted High Risk Offenders

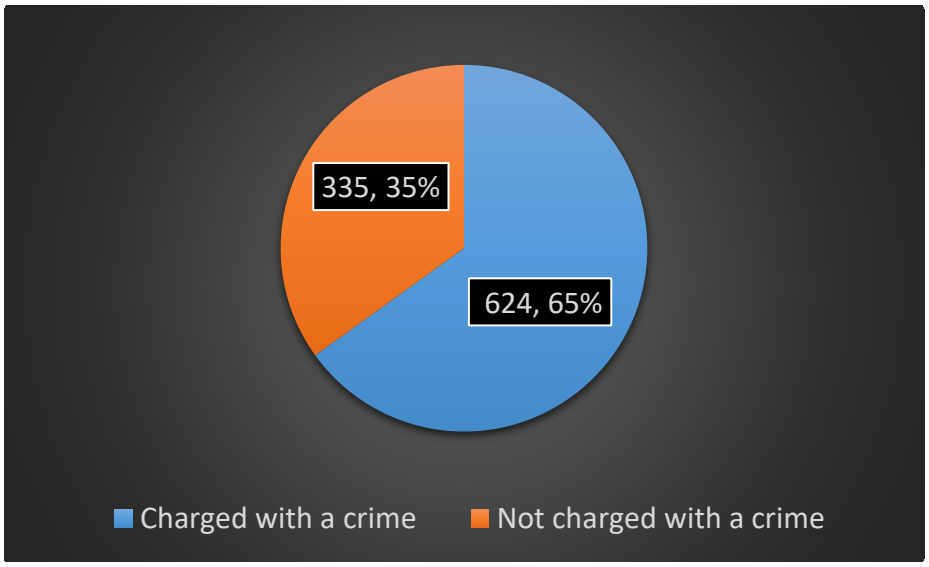

Figure 8: Flagged High Risk Offenders Charged Vs Not Charged with a Crime after 730 Days

Figure 8 indicates that overall, 65% (624) of the offenders that were flagged as High Risk were charged with a criminal offence (not necessarily IPV) in a 730 day follow up period.

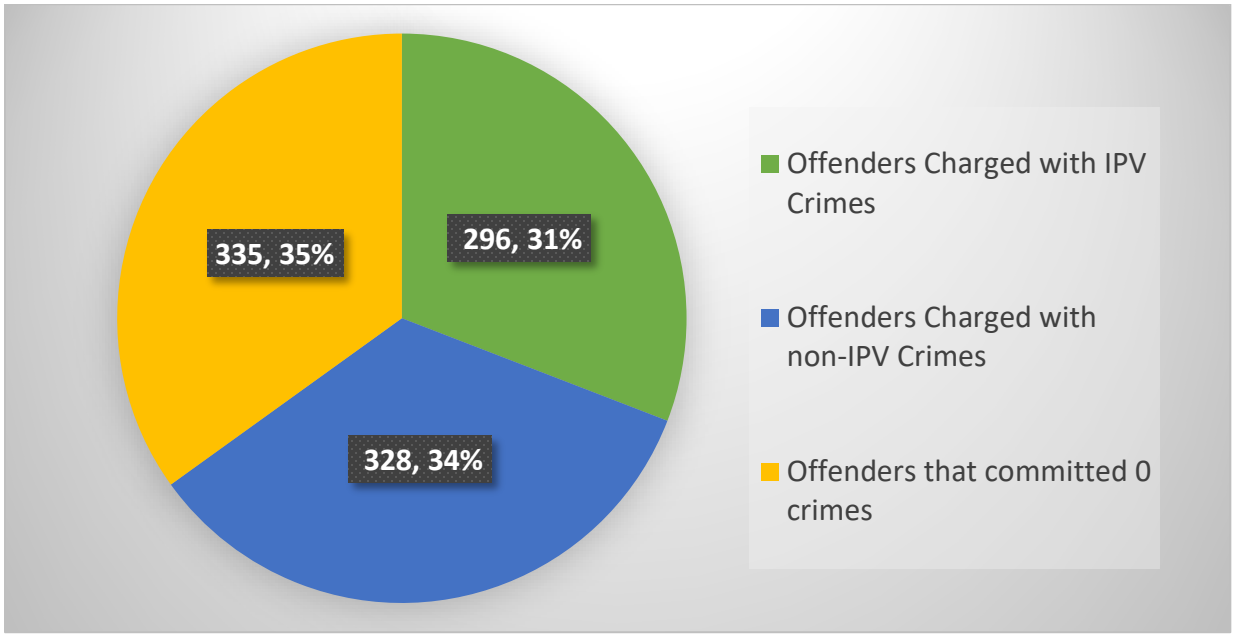

Figure 9: Breakdown of Flagged High Risk Offenders that were Charged with 0 Crimes, Non IPV Crimes, and IPV Crimes

As shown in Figure 9, in a 730 day follow up period 296 of the 959 offenders went on to be charged with an IPV crime versus 328 that that went on to be charged with one or more crimes that were not classified as IPV. For greater clarity, the 328 offenders were only charged with Non-IPV crimes in the follow up period. This finding illustrates that the flagging procedure is more likely to predict general re-offending than IPV offending and only 1/3 of flagged offenders go on to commit further IPV.

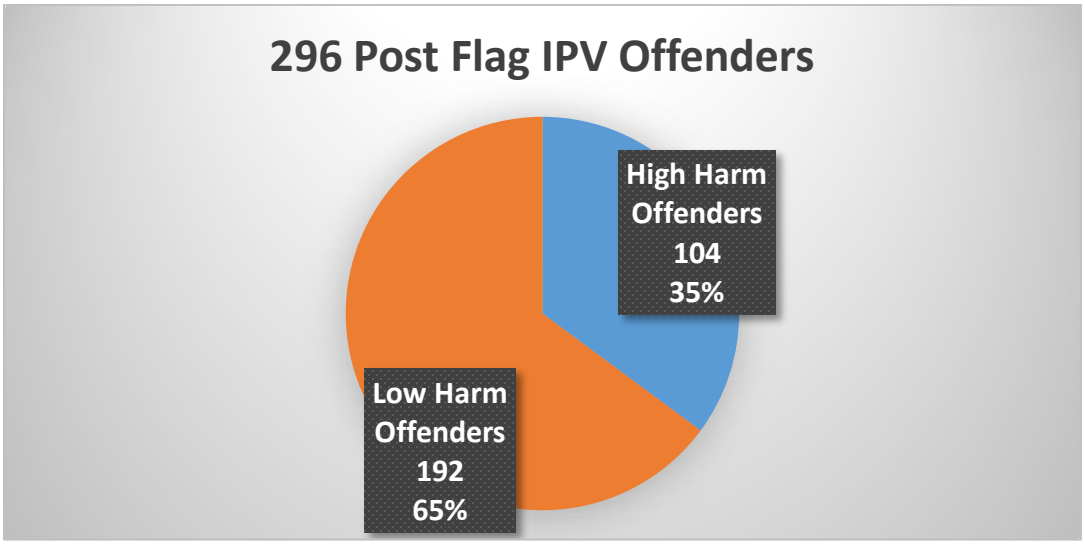

Figure 10: Offenders that were Charged with 1 or more High Harm IPV Crimes Vs Non-High Harm IPV Crimes

296 offenders went on to be charged with an IPV crime after being flagged as High Risk. Of the 296 total offenders, 35% committed a high harm crime as illustrated in figure 10. This is not a percentage of the total population of flagged offenders, but rather a percentage of the offenders that committed an IPV crime in the follow up period.

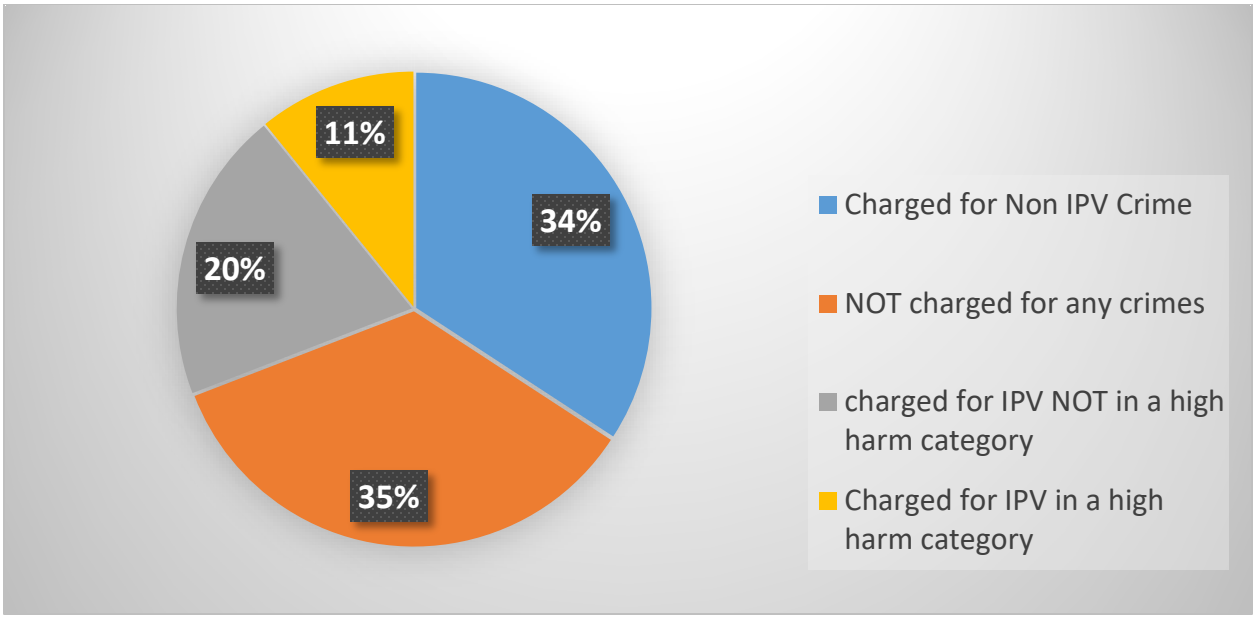

Figure 11: 959 Forecasted High Risk Offenders After a 730 Day Follow Up

Figure 11 provides a full picture of the breakdown of the 959 offenders and their post flag offending behaviour after 730 days. In other words, true positives (11%) and false positives (89%) in overall totals.

All IPV High Harm Offenders & False Negatives

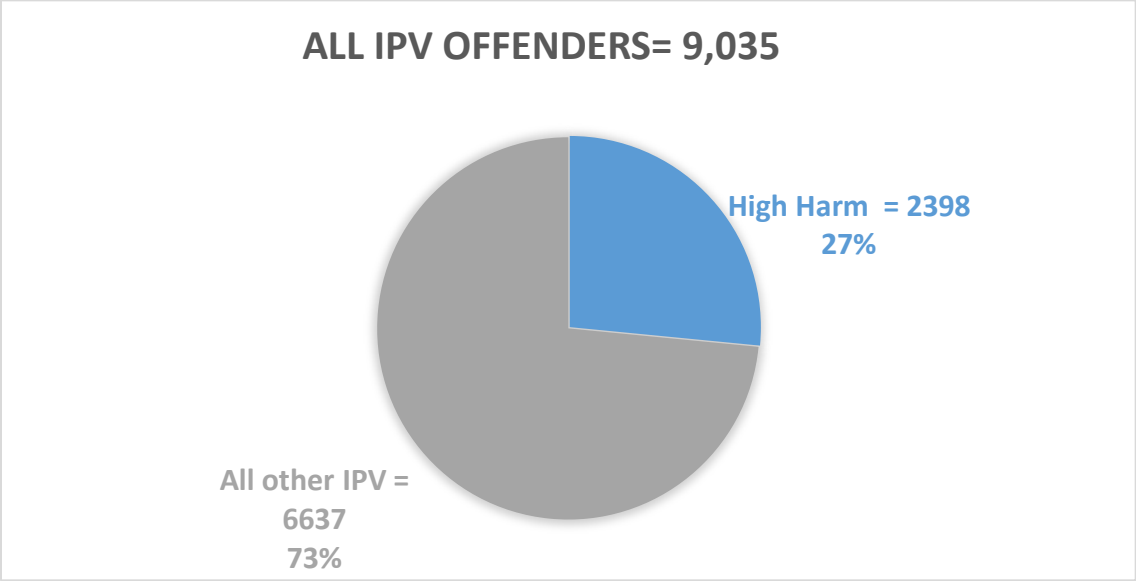

Figure 12: Total Number of High Harm Vs Non-High Harm IPV Offenders 2009-2019

Figure 12 illustrates an extraction of *all* IPV crimes from the London Police Versaterm database that identified 9,035 unique offenders between 2009 and 2019. A related query of all IPV offenders that committed one or more of the identified high harm crimes revealed a total of 2,398 unique offenders of the 9,035 total IPV offenders.

Table 2: Age of First High Harm IPV Crime

Mean age	34
Median age	32
Youngest age	16
Oldest age	86

Of the 2,398 offenders that were charged with one or more of the identified high harm crimes between 2009 and 2019 the average age of the offender was 34. Also of interest is the wide age range between the youngest and oldest offender illustrated in table 2.

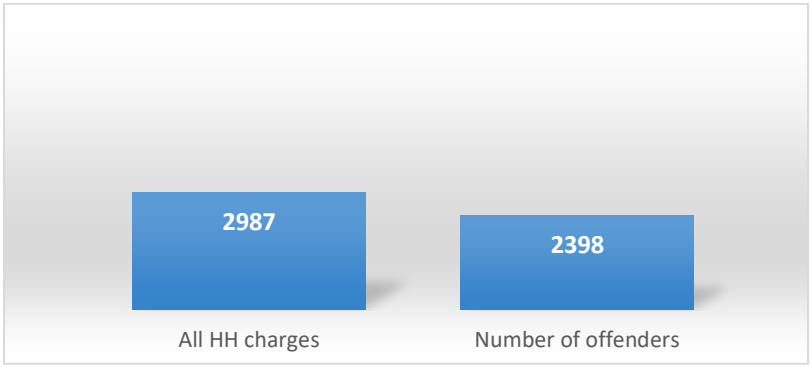

Figure 13: Total Number of High Harm Offenders Compared to High Harm Charges

Figure 13 illustrates that each of the 2,398 high harm offenders are responsible for an average of 1.24 high harm crimes between 2009 and 2019.

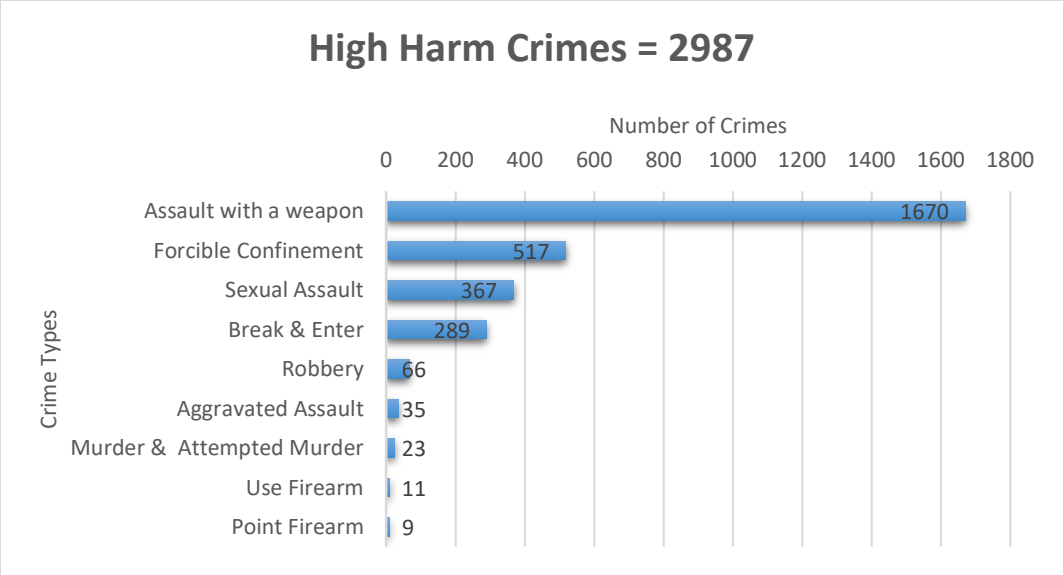

Figure 14: Breakdown of High Harm Crimes by Category between 2009 and 2019

An analysis of the frequency of each IPV high harm crime type indicated that assault with a weapon accounted for 56% of all of the IPV high harm crimes. The offences of murder and attempted murder combined accounted for 0.8% of all of the IPV high harm crimes. To clarify of all of the 23 offenders that were charged with murder and attempted murder only two were charged with the crime within 730 days of being flagged as high risk (true positive). Of the remaining 21 (false negatives), 9 offenders were flagged *after* having committed the murder or attempted murder and 11 were *never* flagged at all. One offender was flagged three years *before* having committed and attempted murder. These findings are shown in figure 14.

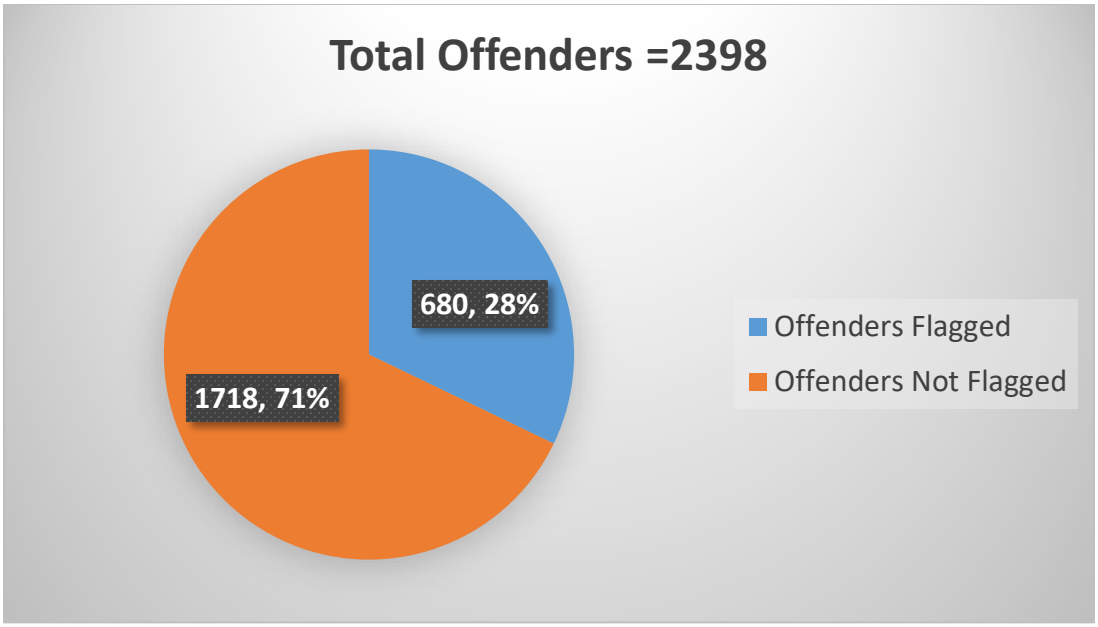

Figure 15: Total Number of False Negative IPV High Risk Flags 2009-2019

Figure 15 illustrates that 71% offenders that committed one or more of the identified high harm crimes were not flagged as high risk at any time either before or after they committed a high harm crime (false negatives). Equally as important, 28% were flagged as high risk at some point either before (true positive) or after they committed an identified high harm crime. For clarity, 28% was not necessarily predicted as high risk at the right time. 11% committed a high harm crime within a 730 day follow up after being predicted to do so while the remaining received their flag outside of that the 730 days. Some may have been flagged and it expired before they committed a high harm crime, or they were flagged after or as a result of a high harm crime.

All Non High Harm IPV Offenders & True Negatives

As previously displayed in figure 12, the total number of non-high harm IPV offenders that were charged between 2009 and 2019 was 6,637 which was 73% of all of the total IPV offenders (9,035). Figure 16 below, indicates that 91% of the offenders were true negatives, meaning they were correctly forecasted as not high risk. It should also be noted that 9% of offenders were flagged as high risk at some point either before or after committing one or more non-high harm crimes. In other words, they committed a non-high harm crime and were in-correctly predicted to be harmful.

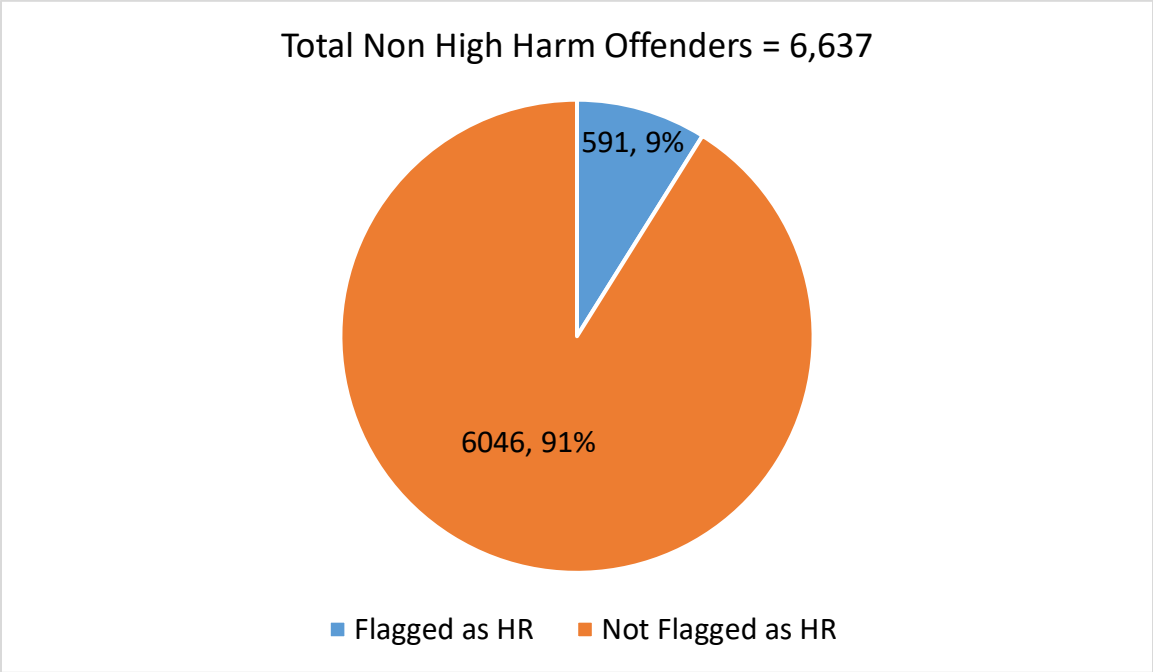

Figure 16: Number of Non-High Harm Offenders Flagged vs Not Flagged as High Risk

Table 3: Confusion Matrix

N = 9035	**Actual HR**	**Actual Not HR**	Total	
Predicted HR	TP = 104	FP= 855	959	Precision = 10.8%
Predicted Not HR	FN = 1718	TN =6036	7663	
Total	1822	6891		Error Rate = 27.5%
	True Positive Rate = 5.7% (sensitivity)	True Negative Rate =87.9% (specificity)		Accuracy = 67.9%

The confusion matrix as shown in table 3 provides an evaluation of the model used for predicting high versus not high harm offending in this study. As illustrated in the table the overall accuracy of the model under study is 68%. In terms of the sensitivity, the model indicates is less than 6% of the actually high risk individuals were correctly identified. However, the model has a high level of specificity in identifying the rate at which individuals were correctly identified as not high risk.

Suicidal Tendencies Flags in the True Positives, False Positives, and False Negatives

Among all of the forecasted High Risk offenders that had a complete 730 day follow up, 52 also had a suicidal tendencies flag. For clarification, the date that the suicidal tendencies flag was added is unknown. As such, the flag may have been added before or after an offender was charged with an IPV crime.

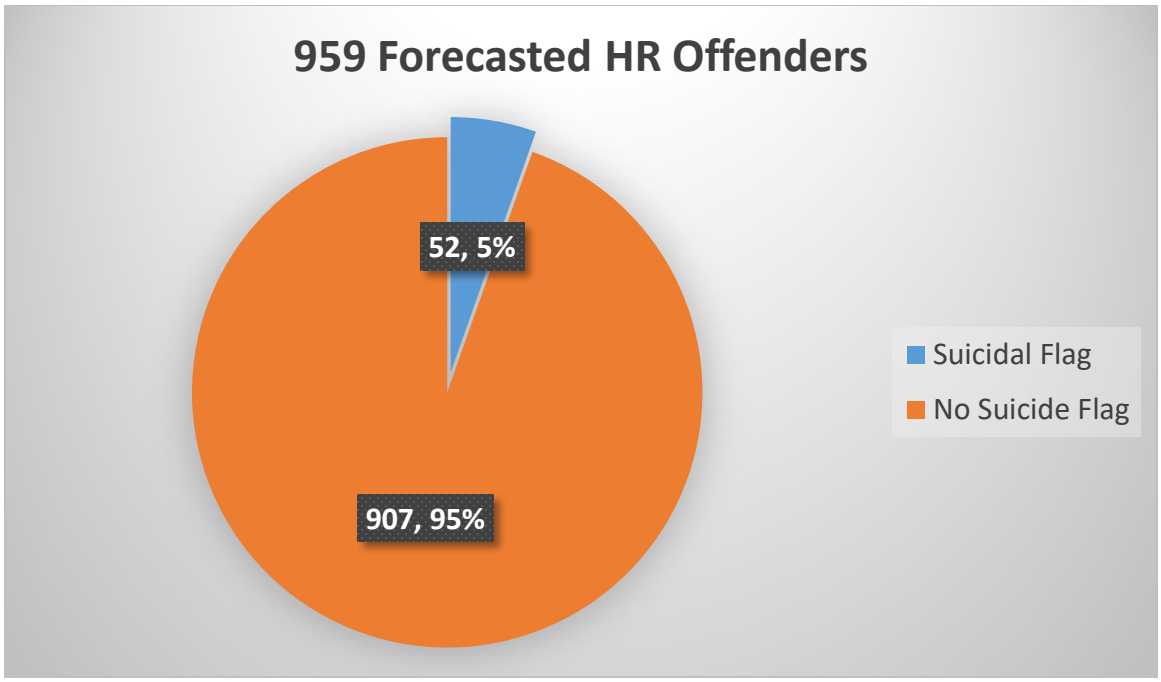

Figure 17: Total Number of Suicidal Flags Among the Forecasted High Risk Offenders

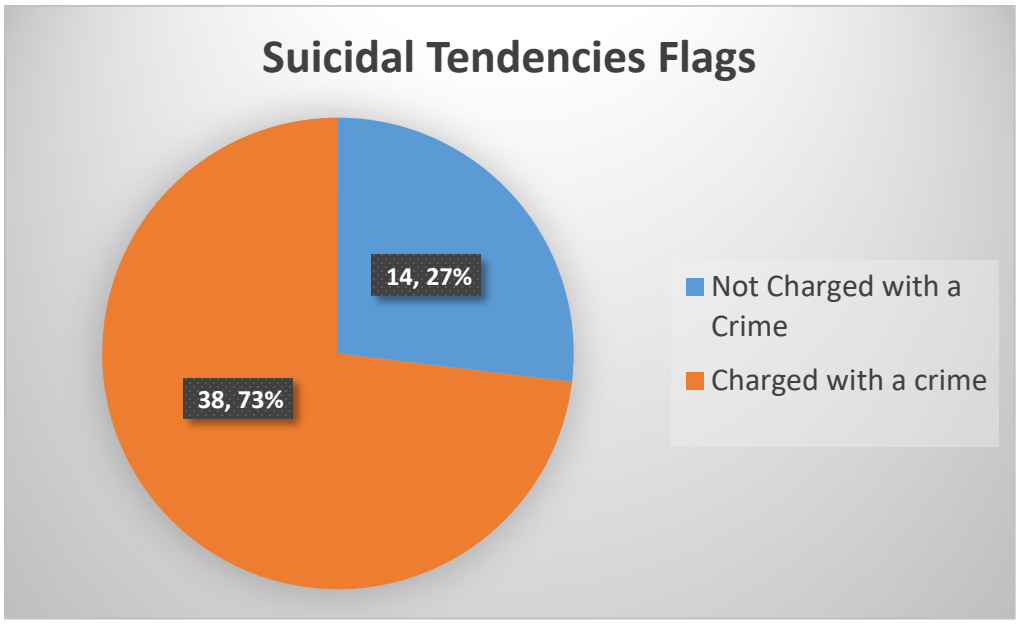

Figure 18: Suicidal Tendencies Flags Among False Positives - Charged Vs. Not Charged

Of the total 52 suicidal tendencies flags 73% were among those offenders that went on to be charged with a crime in any category in a 730 day follow up period. This is displayed in figure 18.

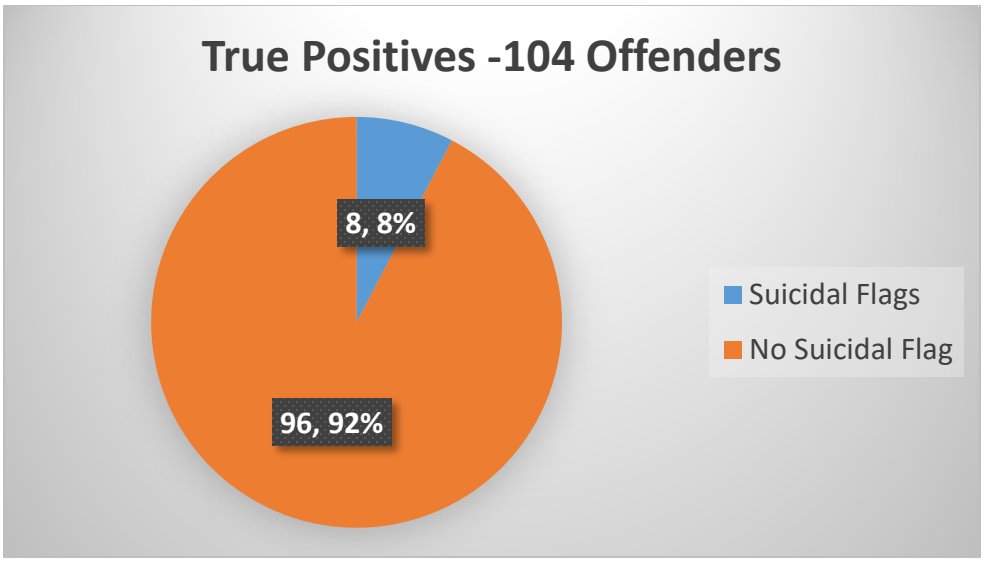

Figure 19: Suicidal Tendencies Flags Among the True Positives

For those individual that were correctly forecasted to be a high risk IPV offender, the likelihood that they also had a suicidal tendencies flag was 8%, as shown in figure 19.

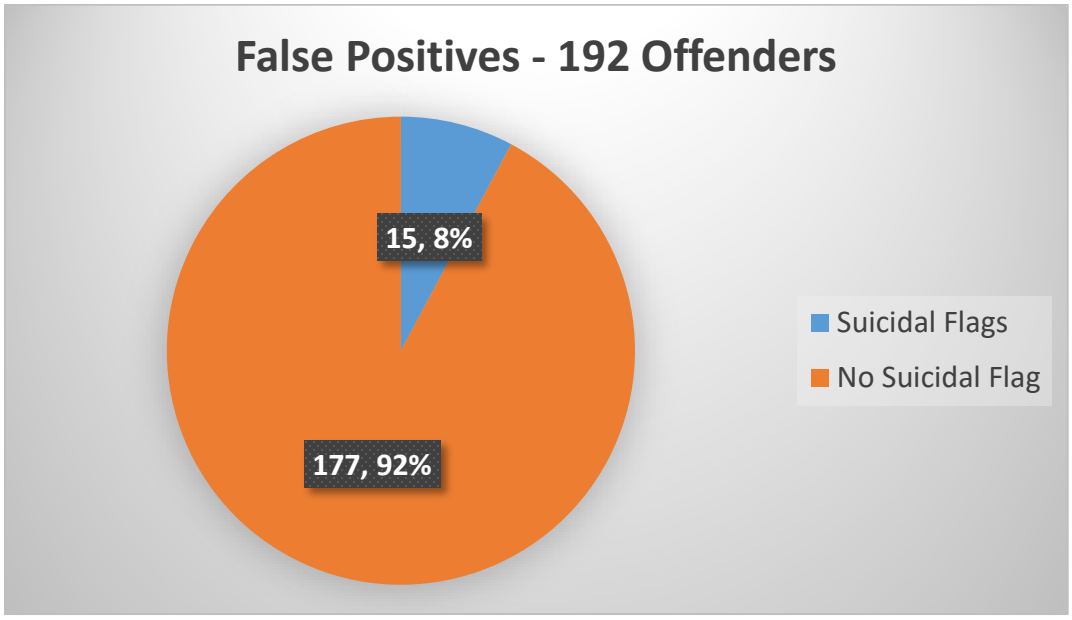

Figure 20: Suicidal Tendencies Flags Among False Positives - IPV Offenders in Non-High Harm Categories

Similarly to the True Positives, Figure 20 indicates that 8% of flagged High Risk IPV offenders that went on to commit only IPV in non-high harm categories had suicidal tendencies flags.

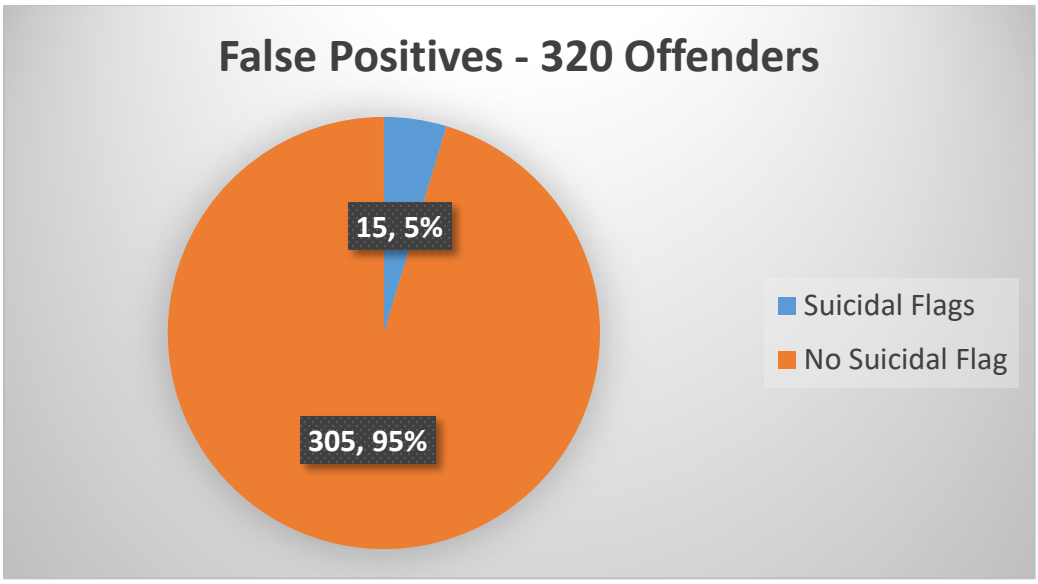

Figure 21: Suicidal Tendencies Flags Among False Positives - Non IPV Offenders

Figure 21 indicates that 5% of flagged High Risk IPV offenders that were charged with Non IPV crimes in a 730 day follow up had suicidal tendencies flag. Offenders that went on to be charged with IPV in a high harm category or non-high harm category were twice as likely to have a suicidal tendencies flag than those that were not charged with any crimes in a 730 day follow up. This is illustrated below in Figure 22.

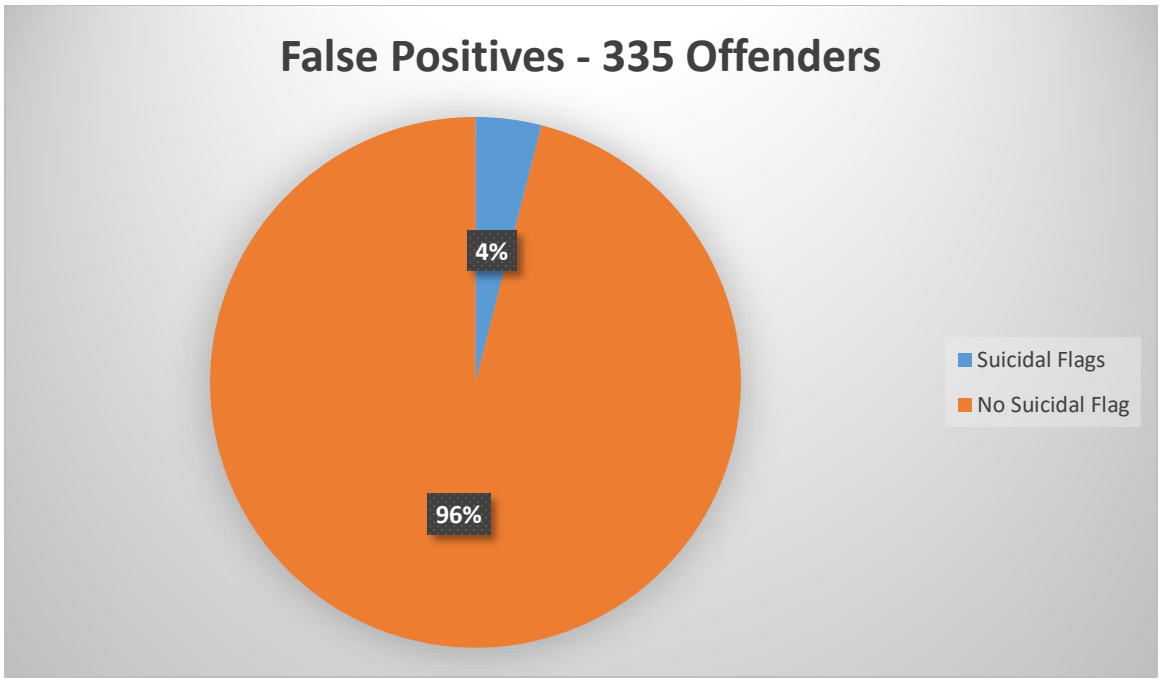

Figure 22: Suicidal Tendencies Flags Among False Positives - Offenders Charged With 0 Crimes

Suicidal Tendencies Flags and the False Negatives

An analysis of the total number of suicidal tendencies flags among the list of all 2,398 IPV high harm offenders between 2009 and 2019 revealed that only 104 offenders were flagged, as demonstrated in figure 23.

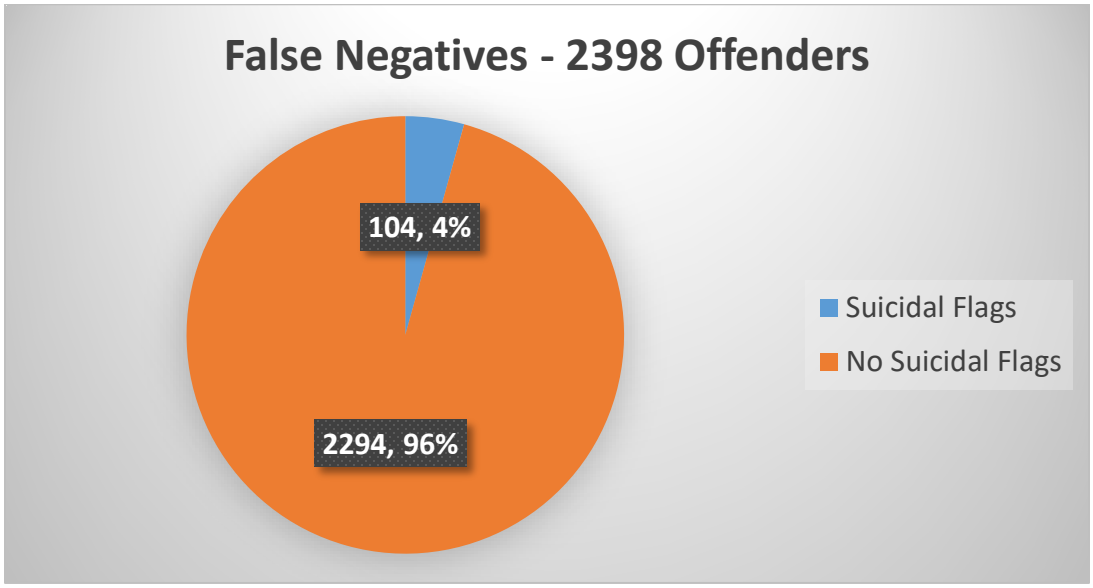

Figure 23: Suicidal Tendencies Flags Among False Negatives

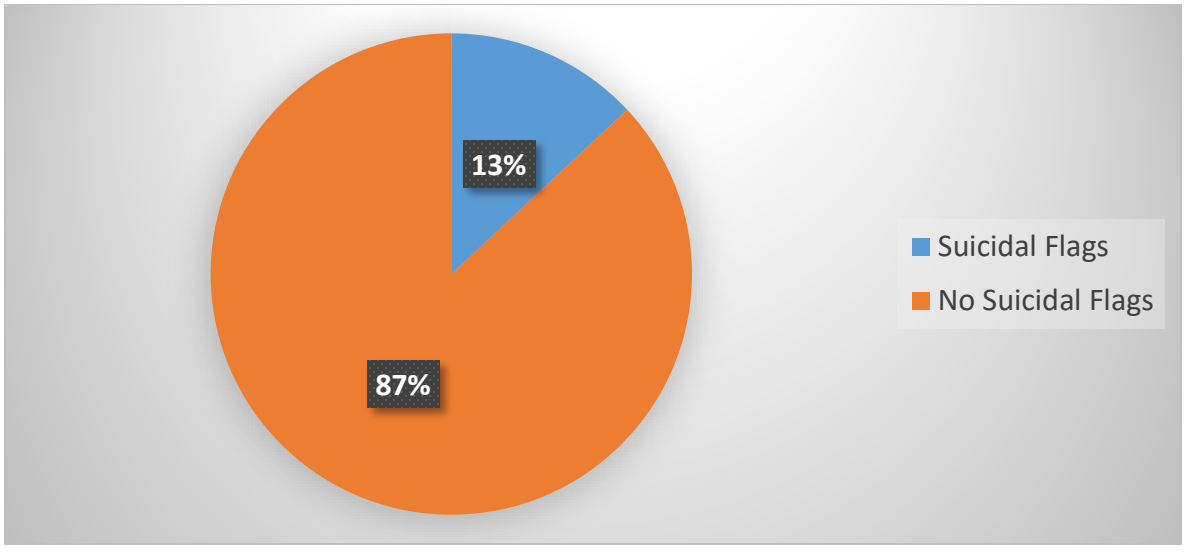

Figure 24: Suicidal Tendencies Flags Among Offenders Charged with Murder or Attempted Murder

Figure 24 illustrates that 13% of most harmful offenders that have committed murder or attempted murder were found to have a suicidal tendencies flag upon review. This accounts for 3 out of 23 offenders. For clarity, it is unclear if the suicidal tendencies flag was added before or after the high harm offence. This figure simply considers all offenders that committed murder or attempted murder between 2009 and 2019 and does not consider whether or not they were flagged as high risk.

Summary of Results

How were the 1,314 forecasted high risk persons identified?

It is clear from interviews with members assigned to the IPV Unit and review of procedures that the process of identifying high risk IPV offenders in London, Ontario has evolved over time. When the Domestic Violence Unit was created in 2009 officers were in charge of auditing occurrences where charges are laid and identifying high risk offenders using their professional judgement. As a result of the audit, high risk offenders were brought to the attention of other community stakeholders such as the Crown Attorney and the Children's Aid Society. Very few offenders were classified as high risk during the first two years of the unit's development. The process slowly changed in late 2011 when officers began being trained in ODARA and was consistently used beginning in 2012. However, since the unit's inception officers have occasionally used professional judgement to classify offenders as high risk when they do not reach the threshold using ODARA.

Table 4: Summary of Breakdown of Charges laid after 730 Days and Related Suicidal Tendencies Flags

Category of Post Flag Behaviour	*Number of Offenders*	*Suicidal Tendencies Flags*
Not charged for any crime category	335 – 35%	14 – 4% of population
Not charged for IPV but for some other crime category	320 – 34%	15 – 5% of population
Charged for IPV but not in a high harm category	192 – 20%	15 – 8% of population
Charged for IPV in a high harm category	104 – 11%	8 – 8% of population

As demonstrated with a confusion matrix (table 3) the results of the current process of identifying offenders that are at high risk of high harm is has a less than 6% sensitivity rate while at the same time high rate of specificity (88%) in identifying individuals at low risk of low harm.

Among all perpetrators of the highest harm IPV between 2009 and 2019, how many were not on the list of 1314? How many of these individuals were flagged as having suicidal tendencies?

The results of this query have revealed that the total number of highest harm IPV offenders during this time frame was 2398, and 71% of these offenders were not on the list of 1,314 offenders that were flagged. This finding illustrates a high false negative rate in terms of offenders that have committed high harm crimes and were not ever flagged as high risk, even after committing a high harm crime. The suicidal tendencies flag of this population was just 4% which raises new questions on whether the use of this flag is currently being appropriately utilized. When considering all offenders that committed only murder or attempted murder

between 2009 and 2019, 13% of these offenders had a suicidal tendencies flagged attached to their profile.

Among all perpetrators of IPV between 2009 and 2019, how many were not on the forecasted list of 1314 offenders and did not commit a high harm offence?

The total number of all IPV offenders during the period under analysis was 9,035 and 6,046 of these offenders were appropriately categorized as not high risk. In other words, 91% of the population were true negatives.

Chapter 5: Discussion

"No matter what targets are selected for police resources, no matter how well the police methods are tested, the central management question will always be, "what are police doing to accomplish our objectives, when, where, and with what apparent result?" (Sherman, 2013, p. 391)

The findings of this research have presented some interesting areas of discussion not only about targeting high harm IPV but of the value that can be gained from tracking. This chapter will explore the implications of this study in the areas of theory, policy, future research, and finally limitations.

Theoretical Implications

Repeat Offending and Escalation

The results of this study have theoretical implications in terms of advancing the understanding of repeat offending in predicted high harm IPV offenders. As a result of tracking forecasted high risk offenders for 730 days, it is clear that many of them become repeat offenders (65%). However, when examining whether these offenders commit repeat IPV crimes, this study indicates that 31% of offenders in this subsection of identified high risk offenders go on to commit one or more IPV crimes. This should be taken into context that these offenders do not account for an entire population, rather a population that was predicted to reoffend and cause more injury.

The findings of this study support other recent studies that utilize police data that indicate that between 21 and 24% of IPV involves repeat victimization (Chambers-McClellan, 2002; Bland & Ariel, 2015). Given these findings, it is clear that IPV crimes involve some repeat

victimization and there is merit in efforts to use police data to identify and target those individuals that are most likely to cause the most serious harm.

This study adds to the understanding of repeat offending by isolating and tracking not just the entire population of IPV offenders, but rather those that were predicted to be the most dangerous. Those predicted to be the most harmful were 31% likely to re-offend versus a lower rate of all IPV offenders studied in previous research in this area. This research illustrates the fact that tracking police data adds value to our understanding of IPV in terms of repeat offending. This study brings into question the long held notion that IPV involves a cycle of violence and on-going repeat victimization (Walker, 1984). Furthermore, this study indicates that 69% of the 959 offenders that were predicted to be high risk of reoffending and to cause more serious injury did not commit any further IPV crimes in 730 days after being identified. This finding is similar to other research in this area (Bland & Ariel, 2015; Chambers-McClellan, 2002; Sherman & Berk, 1984). This knowledge can and should be utilized by police services in understanding the value of using resources to focus on identifying the perpetrators that are likely to reoffend.

When considering the notion of escalation and increased frequency of offending, this research adds to the literature in this area by examining police data in relation to offenders that were predicted as high risk as opposed to studying dyads or victim surveys. In this case, escalation was not supported in the majority of cases due to the finding that the most common number of crimes an offender committed post identification was 0 crimes followed by 79 offenders who committed one crime that were not necessarily IPV crimes in a two year follow up.

In terms of increasing frequency and escalation, many offenders (89%), did not escalate in the sense of committing an identified high harm crime as predicted and 35% did not commit any crimes. Overall, 69% were not involved in any IPV crimes after being flagged as high risk. This is similar to research conducted by Barnham et al, (2017) who found that in a follow up of 731 days, 77% of couples were not involved in any further IPV crimes after identification. However, Barnham's research differed from this study which examined just offenders who may or may not have had new partners and only considered offenders that were predicted high risk. It should also be noted that the lack of escalation in this study may be a result of the targeting impact that police and social services have on predicted high risk offenders. This is due to the fact that all of the victims in this study received additional supports and outreach compared to the general population of IPV victims.

Overall, these findings bring into question the theory of escalation and adds credence to the desistance literature by indicating that even offenders predicted to be the most dangerous desist in criminal offending. As a result, police should consider targeting efforts that facilitate this desistance via appropriate referrals and reduce resources spent on efforts to criminalize offenders that are deemed to be a low risk of low harm. While at the same time focusing policing resources on offenders that are deemed to be at high risk of high harm.

Suicidal Ideations

The final theoretical implication considers suicide ideations as a marker for high harm IPV offenders. Many recent studies have begun to shed light on this topic (Bridger et al, 2017; Button et al, 2017; Chalkley & Strang, 2017; Eke et al, 2011; Thornton, 2011). The recent research, as discussed in the literature review, has advanced the theory of suicidal ideations as an indicator of lethal IPV offending. This study has considered whether or not a suicidal

tendencies flag may be a better predictor of high harm IPV offending than the current method of forecasting. Although the findings were retrospective, support for this theory was generated by the finding that over three times as many offenders that were charged with murder or attempted murder had a suicidal tendencies flag compared to offenders that did not commit any crimes after being forecasted as high risk. This finding should be considered with caution given that the total sample of offenders with a suicide flag was small, coupled with the fact that it is not clear if an offender received the flag prior to or after being charged with an IPV crime.

Policy Implications

Enhancements to Identify the Highest Risk of High Harm

Several policy implications are discussed in this section that are relevant not only to the London Police Service, but also for other police and policy-makers throughout Ontario and beyond. First and foremost, is the recommendation to clearly define what it means for an offender to be deemed a high risk IPV offender. If it means a person is high risk of committing a certain crime or subset of crimes that needs to be made clear. If it means a high risk of reoffending at all then that needs to be clearly understood when questions are raised by police executives and the public.

The definition of high risk is critical in order to assess the implications of the false negatives. As show in the result chapter, this study found that 71% of high harm offenders were not assessed as high risk by the ODARA tool or professional judgment over the ten year study period. It should also be noted that none of the IPV murders that took place between 2009 and 2019 were true positives in the sense that the offence took place within 730 days of receiving a high risk flag. Of the 23 offenders that committed murder and attempted murder only 12 had ever received a high risk flag and 9 of them were flagged *after* having committed the murder or

attempted murder. Given the high rate of false negatives identified in this study, enhancements to risk assessments should be explored. Although this study includes assessments based on professional judgment and ODARA, it is clear from this research and previous validation studies that the ODARA tool is useful in identifying offenders that will reoffend in a general sense. Discriminating risk is made difficult using ODARA and professional judgment. It is imperative to note that the ODARA tool does not claim to predict lethal offending and this study and others have shown that it does not predict lethal offending. Government and police agencies should consider leveraging existing police data to identify offenders that are likely to reoffend in a high harm category as opposed to offenders that will reoffend in any category.

As noted in the introduction chapter, the Ontario government established the Domestic Violence Death Review Committee in 2003 for the purposes of providing recommendations to prevent IPV fatalities. As shown this study and many others, identifying the 'needle in the haystack' (Sherman, 2007) is not a simple task due to the fact that IPV fatalities are very rare when compared to the entire population. Given the limitations of ODARA and professional judgment in this regard, there is room to reduce the number of false negatives. A great deal of policing is not subject to analysis and the use or value of police data has been ignored and under-utilized (Bland & Ariel, 2020; Sherman, 2013). Police data are a source of information that is readily available and can assist in answering a number of questions when it comes to targeting intervention strategies for many crimes including domestic violence and assessing the risks (Bland & Ariel, 2020).

This study explored the tracking of the assessments that are not based on police data, but rather professional judgment and a list of questions posed to a victim. Research suggests that suicidal ideations and previous assaults committed against a victim are predictors of high harm

IPV. In order to improve identification of risk, targeting information held by healthcare and social services in relation to suicidal tendencies and IPV needs to be more widely shared with police. Using automatic digital tracking, these markers should be utilized to flag offenders not only for outreach to victims but for police officers attending to a call that could potentially result in serious harm to a victim or themselves.

Procedures for Identification of Suicidal Tendencies

In order to operationalize the use of police data to identify the highest harm IPV offenders there must first be clear criteria established to identify individuals that have suicidal tendencies. Currently in London, Ontario and likely other jurisdictions, the decision to add flag records on individuals for suicidal tendencies and other markers is based on professional judgment. In other words, each officer will make their own determination of what it means for an individual to have suicidal tendencies rather than a consistent definition.

Secondly, there is an overall lack of understanding in the value of identifying and tracking this information. The individual officer must understand the value of this flag, make the determination to add the flag, and go through a manual process of adding the flag. When an identified criterion is met, a digital tracking system should then automatically result in a suicidal tendencies flag record for the individual. This flag record should also be utilized in conjunction with offenders that have been charged with an IPV crime or are subject to an IPV 911 call. The combination of these two markers should digitally prompt actions for officers assigned to the IPV Unit in order to engage in targeting efforts that may have been missed by the current system. It is acknowledged that this system will create a larger pool of individuals to monitor but will also reduce the number of offenders that are at high risk of high harm offending that are not flagged in the current process. In order words, the false negatives will be reduced.

Not only will an automated system with flagged markers reduce the false negatives and prompt outreach to victims, but it will also add great value to officers attending an IPV call involving a specific address or individual. Officers attending IPV calls that meet this specific criterion will be able to arm themselves with valuable information. This will provide the critical ability to respond with the appropriate urgency and knowledge of the risks in order to not only to protect victims but to protect themselves in potentially volatile encounter.

Procedures for Digital Tracking Systems

In light of this study, a number of policy recommendations have been discussed thus far that revolve around changes to targeting practices that have been identified through tracking. The tracking of the performance of the model used to identify offenders as high risk has not been instituted or considered since the IPV Unit in London, Ontario was established in 2009. The tracking of the overall number of IPV criminal charges has been the focus current processes rather than the tracking of the model or practices of identifying high risk offenders. As discussed in this research, there is currently no method of easily identifying whether an ODARA score or professional judgment led to a high risk flag. This can be easily rectified by instituting a checkbox system that can be automatically extracted into a digital monitoring system as opposed to reading reports. If this system were to be introduced, the validity of each method could be tracked and understood independently.

As a result of not utilizing digital tracking or considering the overall effectiveness of the model, a labour intensive manual process had to be undertaken in this study. This was a cumbersome process that could be made simple with a digital tracking system with parameters included to capture the performance of the model. A digital tracking system would allow for

managers to firstly determine how the model is currently performing and set goals for improvement and monitor the process.

Through tracking and monitoring the model, managers will be able to identify the false negatives and risk factors that can be added to the model to improve the accuracy. By reducing false negatives more victims will be identified for outreach and patrol officers will be better informed and prepared when attending IPV calls that have the potential for violence.

Research Implications

Through the advancement of evidenced-based policing, tracking can raise questions that may never have been asked and could improve the ability for police to service the community (Sherman, 2013). In this case, the act of tracking a model of forecasted high risk offenders has raised new questions in how to improve the targeting of high harm offenders.

New questions have been raised in terms of improvements with the knowledge that 71% of high harm offenders are either; a) never being assessed or b) being assessed and scoring under the high risk threshold. Furthermore, tracking has revealed that the remaining 29% are flagged at some point and 11% of those offenders are committing high harm crimes within 730 days after being assessed as high risk. This finding leads to a question of how many offenders are being flagged *because* of a high harm offence that has already been committed. If this is the case, then this begs the question of what value does this process have to victims and what could be done to reach these victims *before* the high harm is committed? Replication of this study in other jurisdictions and increased tracking is needed in order to ensure validity and to answer these questions.

This study attempted to shed light on the forecasting validity of the suicidal tendencies flag but fell short in identifying if it could be a predictive factor because the date the flag was entered is unknown. Future research should be considered that tracks the date of a suicide marker and the subsequent offending behaviour of the individual. This would allow for a clear picture of whether or not this information could predict high harm IPV offending more accurately than the current model. Other identified risk factors, such as a reported IPV assault, could be flagged and tracked to determine if it can be utilized by police to improve the accuracy of the forecasting model and reduce the false negatives.

As discussed in introductory chapter, The Ontario Domestic Violence Review Committee has reviewed IPV fatalities since its inception in 2003. Retrospective studies of cases reviewed by the committee have identified risk factors for IPV murders that include previous assaults and self-harm indicators (Eke et al, 2011). Further research should be considered in testing a police data model utilizing these variables from police records and previous cases in order to test the predictability of these variables in reducing false negatives. As discussed previously, data held by the police are currently under-utilized as potentially valuable in prediction of harm. Further research is needed to better understand its value.

Study Limitations

This chapter concludes with a discussion on the limitations of this study. By examining criminal histories only there are limitations in providing a fulsome understanding in terms factors that contributed to what occurred in the follow up period for each individual. For example, the low rate of true positives (11%) may be due to individuals being incarcerated or moving out of the jurisdiction. In addition, the true positives may be reduced because of the targeting efforts that

have effectively reduced the offending or encouraged the victim to seek help or leave the relationship. In other words, the 11% true positive rate could have been due to a high quality of interventions by police and social services that cannot be understood by this research. By looking at only an offender's IPV crimes over time does not provide details such as relationship or employment status that may provide insights into their offending behaviour. This study is designed to only understand the current model of forecasting a large data set of offenders.

A second limitation of this research is that un-reported crime is not considered. It is understood that the number of crimes committed in each category of examination of true negatives, true positives, false positives, and false negatives is likely under-represented. However, as indicated in the literature review section the rate of harmful crimes being under-reported is less likely than less severe crimes (Ariel & Bland, 2019; 2020). Additionally, examining large data sets held by police should not be ignored or minimized as valuably simply due to under-reporting.

A third limitation of this study relates to method of the identification of high harm offences. It is acknowledged that this list of crimes used to determine high harm is not standardized or utilized by any other agency. Police and policy-makers have not yet considered what IPV crimes are more harmful than others. Perhaps this is due to the argument that all IPV causes harm and the reluctance to minimize the impact of that these crimes have on a victim. It is difficult to quantify the harm of a single event against a lengthy relationship of emotional or multiple minor assaults. It is acknowledged that a list of crimes to define harm is not without limitations. However, a method is needed to define, with more precision, what it means for an offender to be high risk. One may suggest that the Canadian Crime Severity Index (CSI) could have been exclusively used for this study. However, the crime severity index does not consider

the harm of a crime committed by a stranger versus an intimate partner and thus the CSI was used to select the most harmful crimes that could be committed against an intimate partner. A meaningful list of high harm crimes was compiled in the context of IPV based on a review of the Canadian Crime Severity Index and professional judgment.

It is further acknowledged that the use of the suicidal tendencies flag in this study was limited. The suicidal tendencies flag was a not used in a predictive fashion due to the lack of dates associated with the flag as well as the low number of flags present. However, this provides an opportunity for improvement in data gathering and a new understanding of the value of capturing this data. The under-utilization of the suicidal flag is in of itself interesting because it underscores areas of improvement and procedures needed to standardize its use. Overall, the current study is limited in this regard, but provides insight for further research.

A final limitation is the possibility of errors due to the necessity of having to manually count offending behaviour. There is the possibility that manual counting and the requirement to review cases to determine if a case was related to IPV may have resulted in errors. Unfortunately, given the current system there is not an alternative method in this case. There was also the problem of trying to isolate the crimes of forcible entry and choking in the false negative calculation. This was due to the fact that that in terms of crime types these crimes can only be searched by the term 'criminal code other' which includes a number of crimes. Due to this fact it is anticipated that some of these crimes were missed in the false negative calculation.

Despite the limitations, this research has advanced the understanding of escalation and repeat offending in a subset of forecasted high risk IPV offenders as well the potential benefit of utilizing police data to improve targeting. This study has provided policy makers and police executives actionable recommendations to enhance targeting of IPV and begin using digital

tracking models to determine the results. Additionally, this study has set the foundation for further research in terms of and testing predictors of high harm IPV using police data.

Chapter 6: Conclusion

As discussed in the introductory chapter, the police response to IPV in Ontario, Canada has evolved following two inquests involving IPV fatalities and the subsequent forming of the Ontario Domestic Violence Death Review Committee (DVDRC) in 2003. As a result, police have become under increased scrutiny to improve responses to IPV, especially lethal IPV. In 2009, the London Police Service created a specialized unit dedicated to auditing IPV crimes and identifying high risk offenders. By 2012, the London Police Service's IPV Unit was primarily using ODARA to identify high risk IPV offenders for increased targeting and increased supports provided to victims.

The Ontario DVDRC 2018 Annual Report provided an executive summary of common risk factors of all IPV murders since the committee's inception. It was found that 71% of all cases involved repeated IPV (Office of the Chief Coroner, 2019). Although not all of the previous cases involved reports to police, this finding illustrates the unique position that police have in intervening in many of these cases to prevent fatalities. The report also indicated that a perpetrator who was depressed was present in 50% of cases and a perpetrator that was suicidal occurred in 44% of cases associated with IPV murders. The findings of the DVDRC report combined with other recent research on the risk factors of high harm IPV and validity of risk assessments inspired the research design for this study.

This study examined a subset of 1,314 IPV offenders in London, Ontario that were forecasted as high risk in terms of committing more assaults and causing more injury in a shorter time frame. The definition of high risk was discussed as lacking in precision and requires greater clarity in order to assess the accuracy of the model of forecasting. In order to assess the model,

a list of IPV crimes were identified as the highest harm using professional judgment and consulting the Canadian Crime Severity Index. Each offender's criminal behaviour was examined for a period of 730 days after they were identified as high risk in order to answer a number of questions in relation to the accuracy of the forecasting model. This research also examined suicidal tendencies among offenders in each category in order to shed light on how this flag could be improved and utilized to predict IPV high harm offending.

As a result of this assessment, it was found that the forecasting model, which is primarily based on ODARA, forecasts general recidivism in two-thirds of cases and one third of these re-offended in an IPV category. This finding is consistent with the existing research in terms of the predictive validity of the ODARA (Eke et al., 2011; Hilton et al., 2004; Hilton & Eke 2016).

The critical difference about this research compared to other ODARA studies is that it has questioned the predictive validity of a high risk ODARA score with reference to high harm IPV, and how many high harm IPV offenders are not captured in this model. This research has shown that 71% of high harm IPV offenders are not captured with this model and are not subject to targeting strategies. In other words, 71% of offenders that commit high harm crimes are either not assessed or assessed and do not reach the high risk threshold. A rate of 71% in terms of false negatives illustrates the difficulty in identifying the most harmful offenders with the current model of forecasting.

In a day of increased public scrutiny, reduced resources, and improvements to technology police agencies and policy makers should consider the notion that this model can be improved. The goal of the forecasting model should be to isolate and identify the highest harm individuals for targeting. Furthermore, a high rate of false positives and false negatives should

be expected and understood by police leaders when engaging in forecasting models that are not tracked or examined for accuracy and improvements.

In terms of theoretical concepts, the research aimed to gain further understanding in the theories surrounding repeat IPV offending and escalation. Repeat offending has been well established in both victim surveys and quantitative police data studies. This study provided evidence that 31% of offenders predicted to be the most harmful re-offend, which is slightly higher than previous studies of *all* IPV offenders. The knowledge gained from this information is valuable in order for police personnel to make decisions on whether or not to allocate resources for targeting offenders and victims to prevent repeat offending. This research illustrates the value in tracking IPV in terms of repeat offending in order to understand the impact that targeting efforts may have.

In terms of increasing frequency and escalation, 89% of the flagged high risk offenders did not escalate in the sense of committing an identified high harm crime and 35% did not commit any crimes. The low rate of escalation may in fact be due to increased supports to victims and police targeting efforts. Of interest is that overall, 69% of offenders were not involved in any IPV crimes in a 730 day follow up. This data adds value to the existing research in a Canadian context which illustrates that even the predicted highest harm offenders are likely to desist in offending. In light of this information, police services should consider what targeting practices should be utilized to facilitate desistance such as diversion and social service interventions rather than efforts that may bring the offender back into the criminal justice system.

The findings of this research suggest that an improved forecasting model can be achieved through utilizing police data in a machine learning strategy, to create a model that identifies individuals with a history of IPV and suicidal tendencies. These two risk factors have been

established in research both in Canada and abroad and could be utilized to improve targeting by building a model that begins with these two factors. By examining the suicidal tendencies flag in retrospect, this study concludes that three times as many individuals that committed murder or attempted murder between 2009 and 2019 had suicide flags compared to offenders that were predicted as high risk and did not reoffend in a 730 day follow up. It is suggested that by improving procedures regarding the use of the suicidal tendencies flag that this data will be valuable in predicting high harm IPV.

This study aimed to provide a fulsome account of both how offenders are being identified for assessment in London, Ontario as well as the post-identification offending behaviour for those forecasted to be high risk. This research has provided an exploration of both the targeting practice and an assessment of the accuracy of the model by tracking the outcomes. It is clear that the current process, utilizing primarily ODARA, identifies individuals that are likely to engage in repeat offending in general but not IPV specifically. However, it is hoped that this study has provided compelling reasons to improve targeting efforts aimed to reduce the highest harm IPV offending and to spark consideration for evidence-based change among executive decision makers.

References

Barnham, L., Barnes, G.C., & Sherman, L.W. (2017). Targeting Escalation of Intimate Partner Violence: Evidence from 52,000 Offenders. *Cambridge Journal of Evidence-Based Policing 1*(2-3) 116-142.

Bland, M., & Ariel, B. (2015). Targeting escalation in reported domestic abuse: evidence from 36,000 callouts. *International Criminal Justice Review, 25*(1), 30-53.

Ariel, B., & Bland, M.(2019). Is crime rising or falling? A comparison of police recorded crime and victimisation surveys. *Methods of Criminology and Criminal Justice Research (Sociology of Crime, Law, and Deviance), 24*, 7–31.

Bland, M., & Ariel, B. (2020). *Targeting Domestic Abuse With Police Data,* Switzerland: Springer.

Bridger, E., Strang, H., Parkinson, J., & Sherman, L. W. (2017). Intimate partner homicide in England and Wales 2011–2013: pathways to prediction from multi-agency domestic homicide reviews. *Cambridge Journal of Evidence-Based Policing, 1(2 and 3),* 93–104.

Button, I., Angel, C., & Sherman, L. (2017). Predicting Domestic Homicide and Serious Violence in Leicestershire with Intelligence Records of Suicide Ideation or Self Harm Warnings: A Retrospective Analysis. *Cambridge Journal of Evidence-Based Policing, 1 (2-3)*, 105-115.

Campbell, J. C., Webster, D., Koziol-McLain, J.,Block, C., Campbell, D., Curry, M., Gary, F., Glass, G., McFarlane, J., Sachs, C., Sharps, P., Ulrich, Y., Wilt, S., Manganello, J., Xu, X., Schollenberger, J., Frye, V., Laughon, K. (2003). Risk factors for femicide in abusive relationships: Results from a multisite case control study. *American Journal of Public Health* 93(7) 1089-1097.

Campbell, J. C., Glass, N., Sharps, P.W.,Laughon,K., & Bloom, T. (2007). Intimate partner homicide - Review and implications of research and policy. *Trauma Violence & Abuse* 8(3) 246-269.

Chalkley, R., & Strang, H. (2017). Predicting domestic homicide and serious violence in Dorset: a replication of Thornton's Thames Valley Analysis. *Cambridge Journal of Evidence-Based Policing, 1(2 and 3)*, 81–92.

Chambers-McClellan, A., (2002). Evidence for the escalation of domestic violence in 911 call records Doctoral dissertation, Medical College of Georgia.

Conroy, S. (2018). Police-reported violence against girls and young women in Canada, 2017. *The Canadian Centre for Justice Statistics*. Canada ed. Ottawa.

Eke, A.W., Hilton, N. Z., Harris, G.T., Rice, M. E, and Houghton, R. E., (2011). Intimate Partner Homicide: Risk Assessment and Prospects for Prediction. *Journal of Family Violence 26*(3), 211-16.

Feld, S. L., & Straus, M. A. (1990). Escalation and desistance from wife assault in marriage. In M. A. Straus and R. J. Gelles edited with the assistance of C. Smith, *Physical violence in American families: Risk factors and adaptations to violence in 8,145 families* (pp. 489-505). New Brunswick, NJ: Transaction Publishers.

Felson, R. B., & Paré, P. P. (2005). The reporting of domestic violence and sexual assault by nonstrangers to the police. *Journal of marriage and family, 673,* 597-610.

Gerth, J., E. Bauch and J. Endrass (2017). Assessing the Discrimination and Calibration of the Ontario Domestic Assault Risk Assessment in Switzerland. *Partner Abuse* 8(2) 168-189.

Government of Canada, Department of Justice (2015). Inventory of Spousal Violence Risk Assessment Tools Used in Canada. Retrieved 18 December, 2020 from https://www.justice.gc.ca/eng/rp-pr/cj-jp/fv-vf/rr09_7/p4.html

Grogger, J., Ivandic, R., & Kirchmaier, T. (2020). CEP Discussion Paper No 1676 February 2020 Comparing Conventional and Machine-Learning Approaches to Risk Assessment in Domestic Abuse Cases.

Hilton, N. Z., Harris, G.T., Rice, M.E., Lang, C., Cormier, C. A., (2004). A brief actuarial assessment for the prediction of wife assault recidivism: The Ontario Domestic Assault Risk Assessment. *Psychological Assessment 16*(3) 267-275.

Hilton N.Z., Harris G.T., (2009). How Nonrecidivism Affects Predictive Accuracy: Evidence From a Cross-Validation of the Ontario Domestic Assault Risk Assessment (ODARA). *Journal of Interpersonal Violence*. 24(2) 326-337.

Hilton, N. Z. & Eke, A.W., (2016). Non-Specialization of Criminal Careers Among Intimate Partner Violence Offenders. *Criminal Justice and Behavior 43*(10) 1347-1363.

Hilton, N. Z., Popham, S., Lang, C., & Harris, G. T. (2014). Preliminary validation of the ODARA for female intimate partner violence offenders. *Partner Abuse, 5*(2), 189–203.

Hutchison, I.W., & Hirschel, J.D. (1998). Abused Women: Help-Seeking Strategies and Police Utilization. *Violence Against Women, 4*(4), 436–456.

Intimate Partner Violence (2012). Understanding and Addressing Violence Against Women. World Health Organization. Retrieved 17 July 2020 from http://www.who.int/reproductivehealth/publications/violence/en/index.html

Jaffe, P., Burris, C.A. (1984). An Integrated Response to Wife Assault: A Community Model, Canada. Ministry of the Solicitor General. Research Division.

Kalaichandran, S. (2018). Risk Factors for Domestic Homicide: Immigrant & Canadian-born Populations. Electronic Thesis and Dissertation Repository. 5363.

Kerr, J., Whyte, C., and Strang, H., (2017). Targeting Escalation and Harm in Intimate Partner Violence: Evidence from Northern Territory Police, Australia. Cambridge Journal of Evidence-Based Policing, 1-17.

Langan, P. A., & Innes, C.A. (1986). Preventing domestic violence against women. *Crime and Justice Facts, 1985*. Washington, DC: U.S. Bureau of Justice Statistics, Special Report.

Lauria,I., McEwan, T.E., Luebbers,S., & Simmons,M (2017). Evaluating the Ontario Domestic Assault Risk Assessment in an Australian Frontline Policing Setting. *Criminal Justice and Behavior, 44*(12) 1545-1558.

London Police Service Statistics, London Ontario, Canada. Unpublished. Retrieved Aug 20, 2019.

London Police Service. Crime Statistics (n.d). Retrieved From https://www.londonpolice.ca/en/about/Crime-Statistics.aspx. Retrieved 27 January 2021.

Messing, J. T. and Thaller, J. (2013). The Average Predictive Validity of Intimate Partner Violence Risk Assessment Instruments. *Journal of Interpersonal Violence*, 28, 1537–1558.

Musielak, N., Jaffe, P., and Lapshina, N. (2020) Barriers to safety for victims of domestic homicide. *Psychology, Crime & Law*, *26*(5), 461-478

Ontario, Office of the Chief Coroner (2019). *Domestic Violence Death Review Committee 2018 Annual Report.* Ontario.

Pagelow, M.D. (1981). *Woman battering: victims and their experiences*. Beverley Hills: Sage.

Perez Trujillo, M., & Ross, S. (2008). Police Response to Domestic Violence. *Journal of Interpersonal Violence 23*(4), 454-73.

Sherman, L. (2007). The Power Few: Experimental Criminology and the Reduction of Harm. *Journal of Experimental Criminology*, 3, 299–321.

Sherman, L. (2013). The Rise of Evidence-Based Policing: Targeting, Testing, and Tracking. *Crime and Justice, 42*, 377-451.

Sherman, L., & Berk, R.A., (1984). The specific deterrent effects of arrest for domestic assault. *American Sociological Review 49*, 261-272.

Sherman, L. W., Neyroud, P., & Neyroud, E. (2016). The Cambridge Crime Harm Index: measuring total harm from crime based on sentencing guidelines. *Policing, 10*(3), 171–183.

Strang, H., Neyroud, P., & Sherman, L. (2014).Tracking the Evidence for a 'mythical number': Do UK Domestic Abuse Victims Suffer an Average of 35 Assaults Before Someone Calls the Police?' *Policing: A Journal of Policy and Practice, 8*(2), 222-228.

Statistics Canada (2015). *Intimate Partner Violence.* Retrieved From https://www150.statcan.gc.ca/n1/pub/85-002-x/2013001/article/11805/11805-3-eng.htm Retrieved 25 November 2020

Statistics Canada (2020). *Uniform Crime Reporting Survey (UCR).* Retrieved From https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3302. Retrieved 24 November 2020

Statistics Canada (2017). *2016 Census Population.* Retrieved From: https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/Page.cfm?Lang=E&Geo1=CSD&Code1=3539036&Geo2=PR&Code2=47&Data=Count&SearchText=North&SearchType=Begins&SearchPR=01&B1=All. Retrieved 27 Jan 2021

Statistics Canada (2020). Police Reported Crime Statistics in Canada, 2019. Retrieved From: https://www150.statcan.gc.ca/n1/daily-quotidien/201029/t003a-eng.htm. Retrieved 27 Jan 2021.

Stockl, H., Devries, K., Rotstein, A., Abrahams, N., Campbell, J., Watts, C., Moreno, C.G (2013). The global prevalence of intimate partner homicide: a systematic review. *Lancet 382*(9895) 859-865.

Thornton, S. (2011). Predicting serious domestic assaults and murder in the Thames Valley. Cambridge, University of Cambridge.

Turner, E., Medina, J., & Brown, G. (2019). Dashing Hopes? The Predictive Accuracy of Domestic Abuse Risk Assessment by Police. The British Journal of Criminology 59(5),1013-1034.

van Der Put, C. E., Gubbels, J., and Assink, M. (2019). Predicting domestic violence: A meta-analysis on the predictive validity of risk assessment tools. *Aggression and Violent Behavior 47*, 100-116.

Versaterm (2019). Known Offender User Guide, Canadian, RMS 8.0. Unpublished.

Walker, L.E., (1984). The battered woman syndrome. New York, NY: Springer.

Williams, K. R., & Houghton, A. B. (2004). Assessing the risk of domestic violence re-offending: A validation study. *Law and Human Behavior, 28*(4), 437-455.

World Health Organization (WHO). (2012). *Understanding and addressing violence against women: Intimate partner violence.* Retrieved from http://apps.who.int/iris/bitstream/10665/77432/1/WHO_RHR_12.36_eng.pdf. Retrieved 5 July, 2020.

Appendices

Appendix 1: List of High Harm Crimes

1. Murder
2. Attempted Murder
3. Aggravated Assault
4. Assault by Suffocation
5. Sexual Assault
6. Choking
7. Assault Causing Bodily Harm
8. Assault with a Weapon
9. Use Firearm
10. Point Firearm
11. Break and Enter
12. Break and Enter to Commit Assault
13. Robbery
14. Forcible Confinement
15. Forcible Entry