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PREGNANCY-ASSOCIATED INTIMATE PARTNER VIOLENCE:  
AN EXAMINATION OF MULTIPLE DIMENSIONS OF  
INTIMATE PARTNER ABUSE VICTIMIZATION  
USING THREE UNIQUE DATA SOURCES

by

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M.A. University of Central Florida, 2003

A dissertation submitted in partial fulfillment of the requirements  
for the degree of Doctor of Philosophy  
in the Department of Sociology  
in the College of Sciences  
at the University of Central Florida  
Orlando, Florida

Spring Term  
2009

Major Professor: Jana L. Jasinski

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## **ABSTRACT**

Using three separate and unique sources of data, this study was designed to address:

a) the associations between pregnancy-related violence and femicide with sociodemographic characteristics of victims and offenders and with family dynamics, b) how pregnancy affects the risk for threats of violence, power and control tactics, physical violence, stalking, sexual violence, and femicide, and c) how pregnancy contributes to increased severity of abuse. The overall results reveal a significant statistical correlation between pregnancy and the increased risk of intimate partner abuse on many dimensions, including physical abuse, stalking and harassment, sexual abuse, threats of serious harm and death, lethality risk, and power and control. The correlation between pregnancy and femicide is less clear and in need of further examination. While the nature of pregnancy as a risk factor across multiple dimensions of abuse is certainly pervasive, the findings indicate that power and coercive control warrants close attention as a potentially prominent and dangerous dynamic. Women of younger age, those single or divorced, residing with an IP, and having children in the home were shown to have a significantly increased risk of non-lethal and lethal IPV in all three samples. The findings contribute evidence to existing literature concerning potentially catastrophic outcomes for pregnancies occurring in an abusive context, including extremely high rates of miscarriage in abusive relationships. Implications for practice and for research are discussed.

To Scott, my patient, supportive, loving, and truest partner.

To Macy, my heart, my greatest joy and my motivation.

To the many people who suffer through domestic violence,  
those who have survived, and those who were not given the chance to.

## AKNOWLEDGMENTS

*To Scott:* Thank you for the love and support you pledged from before this Ph.D. was a definite plan to the very end without ever complaining or showing exasperation, though you surely felt it and certainly deserved to. I thank you for being a wonderful partner and father, for encouraging me to pursue my dreams, and helping me believe I could do it.

*To Macy:* I struggled with the decision to go back for this degree and have continued to struggle every single day because of the time it has required, when I would prefer to spend all my time with you. Despite the emotional agony, you were one of the most important motivations for me to get a Ph.D. and to work so hard to do my best. I want to show you how a belief in yourself and in a cause can lead to life change for yourself and others, how hard work does pay off, and that you can make your life's work about something for which you feel passionate. You are and will always be the greatest joy in my life, my very top priority, and know that I aspire to be a great mom as much as I aspire to do anything else.

*To all my parents:* Thank you for your love, support, and encouragement. Thank you for believing in me, for long talks, forgiveness and new beginnings, and for the rolls of quarters and everything that they symbolize.

*To my sister, Brandi:* Thank you for being my very best friend and confidant. Thank you for the many, many hours you stayed up with me all night and “kept me company” while I worked. I miss you every single day and I hope you know what a strong woman you are and how much you inspire me. I feel your love and support and it carries me through many difficult times.

*To Donna, Karen, Clara and Bernie Taylor:* Your countless hours with Macy have provided her with the richest memories and closest bonds to you, and have been major reasons why I was able to study and work as hard as I could. You are such wonderful grandparents. I am forever in your debt.

*To Shelly and Erin:* Thank you for your love and support and for inspiring me to help work for the cause of peace and equality.

*To my father-in-law, Rod Taylor:* Thank you for providing the world with an enduring example of using your work to help others and being nice to every person.

*To Dr. Jana Jasinski,* my dissertation committee chair and mentor of many years: You have inspired me in so many ways and have endlessly supported and guided me through my entire graduate education. You pushed me and forced me to push myself, helping me to realize my capabilities and to learn so much more than I thought I could handle. You have played so many important roles - my teacher, career counselor, psychologist, academic advisor, copy editor, advocate, and motivational coach – and always made me feel like a peer and like a friend. You are on the very top of the list of strong, intelligent, remarkable women who I believe change the world one life at a time. I hope we will share many years of friendship and collaboration.

*To my dissertation committee members, Drs. Jay Corzine, Elizabeth Mustaine, and Jacquelyn Campbell, and also to Drs. Jim Wright, Lin Huff-Corzine, and Elizabeth Grauerholz:* You have tirelessly encouraged, guided, and supported me and so many others for many years. Your expertise and genuine commitment to the success of your students has been so important in my

path, and will continue to impact me and many others as we aspire to achieve the standard for which you all set with our own students. You have made my graduate studies a very rewarding experience and your encouragement has carried me through. Thanks to you especially, and to all the faculty and staff in the Department of Sociology at UCF.

*To Amy, Minna, Monica, and Jenna:* You amazing ladies have made this experience so much more bearable with your constant camaraderie, laughter, and empathy. You inspire me in so many ways and I will always be grateful for your unwavering support. I look forward to a lifetime of friendship, collaboration, conference reunions, and more laughter.

God answered a prayer for me loudly and clearly long ago when I asked what to do with my life and how. I am so glad I asked.



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## CHAPTER ONE: INTRODUCTION

Intimate partner violence perpetrated against women has been deemed an important human rights issue and a major public health and criminal justice issue on a global level (Heise & Garcia-Moreno, 2002; Tjaden & Thoennes, 2000). In the U.S. alone, a recent national-based study revealed startling estimates regarding violence against women (Moracco, Runyan, Bowling, & Earp, 2007), reporting that nearly 60% of the women in the national probability sample had experienced physical, sexual, or stalking violence in their adulthood (at least 18 years of age), usually by a current or former intimate partner. Findings from the National Violence Against Women Survey revealed that 64% of women compared to 16.2% of men had experienced IP-perpetrated physical, sexual, or stalking violence in adulthood, with lifetime abuse victimization rates of 22.1% for women compared to 7.4% for men (Tjaden & Thoennes, 2000, p. iii).

While there are many negative consequences associated with IPV (e.g. Heise & Garcia-Moreno, 2002), the most serious of these is intimate partner femicide, defined as “the killing of women by intimate male partners, that is, current or former legal spouses, common-law partners, and boyfriends” (Dawson and Gartner, 1998, p. 383). According to the Bureau of Justice Statistics, there were 1,181 intimate partner murders perpetrated against women in the U.S. in 2005 (Fox & Zawitz, 2007). This number represents nearly one-third of the total number of female murder victims, as compared to 3% of males who were murdered by an intimate. Similarly, CDC data (via the National Violent Death Reporting System) reveal that 65% of intimate partner homicides in their 2005 sample involved female victims (Karch et al., 2008). These statistics are likely underestimates, however, since the victim-offender relationship may not always be known and an actual intimate partner homicide may not be classified as such in

official reports, mainly due to the lack of an ex-dating partner category in supplemental homicide reports (e.g., Frye, 2008).

Since domestic violence was recognized as a bona fide social problem and a research agenda was firmly established in the 1970's on the heels of the Feminist Movement (Berns, 2004; Tierney, 1982; Yllo, 1988), there have been hundreds of empirical studies and other commentary addressing all aspects of domestic violence. These aspects include prevalence and the identification of risk factors (e.g., Tjaden & Thoennes, 2000; Walton-Moss, Manganello, Frye, & Campbell, 2005), the development and application of various theoretical perspectives (e.g., O'Leary, 1998), appropriate research methodology and related definitional and ethical issues (e.g., Campbell, J.C., & Dienemann, 2001; DeKeseredy, 2000), and consequences on victims, children, and society (e.g., Tjaden & Thoennes, 2000). In addition, countless substantive areas have been explored such as reactions to domestic violence (e.g., Buzawa & Buzawa, 1996), sexual assault in intimate relationships (e.g., Mahoney & Williams, 1998), elder abuse (e.g., Lachs & Pillemer, 2004), domestic violence-related stalking (e.g., Burgess et al., 2001), and so on. One of the developing substantive areas concerning lethal and non-lethal IPV is *pregnancy-associated* violence and homicide, or violence/homicide occurring during or within one year of pregnancy (i.e., Campbell et al., 2007; Chang et al., 2005; Shadigian & Bauer, 2005).

The correlation between pregnancy and lethal and non-lethal intimate partner violence is an historically understudied area (Shadigian & Bauer, 2005), but research in this area has produced a growing body of sociological and medical literature over the past several years. These studies, however, have continued to produce conflicting findings, leaving the question of whether or not pregnancy increases risk for lethal and non-lethal intimate partner violence in need of further examination.

The implications of this research for policy and intervention are crucial, particularly with regard to the medical field. Such policies begin with the incorporation of IPV education and response training in medical curricula, as well as screening practices and response training among practicing medical professionals, as they generally are in contact with pregnant women throughout the course of pregnancy and the postpartum period.

Since pregnancy presents a risk to both the mother and her unborn baby, pregnancy-associated IPV may be particularly tragic given the vast number of potentially life-threatening consequences to both. This concern is underscored by research suggesting abuse during pregnancy may be more frequent and severe than IPV in general (Martin et al., 2004). Given that abuse during pregnancy has been determined a heightened risk factor for intimate partner homicide (femicide) (i.e., McFarlane, Campbell, Sharps, & Watson, 2002), the potential effects are literally a matter of life or death for both the mother and unborn baby.

The extant literature on pregnancy-associated IPV offers a variety of methodological approaches with many different types of data. While this range has certainly provided an important foundation, it is also likely the source of the contradictions in findings. Researchers have compiled literature reviews on the topic, providing rich summaries on the progress in this area of research and in what we currently know (Campbell, Garcia-Moreno, & Sharps, 2004; Jasinski, 2004; Shadigian & Bauer, 2005). In addition, they have highlighted the difficulties in determining the correlations between pregnancy and IPV given the available data and methodological approaches being used.

The current study can be considered the first phase of a multidimensional research project to address an important issue within the literature on pregnancy-associated IPV; whether or not pregnancy presents a heightened risk for lethal or non-lethal violence by an intimate partner.

This important question has been explored in the literature, yet there has been no definitive conclusion on the whole. In fact, the division in findings has led to somewhat of a debate regarding pregnancy-associated risk for IPV in general and for femicide.

A departure from studies based on convenience samples and single data sources, this study involves analyses using *three* separate and diverse data sources in order to begin unraveling the complex problem of determining where the correlations of pregnancy and IPV are (i.e. the big picture). The study addresses where the differences are in the data, revealing how certain sociodemographic risk factors may vary depending on sample, for example, as well as consequences of violence for pregnant women. The analyses include both lethal and non-lethal violence, providing important implications for researchers, policy makers, and practitioners, with the ultimate goal being to provide information that will help decrease the prevalence of IPV and femicide.

## CHAPTER TWO: LITERATURE REVIEW

### Prevalence of IPV/Femicide Among Pregnant Women

Various estimates of the prevalence of non-lethal physical IPV perpetrated against pregnant partners have emerged from studies, including for example, a range from 0.9% to 20.1% based on a comprehensive review of studies (Gazmararian et al., (1996), a range of 4% to 8% in studies subsequent to that review (Gazmararian et al., 2000), and 8.7%, based on a longitudinal, sixteen-state study using PRAMS data (Saltzman, Johnson, Gilbert, & Goodwin, 2003). When psychological abuse is included, the range is expanded to 17% to 24.5% (Libbus et al., 2006). Similarly, the World Health Organization reports that between 6% and 15% of women in Canada, Chile, Egypt, and Nicaragua have been physically or sexually abused during their pregnancies (Heise, & Garcia-Moreno, 2002). Campbell, Garcia-Moreno, and Sharps (2004) estimate 3.8% to 31.7% of women in developing countries have been abused during pregnancy, compared to 3.4% to 11% in industrialized countries. Gazmararian et al. (2000) assert “These numbers suggest that violence may be more common for pregnant women than preeclampsia or gestational diabetes...” (p. 80). In addition, pregnancy-associated homicide by an intimate partner is an established problem in the U.S. and around the world (Heise, & Garcia-Moreno, 2002).

Despite these prevalence estimates based on studies of various samples, there is no national estimate available for the prevalence of non-lethal or lethal violence suffered by pregnant women in the U.S., according to a 2002 U.S. government report (McPhail & Toiv, 2002). The report further states that available estimates are not generalizable to the entire

country and that the findings from existing studies cannot be applied to all pregnant women due to problems associated with sampling and methodology.

Researchers using a variety of methodological approaches have concluded that pregnancy presents an increased risk for homicide, making homicide one of the most common ways pregnant women are killed (i.e. Krulewitch, Roberts, & Thompson, 2003; McFarlane et al., 2002; Shadigian & Bauer, 2005). Like femicide in general, pregnancy-related femicide tends to involve a context of chronic domestic violence perpetrated by the male intimate partner (i.e. Decker, Martin, & Moracco, 2004; Gazmararian, 1996; McFarlane et al., 2002). In a study involving IPV screening of pregnant women at various points of pregnancy and postpartum, researchers found women were ten times more likely to experience pregnancy-associated IPV if their intimate partner had been violent prior to the pregnancy (Mezey, Bacchus, Bewley, & Haworth, 2001). In fact, researchers have discovered that IPV may increase when the victim becomes pregnant (Burch & Gallup, 2004; Campbell, Oliver, & Bullock, 1998). This potential increase in IPV may indicate a continuum of violence which may conclude in femicide during or after the pregnancy (Macy et al., 2007; McFarlane et al., 2002; Campbell et al., 1995).

In their national study on pregnancy-associated homicides from 1991 to 1999, Chang et al. (2005) reported a statistic of 1.7 killings per 100,000 live births, leading them to conclude that homicide is “a leading cause [of death] for women of reproductive age” (p. 473). However, their findings were criticized for “substantially underestimate[ing] the magnitude of the problem,” because the data used in the study (death certificates) were incomplete with regard to pregnancy status (Horon & Cheng, 2005, p. 1879). Their critics cited a rate of 10.5% pregnancy-associated homicides per 100,000 live births in Maryland based on their research using multiple data sources (Horon & Cheng, 2005). Additional state rates of 7.2 per 100,000 live births in



North Carolina (Parsons & Harper, 1999), and 3.5 per 100,000 live births in Massachusetts have been derived from similar research (Nannini, Weiss, Goldstein, & Fogerty, 2002).

Experts caution that all estimates are inevitably low due to the nature of the data used and the difficulty in determining pregnancy status (Campbell et al., 2007; McPhail & Toiv, 2002; Shadigian & Bauer, 2005). Additionally, differences in definitions and in accuracy of pregnancy status make comparing data across studies impossible (McPhail & Toiv, 2002). True prevalence rates are therefore unknown and the samples used in studies must be carefully considered (Jasinski, 2004). This is especially true when dealing with small samples, where researchers are warned that results concerning pregnancy-associated deaths should be interpreted with “considerable caution” (Hoyert, 2007, p. 11).

### The Pregnancy Debate

The existing literature on pregnancy-associated IPV and femicide is divided by two distinct sets of findings where pregnancy has been found to be a risk factor for lethal and non-lethal IPV in some studies and has been found to decrease risk in others. Hotaling and colleagues (1988) speculated pregnancy may lead to the onset of violence in previously non-abusive relationships; however, subsequent research specific to abuse during pregnancy has found that this happens rarely and according to abused women, is related to first pregnancy and jealousy of the unborn child or suspicions about paternity. Other researchers have found that IPV may increase in frequency and severity during pregnancy (Burch & Gallup, 2004; Helton & Snodgrass, 1987; Martin et al., 2004; Richardson et al., 2002; Stewart & Cecutti, 1993).

Pregnancy-associated femicide has also been studied with compelling findings to suggest women are indeed at an increased risk of death at the hands of their intimate partners during

pregnancy and/or the pre or postnatal period (i.e. Chang, Berg, Saltzman, & Herndon, 2005; Horon, 2005; Shadigian & Bauer, 2004). In cases where abuse during pregnancy has been identified, the women experience as much or an even higher risk for femicide (Chang et al., 2005; Krulewitch, Pierre-Louis, de Leon-Gomez, Guy, & Green, 2001; McFarlane et al., 2002; McFarlane, Parker, & Soeken, 1995). For example, McFarlane and colleagues (2002) found women who were abused during pregnancy experienced a greater risk of ultimately being killed by their IP.

In puzzling contrast, other studies suggest that pregnancy may *decrease* the risk for IPV during or immediately after pregnancy, providing a protective period to some extent (Campbell, Pugh Campbell, & Visscher, 1995; Decker, Martin, & Moracco, 2004; Jasinski, 2001). For example, relying on a small convenience sample (n=53) of patients from two prenatal clinics in low-income areas, Decker, Martin, and Morocco (2004) found that about half of the abused women in their sample experienced lower risk for femicide (and non-lethal IPV) during their pregnancies. However, they noted that the other half of the women in the sample left their intimate partner during the pregnancy and those were the subjects determined to be at the greatest risk for homicide. Therefore, their suggestion that pregnancy may have lowered the risk for homicide was based on an already lower-risk group. Furthermore, as Jasinski (2004) has highlighted as a common problem associated with clinic samples, there was no comparison group of non-pregnant women in the study.

In addressing the pregnancy-associated IPV debate, Jasinski (2004) points out that much of the research pertaining to IPV and pregnancy relies upon anecdotal reports from pregnant women and that samples are often obtained from clinical locations. The major problems presented by this methodology are the inability to determine if pregnancy truly increases the risk

for IPV, particularly on a national level, and the inability to compare across studies. Further, existing national datasets are not conducive to addressing these issues since they are not designed to measure pregnancy-associated IPV and since causal order is impossible to determine within the context of existing national data (Jasinski, 2004).

Researchers have had to rely on data that may be not be ideal for measuring this phenomenon, and the various methodological inconsistencies make it difficult or impossible to compare studies. Studies have included convenience sampling from hospitals, clinics, and shelters (i.e., Decker, Martin, & Moracco, 2004), multi-city sampling (i.e., McFarlane et al., 2002), state-level studies (Horon & Cheng, 2001; Martin, English, Clark, Calenti, & Kupper, 1996), national probability samples (i.e., Jasinski, 2001), and samples of batterers (Burch & Gallup, 2004). While these studies have presented a wide range of data and important findings, the question of whether pregnancy presents an increased risk or not persists. Other areas of the literature are also inconsistent, particularly with regard to sociodemographic characteristics of victims and perpetrators.

### Sociodemographic Characteristics

In understanding the risk of pregnancy associated with IPV and femicide, we must first understand the nature of our samples and what other characteristics may be involved.

Researchers find that socioeconomic factors commonly operate as important controls in scientific studies, acting to explain other findings when taken into consideration (i.e. Jasinski, 2001). However, Campbell contends, “in more than 20 years of research on IPV, there is still debate on how much risk for IPV ever occurring is attributable to sociodemographic factors...”

(2004, p. 1464). Common sociodemographic variables include race/ethnicity, age, education, income, and employment status.

### *Race/Ethnicity*

According to Jasinski, "...little research takes into account ethnic differences in risk for victimization among pregnant and non-pregnant women. What research does exist is inconclusive" (2001, p. 714). While race and ethnicity have commonly been excluded as a variable in research on IPV and pregnancy to date, (Jasinski, 2004; Jasinski & Kaufman Kantor, 2001), the more recent inclusions of race and ethnicity as factors have produced inconsistent results. Some studies report that Black women are at a higher risk for IPV during pregnancy (i.e., Goodwin et al., 2000), while others have reported higher rates of victimization in White women (i.e., Berenson, Stiglich, Wilkinson, & Anderson, 1991) and Puerto Rican women (Torres et al., 2000). Correspondingly, studies pertaining to pregnancy-associated IPV and IPV in general reveal that non-White males are more likely to abuse their partners than White males (i.e. Anderson, 1997; Mihalic & Elliott, 1997).

Black women have been determined to be at a greater risk for IPV *and* femicide during pregnancy and in general as compared to White women (i.e., Chang et al., 2005; Goodwin et al., 2000; McFarlane et al., 2002). In fact, McFarlane et al. (2002) found a more than three-fold increase in femicide risk for black women. Campbell et al. (2007) posit that this may be due to higher rates of unemployment among Black men. While certainly reasonable with regard to the implications of unemployment/low income on IPV, especially IP femicide, research as a whole has neglected to explore the correlations of race and ethnicity. For both lethal and non-lethal IPV among pregnant women, this particular sociodemographic correlation clearly warrants

further research to produce other plausible explanations. For example, researchers may discover disparate opportunities for Black women with regard to intervention in a violent relationship, such as a lack of availability of reliable prenatal care as a result of lower socioeconomic status and unemployment. There may also be a correlation between race and age, though this relationship has not been explored thoroughly. As Jasinski explains, “Definitive conclusions about the ethnic differences are difficult to make with the existing research...due to differences in samples, data collection, and definitions of domestic violence” (2001, p. 715).

### *Age*

While Gelles (1990) proposed that pregnancy as a risk factor for pregnancy could be a spurious relationship due to age, the findings concerning age have been firmly established in more contemporary research. Younger women experience higher risk for lethal and non-lethal IPV during pregnancy and generally (Berenson et al., 1991; Datner, Wiebe, Brensinger, & Nelson, 2007; Dietz et al., 1997; Goodwin et al., 2000; Krulewitch, Roberts, & Thompson, 2003; Shadigian & Bauer, 2004), and younger men are more likely to abuse their partners than older men (i.e. Anderson, 1997; Cunradi, Caetano, & Schafer, 2002). In fact, one research team finds that youth is one of the strongest predictors of intimate partner violence (Campbell et al., 1997). Another study shows that young mean *couple* age is predictive of male-perpetrated IPV (Cunradi et al., 2002). In addition to age, researchers have examined other demographics including education and income to determine risk factors.

### *Educational Attainment*

Also firmly established in the literature, lower educational attainment is associated with increased risk for lethal and non-lethal IPV, both during pregnancy and generally (Campbell et

al., 2004; Datner, Wiebe, Brensinger, & Nelson, 2007; Goodwin et al., 2000; Jasinski, 2001; Tjaden & Thoennes, 2000). Men with lower educational achievement are more likely to abuse their partners than men with higher educational achievement (Anderson, 1997; Cunradi, Caetano, & Schafer, 2002), and the relationship is similar for victims. For example, Macy et al. (2007) reported that only 32.3% of the abused pregnant women in their sample had more than a high school diploma. Several other studies have supported these findings concerning the risks associated with lower education levels (Datner et al., 2007; Dietz et al., 1997; Goodwin et al., 2000; Martin et al., 2004).

### *Employment/Income*

Findings pertaining to education are important because education not only presents a potential for power-differential in a relationship (Lambert and Firestone 2000), but education has implications for employment and income as well. For example, Martin et al. (2004) found that the abusers in their sample were significantly more likely to be unemployed compared to the men in their control group. However, Cunradi, Caetano, and Schafer (2002) found a very weak correlation between employment status and IPV, though they did find that the Black and Hispanic families in their sample reporting IPV had significantly lower household incomes than their White counterparts. This is not surprising given that researchers have frequently found that low income is predictive of male intimate partner violence perpetration (Anderson, 1997; Cunradi, Caetano, & Schafer, 2002). In fact, one team found “that the annual household income is the most important influence on the probability of IPV for White, Black, and Hispanic couples” (Cunradi, Caetano, & Schafer, 2002, p. 385), but this study did not pertain to pregnancy-associated violence. Inclusion of sociodemographics is crucial in pregnancy-

associated IPV/femicide studies, both to contribute support to or to challenge existing knowledge, as well as to better understand those groups at the highest risk.

### Family Dynamics

In addition to controlling for relevant sociodemographics in pregnancy-associated IPV studies, researchers should consider family contextual factors as well, such as the status of the intimate relationship and the effect of other children in the home in order to determine potential risk factors for abuse. Increased risks for lethal and non-lethal IPV associated with the status of a couple (e.g. Brownridge et al., 2008; Dawson & Gartner, 1998), as well as with the presence of children in the home (e.g., Campbell, Garcia-Moreno, & Sharps, 2004), have been established in the literature so continuing research must take these factors into account.

Beginning with the intimate partnership, the status of an intimate relationship is an important component in understanding and explaining intimate partner abuse and homicide in general (i.e., Dawson & Gartner, 1992). Studies consistently report that IPV victims are less likely to be married, both during pregnancy and in general (Dietz et al., 1997; Goodwin et al., 2000; Martin et al, 2004; Tjaden & Thoennes, 2000). Common-law relationships have been identified as particularly high-risk (Dawson & Gartner, 1998; Jasinski, 2001). Risks associated with non-marital and/or common-law relationships have been identified being as much as five times higher than for marital unions in studies addressing lethal and non-lethal violence (Chang et al., 2005; Dawson & Gartner, 1998; Jasinski, 2001).

Non-marital relationships may be more autonomous and a female partner might be able to leave more easily than if she were married, thus creating a greater threat to the male's perceived sense of ownership and control over her (Browne, Williams, & Dutton, 1999).

Further, cohabitating couples must contend with the perils of dating relationships and marriages (Dawson & Gartner, 1998). Specifically, in referencing Makepeace (1997), Dawson and Gartner (1998) explain, "...problems faced by common-law couples are twofold: They experience frustrations common to dating relationships, and they are faced with conflicts similar to married couples because both forms of intimacy involve living under the same roof" (p. 382).

Common-law unions tend to be childless, or have the presence of stepchildren, both of which promote greater conflict in relationships. The presence of stepchildren, which is more prevalent in common-law than registered unions (Wilson, Johnson, & Daly, 1995), is believed to be a particularly strong factor in intimate partner violence (Campbell et al., 2003; Daly, Singh, & Wilson, 1993; Wilson, Johnson, & Daly, 1995).

The risks associated with stepchildren are particularly pronounced in arrangements where the woman has children sired by a former male partner (Campbell, 2003). These risks pertain to lethal and non-lethal IPV (Brewer & Paulsen, 1999; Campbell et al., 2003; Campbell et al., 2004; Daly, Wiseman, & Wilson, 1997), where researchers have identified a two-fold increased risk for femicide in relationship where women have children from a previous relationship (Campbell, 2003; Campbell, Oliver, & Bullock, 1998). The relationships within and between family dynamics are clearly present and are complex. Campbell and colleagues (2004) emphasize the importance of including these factors in IPV research given the continuing trends in family diversity.

### Limitations of Current Research

Violence against women during pregnancy is a well-established social problem, as supported by nearly two decades of research. The effects of pregnancy-associated violence



include a range of tragic consequences to both women and their children, to include death. In spite of the research produced on the topic by many of the leading experts in both social and medical research, pregnancy has not conclusively been determined to present a risk for IPV (Gazmararian et al, 2000), despite some very compelling findings to suggest that it does (i.e. McFarlane et al., 2002). Scholars are puzzled by the conflicting findings and continue to forge on with hopes of informing practitioners, policy makers, and future research in order to ultimately reduce the prevalence of pregnancy-associated violence. However, there are several notable limitations in the current literature.

First, while a few studies have addressed pregnancy-associated psychological abuse (e.g., Johnson, Haider, Ellis, Hay, & Lindow, 2003; Martin et al., 2006), even finding psychological abuse to occur more frequently than physical abuse during pregnancy (Castro, Peek-Asa, & Ruiz, 2003), the majority of the literature focuses on physical violence (Macy et al., 2007). All types of violence can occur during pregnancy, and certainly can cause distress to the woman and unborn baby, as well as potentially being a precursor to more frequent and severe violence. Research on psychological abuse, including verbal abuse and controlling behaviors, sexual abuse, and stalking violence need to need to be addressed much more extensively in research. In addition, the severity of these types of abuse as well as physical violence need to be accounted for in analyses to determine how non-lethal violence may present a risk for femicide.

As has been noted, there are also major shortcomings in the data and methodologies researchers have had to reply on. Few existing data sets are ideal for measuring this phenomenon alone, and small convenience samples often provide unrepresentative information (Jasinski, 2004). Further, methodological differences often preclude the ability to compare studies (McPhail & Toiv, 2002; Heise & Garcia-Moreno, 2002).

While any one source of data will not tell us the whole story, relying on multiple sources in a single study can provide more pieces of the puzzle. Each source, from in-depth interviews with small convenience samples to nationally representative surveys with thousands of respondents has something to offer. The key in unraveling this puzzling question for pregnancy-associated risk for lethal and/or non-lethal IPV is to look to multiple sources, drawing on the strengths of each and piecing together where the risks are. Whereas any one source has been unable to adequately and accurately answer the question of whether or not pregnancy presents an increased risk for IPV, multiple sources, in their totality, will provide a major step forward in this area of research and in informing practitioners, public policy, and future scholarship pertaining to pregnancy-associated IPV/femicide.

Utilizing the National Violence Against Women Survey, The Chicago Women's Health Risk Study, and the National Violent Death Reporting System, the current study seeks to offer a substantial contribution to the current literature on pregnancy-associated violence, lethal and non-lethal, by utilizing multiple data sources to conduct analyses and compare results. This study is one component of what promises to be a multidimensional research project involving the analysis of many sources of data and comparisons between them to construct a more holistic view of the pregnancy-associated violence and homicide phenomenon. Understanding the prevalence and incidence of non-lethal violence against women, characteristics of victims and offenders, and characteristics of the victimizations perpetrated against women serves to augment research on lethal IPV by providing important context and informing methodological approaches for future research. Further, by examining various types of violence and the severity of each in both lethal and non-lethal samples, this study can contribute understanding to the potential continuum of pregnancy-associated IPV from non-lethal to lethal.

The current methodology is chosen in an effort to draw from the strengths of the various datasets and begin to piece together what we can conclude about this phenomenon based on sociodemographics, family dynamics, and other important contextual factors such as type of abuse and frequency/severity of each type. Additionally, the data sources are diverse, ranging from a nationally representative sample to a regional sample, to a sample of all violent deaths in one year in 16 U.S. states. The contributions of each source to the overall picture are discussed individually in Chapter 4, following a discussion of the theoretical framework for this and much of the existing research on pregnancy-associated IPV in Chapter 3.

### CHAPTER THREE: THEORETICAL FRAMEWORK

Intimate partner violence (IPV) is a well-established social problem affecting millions of people all over the world (Heise & Garcia-Moreno, 2002). Although women and men both are affected by this crime, many prominent IPV experts across the world have concluded that women do not abuse at rates equal to men, that women typically abuse for reasons different than men (i.e. self-defense versus control), and that men cause much more injury in frequency and severity than women who abuse their intimate partners (e.g., Dobash & Dobash, 2004; Kimmel, 2002; Nazroo, 1995; Saunders, 2002; Schwartz, 2005). Although these claims have received vitriolic criticism by some (e.g. Straus, 2006), a recent report by the World Health Organization on violence concluded that world-wide, “the overwhelming burden of partner violence is borne by women at the hands of men” (Heise & Garcia-Moreno, 2002, p. 89). The burden of partner homicide is also a woman-centered social problem.

Research on intimate partner homicide concludes, almost without exception, that females are at greater risk than males (e.g., Browne, Williams, & Dutton, 1999; Campbell, 1992; Chimbos, 1978; Daly & Wilson, 1988; Dawson & Gartner, 1998; Paulsen & Brewer, 2000; Rosenfeld, 1997; Smith, Moracco, & Butts, 1998). Websdale (1999) describes intimate partner homicide as “a profoundly gendered affair” (p. 25), in that men commit most intimate partner homicides and for different reasons than their female counterparts. Specifically, men usually kill in conclusion to an on-going pattern of abuse, and/or due to estrangement by a female partner, and women usually kill their male partners out of self-defense (Browne et al., 1999; Campbell, 1992; Daly & Wilson, 1988; Dawson & Gartner, 1998; Paulsen & Brewer, 2000; Rosenfeld, 1997; Smith, Moracco, & Butts, 1998). In fact, women are more likely to be killed by their intimate male partner than by any other type of perpetrator (Browne et al., 1999; Browne &

Williams, 1989; Dawson & Gartner, 1998; Paulsen & Brewer, 2000; Wilson et al., 1995).

Additionally, research shows that women are at least twice as likely to be killed by their intimate partner as males (Browne et al., 1999; Paulsen & Brewer, 2000; Puzone et al., 2000). The U.S. Bureau of Justice Statistics reports that the proportion of female murder victims killed at the hands of their intimate partners has been increasing whereas the proportion of male murder victims killed by an intimate has been decreasing (Fox & Zawitz, 2007).

### The Feminist Perspective

Feminist theory, also referred to by Bersani and Chen as the “patriarchal perspective” (1988, pp. 72-76), is founded on the belief that patriarchy and, consequentially, oppression, are common threads in the structures of society (e.g. Radford & Stanko, 1996; Zalewski, 2000). According to proponents, oppressive views of women are not only culturally sanctioned, but are embedded in and expressed through all social institutions (e.g. Gates, 1978; Hanmer, Radford, & Stanko, 1989; Martin, 1978; Radford & Stanko, 1996).

In a classic work from this position, *Feminist Perspectives on Wife Abuse*, Bograd offers, “As feminists, we believe that the social institutions of marriage and family are special contexts that may promote, maintain, and even support men’s use of physical force against women” (1988, p. 12). In particular, the violent behavior exerted by a man against his intimate partner is driven by the desire to maintain power and coercive control over her (Yllo, 1993), which not only explains perpetration, in that it is a result of a structurally granted right to maintain control over a women, but it explains victimization by considering the role of the women in a violent relationship and how submissiveness, if only temporarily, may be the necessary means to

survival (Dobash & Dobash, 1979; Walker, 1979). These extreme cases of abuse and control have been described as a state of terror for the woman (e.g., Caputi & Russell, 1992).

### *Sexual Terrorism/Sexual Propriety*

Caputi and Russell associate femicide with the term “sexual terrorism” (1992, p. 15), and explain that one cause of sexual terrorism is a sense of entitlement, whereby many males believe they own and can therefore control women. Sheffield argues the term is appropriate “...because it is a system by which males frighten and, by frightening, control and dominate females” (p. 111, 2007). This concept of entitlement is also commonly referred to as “sexual propriety,” (Daly & Wilson, 1988), and is frequently cited in literature pertaining to femicide beginning with the pioneering work of Jill Radford and Diana E.H. Russell (1992), and followed by numerous studies (e.g., Browne et al., 1999; Campbell, 1992; Ellis & DeKeseredy, 1997; Websdale, 1999; Wilson et al., 1995; Wilson & Daly, 1992),.

The term sexual propriety refers to the tendency for men to believe they own women, particularly their sexuality and reproductive abilities (Daly & Wilson, 1988). Sexual propriety is equated to property ownership, where men own “their” women and children, and are entitled to use force and violence if necessary to maintain control of their “property” (Campbell, 1992; Daly & Wilson, 1992). Feminists have argued that this concept has been institutionalized and woven into the structure of society, both in historic and modern times (Campbell, 1992; Johnson, 2007; Wilson, Johnson, & Daly, 1995; Wilson & Daly, 1992).

In her landmark study of homicides in Dayton, Ohio from 1975-1979, Campbell (1992) looked at 73 femicide cases to determine context of the homicide and relationship dynamics (i.e. relationship of victim to offender, homicide motive). She concluded:

...property ownership, power, and control are at the core of homicides between partners. The tradition of male ownership of women and male needs for power are played out to horribly violent conclusions. The message of femicide is that many men believe that control of female partners is a prerogative they can defend by killing women (1992, p. 111).

Researchers highlight the paradoxical nature of femicide. With the fundamental premise of sexual propriety being control and power over women, it is the loss of control that moves some men to seriously harm or kill their partners (Websdale, 1999; Wilson, Johnson, & Daly, 1995). Killing is an extreme alternative to exert a final mechanism of control, regardless of the specific motive (i.e. jealousy). When a male kills his female intimate partner, it is, in essence, an acknowledgement by the male that he has lost control in the relationship. While these acts may be intentional killings or death resulting in what was intended to be aggravated battery, the motive is the same. This loss of control is believed to be the substantive issue on which violence against intimate female partners is centered (Campbell, 1992; Websdale, 1999; Wilson, Johnson, & Daly, 1995; Wilson & Daly, 1992). In fact, it is the issue of control that has led researchers to contend that females in non-marital relationships are at greater risk of femicide since non-marital relationships may be more autonomous and a female partner might be able to leave more easily than if she were in a married relationship (Browne et al., 1999).

### *History of Violence/Estrangement*

Since homicide is often the conclusion to chronic abusive and threatening behavior by the male against his female partner, this abusive context, as well as leaving or attempting to leave the relationship on the part of the female victim, are often named as the most significant risk factors

(Block & Christakos, 1995; Browne, et al., 1999; Campbell, 1992; Chimbos, 1978; Dawson & Gartner, 1998; Smith, et al., 1998; Dobash et al., 1992; Goetting, 1991; Jurik & Winn, 1990; Ellis & DeKeseredy, 1997; Websdale, 1999; Wilson, Johnson, & Daly, 1995; Wilson & Daly, 1992). Studies of IP femicide typically report rates between 70% and 90% with regard to history of violence in the relationship. For example, of the cases in which Smith et al. (1998) were able to determine a history of violence in their 1994 study of North Carolina homicides, 95.8% of femicide cases had a history of violence. Similarly, Websdale (1999) found that 86.6% of his sample of Florida femicide cases had a history of violence.

The issue of estrangement is also common in femicide (i.e. “If I can’t have you, no one can”) (e.g., Campbell, 1992; Daly & Wilson, 1988). Numerous studies have substantiated the notion that leaving a violent relationship presents the most dangerous risk to a woman, leading to “abandonment rage” on the part of her IP (Browne, Williams, & Dutton, 1995, p. 73). In their study of trends in intimate partner homicide for the twenty-five year period of 1980 to 1995, Browne et al. (1999), found that 53% of male perpetrators were separated from their wives when they killed them. Similarly, Websdale (1999) found that 58.2% of his sample had left or attempted to leave the violent relationship, and half of the women in Campbell’s (1992) study killed by intimate partners were estranged at the time of the murders. Other researchers have found similar results of at least 50% estrangement in their studies (Campbell et al., 2003; Goetting, 1991; Wilson & Daly, 1993; & Stout 1991, 1993).

The period of time after the separation seems to be the most critical point regarding the risk for femicide. Specifically the first two months after separation up to one year is the most volatile time period identified by experts (Browne et al., 1999; Stout, 1991, 1993; Wilson & Daly, 1993). Browne et al. (1999) caution that although the months immediately following



estrangement may appear to be the most high risk for femicide, estranged male partners may commit femicide several months or even years after the separation. Even so, eventually, abused women who leave their abuser will eventually be safer from homicide and re-abuse than abused women who stay; the vast majority of abused women who leave are never killed by their partners.

### *Jealousy*

Although history of abuse and estrangement are prominent trends throughout the literature on intimate partner homicide, jealousy and possessiveness have been suggested as more explicit motives (e.g., Block & Christakos, 1995). Morbid jealousy, directly stemming from sexual propriety, is a common motive for intimate partner homicide, as is excessive possessiveness (Block & Christakos, 1995; Chimbos, 1978; Daly & Wilson, 1988; Mason & Blankenship, 1987; Websdale, 1999; Wilson, Johnson, & Daly, 1995; Wilson & Daly, 1992; 1993). In their study of Canadian homicides between 1974 and 1983, Daly and Wilson (1988) reported that police were able to determine a motive in 1,006 out of 1,060 spousal homicides. Although 21.3% of those were attributed to jealousy, the researchers asserted that the figure is grossly unrepresentative of the role that jealousy actually plays in intimate partner homicides, particularly since a majority of the cases they examined were not attributed to anything more specific than an argument of some sort, or anger on the part of the perpetrator. Goetting (1991) reported similar findings in her study of Detroit, Michigan femicides occurring in 1982-1983, where 39.2% of the homicides were attributed to a domestic dispute.

General motives labeled by police are often to determine whether an incidence was a case of premeditation or impulse, but do not explain any substantive conflict. It is possible that any

one of the cases given a general label could have been caused by a suspicion or discovery of infidelity (Wilson & Daly, 1992). Male jealousy can be the result of different issues, such as perceived or real infidelity and/or estrangement. Both represent a loss of control, and when a male kills as a result, he is acting out of “aggressive proprietariness” where he considers adultery and estrangement to be a direct violation of his rights” (Wilson & Daly, 1992, p. 90).

In every society they have studied, Wilson and Daly (1992) have found that most cases of spousal homicide are due to the husband’s violent reaction to his wife’s infidelity (real or imagined), or her plans to leave him. They also point out that when men kill because of suspicion of infidelity or estrangement, many researchers will couple those motives and label them as jealousy. Similarly, Campbell (1992) explains that jealousy of women is a proprietary derivative of attempts by their male intimate partners to control and possess them. In her study of homicides in Dayton, Ohio, Campbell (1992) determined jealousy to be the motive in 64% of the cases. She also pointed out that none of the male perpetrators in her study had actual evidence of sexual infidelity, and that jealousy also included things such as not wanting the female partner to pursue a career, and resenting time spent with the children. In her later national IPV femicide study, 79% of the abusers who killed or almost killed their partners were characterized as being extremely jealous, saying things like “if I can’t have you, no one can” (Campbell et al, 2003). Others have added pregnancy to the list of potential sources of jealousy in a controlling partner (e.g., Bacchus, Mezey, & Bewley 2006).

In addition to the issues established above, autonomy-limiting factors and resource deprivation, namely income, are significant in IPV and femicide (Avakame, 1998; Frye & Wilt, 2001; Wilson, Johnson, & Daly, 1995). In addition to the overall family resources, differences between partners’ achievements and contributions may exacerbate the power and control issues

already present in an abusive relationship, or may incite violence in a non-abusive relationship (Lambert & Firestone, 2000).

### *Status Disparities*

As education and employment are directly related to the household income, and thus, family resources, there are implications for these factors on IPV. There are also risks associated with disparities between partners concerning their education, employment, and income, though literature on the topic reveals some inconsistencies in findings (e.g., Anderson, 1997; Hornung et al., 1981; Kaukinen, 2004; Lambert & Firestone, 2000).

Some researchers have discovered that when a woman has a lower educational attainment than her male IP, she is at a higher risk for multiple types of abuse, ranging from psychological to severe physical abuse (Anderson, 1997; Hornung et al., 1981; Kaukinen, 2004). On the other hand, others have found an increased risk for women with higher educational attainment than their male partners (Kaukinen, 2004; Lambert and Firestone, 2000), and also in cases where the woman has a higher occupational status compared to her male partner (Hornung et al., 1981; Kaukinen, 2004). Similarly, men who earn less income than their female partners are more likely to be violent towards them (Anderson, 1997; Gauthier & Bankston, 2004; McCloskey, 1996).

Findings such as these support the feminist perspective which contends that some men may feel that the economic dependency on the part of his partner gives him power and control over her (Anderson 1997; Gauthier & Bankston, 2004). These men will feel threatened when their perceived power and control is challenged by the female partner gaining economic resources (Anderson 1997; Gauthier & Bankston, 2004). As a result, they turn to psychological

and physical violence to compensate for their sense of loss of power (Lambert and Firestone, 2000), and for their sense of inadequacy in their role as the provider (Gauthier & Bankston, 2004; Kaukinen, 2004). These abusive tactics may also include femicide when the potential autonomy afforded to women with increased financial resources to leave the relationship is countered with lethal violence by the male (Gauthier & Bankston, 2004). However, Campbell and associates (2003) in their national case control data base specifically looked for evidence of status inconsistency in education, employment and/or income and did not find an independent association of any of these or a combination with femicide.

#### The Effectiveness of the Feminist Framework

Researchers who have examined femicide through other theoretical perspectives report that alternative theories failed to provide adequate explanations. A few examples:

- Frye and Wilt (2001) examined femicide through social disorganization theory and found it to be useful in predicting and reducing *non*-intimate partner homicides, but inadequate in affecting the incidence of intimate partner homicide, specifically femicide. They further asserted that the prioritized integration of feminist theory in femicide research is imperative to predict and end femicide.
- Social Learning Theory could be used to explain the intergenerational transmission of violence (Chimbos, 1978; O'Leary, 1988), accounting for the presence of relationship abuse prior to homicide, but it fails to provide evidence of a correlation to femicide.

- Kratcoski (1988) failed to make a correlation when considering perspectives including stress, systems, exchange/social control, and social learning theories to explain family homicide.

According to IPV expert, Martin Schwartz, “The most important research finding of the past two decades is that violence can only be understood in the context of gender inequality (2005, p. 8). The current study will utilize the knowledge gained from this rich history of research and employ a feminist theoretical framework through which to examine factors contributing to a correlation between pregnancy and IPV/femicide. This framework will guide variable selection, analyses, and interpretation of results to determine the factors that may heighten a pregnant woman’s risk of IPV and/or femicide compared to non-pregnant women.

#### Explaining Pregnancy-Associated IPV/Femicide

A number of reasons have been proposed as to why men may first begin or continue perpetrating violence against their IP during her pregnancy, and also how the abuse may take a deadly turn. These include unwanted or unplanned pregnancy (Bacchus, Mezey, & Bewley, 2006; Campbell et al., 1995), a struggle for sexual access by the male partner (Gelles, 1975; Bacchus, Mezey, & Bewley, 2006; Mezey, 1997), stress associated with the anticipation of parenthood (Bacchus, Mezey, & Bewley, 2006; Gelles, 1975), jealousy and resentment, even antipathy, toward the unborn child over the amount of attention and nurturing the child will require of the woman (Bacchus, Mezey, & Bewley, 2006; Campbell et al., 1998; Helton & Snodgrass, 1987; Mezey, 1997), and suspicions concerning paternity (Bacchus, Mezey, & Bewley, 2006). As each of these sources are grounded in issues of power and control, feminist theory offers the necessary framework from which to understand and explain these factors, as it

has been in much of the non-lethal and lethal IPV research (e.g., Campbell, 1992; Ellis & DeKeseredy, 1997; Websdale, 1999).

In their work on unintended pregnancy, Pallitto, Campbell, and O'Campo (2005) argue that "...what is lacking is research that combines the theoretical basis to show how [IPV] creates an environment in which women's control over reproductive decision making is limited...The research in the area of IPV and reproductive health outcomes to date has been relatively atheoretical" (p 230). Though they refer to this framework in relation to the role of unintended pregnancies in reproductive issues, the call can certainly apply to pregnancy-associated IPV research in general, particularly given their implication that studies are needed that "consider gender inequality and male domination in cultural context as factors..." (Pallitto, Campbell, and O'Campo, 2005, p. 230).

### *Unintended Pregnancy*

The impact of unintended pregnancies in IPV comes in two forms. First, women in controlling, abusive relationships may not want to be pregnant but essentially have no choice in the matter. Second, pregnancy may occur where neither partner intended to conceive. In both cases, the male partner's behavior because of and during the pregnancy creates potentially lethal conditions for the woman. Both forms have been explored in research producing empirical evidence that men may resort to severe, even deadly force against the pregnant women in their lives as a direct result of the pregnancy itself.

In their qualitative study of sixteen women, thirteen of whom had experienced pregnancy-associated abuse, Bacchus and colleagues reveal "Women in abusive relationships struggle to retain control over their sexual and reproductive health and experience difficulties in

accessing health care during pregnancy...sexual access is obtained through threats and the use of physical force” (2006, p. 589). Since the abused woman has little or no say in her sexual and reproductive activity, the abuser controls the family planning, and thus, may “get her pregnant” without her desire to have a child. This is one phenomenon associated with sexual propriety, where men believe they own women and have the right to control their sexuality and reproductive abilities (Daly & Wilson, 1988).

An unintended pregnancy may occur with any heterosexual couple, and when a couple is surprised by a mistimed or unwanted pregnancy, violence may begin or may increase as a result of the male partner’s resentment over a number of issues. Goodwin et al. (2000) found that the women in their study who had unwanted pregnancies had significantly higher levels of IPV during the one year period before conception and/or during the actual pregnancy compared to the women who had intended to become pregnant. In fact, they had over twice the risk of physical violence at the hands of their partners compared to women with planned pregnancies. After a comprehensive review of pregnancy-associated IPV studies, Jasinski posits that, in addition to the other potentially dangerous risks posed by issues such as jealousy, an unplanned pregnancy may be perceived by the man as “something that he could not control” (p. 55, 2004).

### *Struggle for Sexual Access*

Along with controlling sexuality and reproduction, men may feel the physical and emotional changes that occur during pregnancy are unacceptable (Mezey, 1997), even in cases where there is not an acute risk associated with sexual proprietariness. In addition to a burgeoning abdomen, physical fatigue, and changes in libido, “pregnancy may block the man’s free access to his wife’s body, resulting in disputes and resentment within the relationship”

(Bacchus, Mezey, & Bewley, p. 593, 2006). The resulting abuse is not limited to physical abuse. Bacchus and colleagues (2006) found a correlation between the woman's changes in her appearance and sexual identity during pregnancy with both psychological abuse, where the men would demean the women over their appearance, and sexual abuse, where they attempt to regain the control over her body. In addition, men may restrict use of family resources as "punishment" and as a mechanism of control (e.g. Bacchus, Mezey, & Bewley, 2006).

### *Financial Stress*

One area of risk stems from the increased financial demands associated with pregnancy and having a child (Bacchus, Mezey, & Bewley, 2006; Gelles, 1975; Jasinski, 2004). Since the costs of health care and supporting a baby certainly increase for everyone, this may cause a financial strain for many, leading to onset of violence or increased severity. Bacchus et al. (2006) found that all of the women in their study had experienced power and controlling tactics by their IP's. They found that the women had been limited or denied access to the family finances, which sometimes stemmed from reduced or lost employment during pregnancy. This led them to be financially dependent on the men, a condition which the men used to exploit by using money as leverage for power and control. In turn, the financial dependency made it more difficult for the women to leave to escape the abuse, as did the prospect of having to raise the child alone. Some of the women wanted to leave and some had attempted to leave in order to reduce the baby's exposure to violence or actual victimization, but the financial dependence, as well as the risk associated with leaving commonly leads women to stay or to return.



### *Jealousy and Resentment*

Jealousy and resentment are common themes in pregnancy-associated IPV literature (i.e. Jasinski, 2004). The women studied by Bacchus and colleagues (2006) report that their partners became jealous and resentful of the baby, seeing the pregnancy and presence of a baby as a threat to the amount of attention and care he was accustomed to. In addition, jealousy also comes from the amount of attention pregnant women receive from others and the amount of time devoted to caring for a baby (Bacchus, Mezey, & Bewley, 2006; Helton & Snodgrass, 1987; Mezey, 1997). In addition to power and control and other psychologically abusive behaviors, this jealousy can lead to severe physical violence.

Women abused by a partner during pregnancy report that the abdomen and breasts are commonly targets for their partner's violent attacks, including kicking and punching (Bacchus, Mezey, & Bewley, 2006; Helton & Snodgrass, 1987). In fact, Bacchus and associates (2006) found that four of the women in their study had suffered six miscarriages between them due to abdominal injury from their partner. The authors contend that this type of directed violence "represents an attack on the woman's sexual and procreative powers as well as her unborn child" (p. 592, 2006). Further, the women in the study perceived the violence "as a reflection of their partner's profound ambivalence, if not hostility, toward their unborn child" (p. 592, 2006).

Jealousy has been established as a cornerstone in abusive relationships in general, particularly in relation to femicide (Block & Christakos, 1995; Daly & Wilson, 1988; Websdale, 1999; Wilson, Johnson, & Daly, 1995). In the case of pregnancy, abusive men often direct these jealous tendencies toward the paternity of the child (Bacchus, Mezey, & Bewley, 2006; Campbell et al., 1998; Jasinski, 2004).

### *Accusations Concerning Paternity*

Evolutionary psychology has been applied to the study of pregnancy-associated IPV, producing explanations for why men may question the paternity of their children (Burch & Gallup, 2004). Whereas women are biologically certain their offspring are theirs since their bodies serve as the site for gestation, men can never be truly certain, which explains why abuse may increase during pregnancy, particularly for men who are sexually jealous (Burch & Gallup, 2004). Burch and Gallup (2004) point out that the evolutionary perspective suggests men would be acutely aware of situations that could affect their ability to reproduce their own offspring, specifically in cases of infidelity or when a woman already has children by another partner. A perceived threat may lead him to react with violence and will also lead to less investment in the child he may suspect is not his, as well as in cases where he has stepchildren. Several studies have found accusations concerning paternity as a cause for pregnancy-associated violence (i.e. Bacchus, Mezey, & Bewley, 2006; Burch & Gallup, 2004; Campbell, 1986; Campbell et al., 1995).

The several explanations discussed for pregnancy-associated violence have one predominant theme: power and control. The demand for power and coercive control tactics used to maintain it is a common theme in abusive relationships (Yllo, 1993). These explanations supported by empirical findings suggest that pregnancy does not offer protection from violence, and explains why it may in fact lead to increases in violence in some cases. As noted by Bacchus and associates, “Pregnancy symbolizes the woman’s autonomous control over her body and her independence from her partner” (2006, p. 595) Considering all the challenges to an abusive man’s inability to maintain that power and control with the changes to the woman and the relationship during pregnancy, and given the predominance of control in domestic violence,

“...it is therefore not surprising that an event such as pregnancy may be associated with increased violence by the abusive partner as he attempts to reestablish his control Bacchus, Mezey, & Bewley, 2006, p. 595).

### Pregnancy and Decreased Risk?

The feminist model offers explanations for why males may become more violent toward their partners during pregnancy, but there are also explanations for why pregnancy may present a period of decreased risk as well. A look at the Latino cultural perceptions regarding the male role in the family is particularly useful in this regard.

Based on data collected from Latina women in a focus group study, Klein and colleagues (1997) were able to identify certain customs that aid in understanding the dynamic of violent relationships within the Latino culture. First, the underlying value system of the Latino culture emphasizes family, particularly unity and loyalty, and outlines certain prescribed roles for women and men. Men are to head the family and are expected to rule with strength and dominance, while also serving as the protector of his wife and children. The concept of *machismo*, whereby men are deemed the dominant sex and free of weakness, is still active within the Latino culture. Women are expected to nurture the family and to essentially submit to the male in everyway and conflict is contained strictly within the family.

The women in their group reported that these cultural expectations of the male encourage violence in the home. In fact, the women reported that Mexican-born Latino men tend to be “more rigid, punitive, and domineering toward women,” compared to Latino men born in the United States (1997; p. 75). However, the idea that men are charged with the responsibility for

protecting the family tends to mitigate attitudes among Latina women and Latino men that domestic violence is a source of egregious power and control.

The significance of family as a core value within the culture is a key to the way people respond to domestic violence, and this is reinforced in the religious structures (predominantly Catholic). Family unity is emphasized, and individuals are expected to sacrifice personally if it benefits the family unit. This is one reason why Latino women are reluctant to leave an abusive husband, as they feel the children should not be separated from their father. A woman's endurance is a necessary and expected sacrifice for the maintenance of the family. Staying with and even forgiving an abusive spouse is viewed as a religious obligation (Klein, Campbell, Soler, & Ghez, 1997; Torres et al., 2000).

Although the study by Klein et al. did not address pregnancy-related abuse specifically, the findings concerning the Latino culture with regard to the gender roles and emphasis on family are useful in inferring how pregnancy might affect the dynamic of a relationship within a Latino family, and perhaps how this might also play out in families from other cultures as well. With the clear expectation that men are to protect their families, a man might be particularly attentive to the needs of his pregnant partner, taking extra care to ensure the well-being of her and the unborn child. This may encourage a decrease in violence or cessation altogether during pregnancy in cases where the man had a propensity for violence against his partner. Violating this responsibility to protect his pregnant wife might result in ridicule and reprimand by the family and/or the church who expect men to tend to the safety of their wives and children, even if abuse may otherwise be accepted as a means to maintain control of the family.

The cultural emphasis on family in general, protection of the family, and the unification of family serves to explain why pregnancy may present a protective period within the Latino

culture. This rationale may also apply to families of other cultures where pregnant women are seen as being in a fragile state, and/or particularly valuable in terms of their role as child bearer. As noted previously, pregnancy presents a time where women are showered with attention, even revered for their role as mother (Bacchus, 2006). Whereas this may incite violence by men who see this attention and reverence as a personal loss, other men may subscribe to the idea that a pregnant woman is especially deserving of protection and safety, both for her and the baby.

## CHAPTER FOUR: METHODOLOGICAL OVERVIEW

The overarching question guiding this research proposal is drawn directly from the question remaining to be answered conclusively in the literature: *What correlations exist between pregnancy and lethal and/or non-lethal IPV?* With the research divided on this issue, it is imperative to continue investigating the relationship between pregnancy and IPV in order to determine what, if any, correlations may exist.

There are many factors to consider with regard to this complex question. As previously noted, a multi-phase research project will be undertaken to explore all related facets, and multiple sources of data utilized in order to get the most complete picture. Given that the current study represents the first phase of this investigation, several questions are relevant in order to establish the foundation. Relying on multiple sources of data is an important strategy; however, no one source will be able to answer every question. In fact, some questions may only be addressed by one source, while others, such as sociodemographics of victims can be addressed by all three. In any case, the theoretical framework and limitations of existing literature call for the following questions to be addressed in the study:

- *What characteristics of victims and perpetrators including age, race, educational attainment, employment status, and income are most associated with pregnancy-associated IPV? With pregnancy-associated femicide?*
- *How does the relationship status (i.e. marital status) and state (i.e. estranged, residing together) of a couple interact with pregnancy to increase risk for pregnancy-associated IPV? With pregnancy-associated Femicide?*

- *How does the presence of other children in the home, particularly children not sired by the male, affect the risk for pregnancy-associated IPV? With pregnancy-associated Femicide?*
- *How does pregnancy affect the risk for and severity of:*
  - *threats of violence*
  - *power/control tactics*
  - *physical violence*
  - *stalking behaviors*
  - *sexual violence*
  - *lethal violence*

### The Datasets

Three separate datasets are used in the current study: The National Violence Against Women Survey, The Chicago Women's Health Risk Study, and the National Violent Death Reporting System. An overview of the datasets and the contributions of each are discussed below, with extensive details pertaining to each study provided in the following chapters.

#### *The National Violence Against Women Survey*

The first dataset used in the current study is the National Violence Against Women Survey, (also known as the Violence and Threats of Violence Against Women and Men in the United States 1994-1996) (Tjaden and Thoennes, 1999). In-depth telephone interviews were conducted with a nationally representative sample using random-digit dialing from November 1995 to May 1996. The sample consisted of 8,000 women and 8,005 men 18 years of age and older residing in households with telephones from every U.S. state and the District of Columbia.

Although the overall goal of the study was to better understand violence against women, both women and men were included “to provide a context in which to place women’s experiences” (Tjaden and Thoennes, 1999, p. ii). Additional details concerning the specific purpose and goals of the study, the pertinent variables, measurements, and methodology are discussed in Chapter 5.

### Why the NVAW?

The NVAW survey presents a crucial resource to IPV researchers and practitioners. To date, it is one of the most heavily cited studies for rates of prevalence, incidence, and consequences (Tjaden and Thoennes, 2000), and remains the only nationally representative survey available to study the association between IPV and pregnancy. Accordingly, it is still widely used for scholarly research concerning violence against women.

The current study seeks to examine the “bigger picture” concerning IPV and pregnancy with a central goal of determining lethality risk. Although the NVAW survey does not directly offer a measure for pregnancy-associated lethality, the otherwise exhaustive data provide an opportunity to more thoroughly study pregnancy-associated non-lethal IPV, including psychological (i.e. threats of violence), physical, stalking, and sexual violence, as well as a measure of the power and control dynamic. These will enhance the current body of research by taking into account multiple forms of abuse, including threats of abuse and severity of abuse, respondent and intimate partner sociodemographic characteristics, and various measures pertaining to reproductive activity on the part of the respondent. These reproductive measures include experiences with pregnancy, live births, and miscarriage/stillbirths, and are studied in conjunction with the various types of intimate partner abuse.



These data can be considered the very foundation for multi-dimensional research seeking to determine the risk pregnancy presents for lethal IPV. Understanding the prevalence and incidence of non-lethal violence against women, characteristics of victims and offenders, and characteristics of the victimizations perpetrated against women serves to augment research on lethal IPV by providing context. As such, the data drawn from the NVAW survey will contribute a major portion to the current study. That portion is the pathway to lethal violence by looking at the frequency and severity of violence in non-lethal cases. Although these data are different from the lethal samples and cannot be directly compared, the examination of both allows for understanding the extent to which non-lethal and lethal IPV differ.

#### *The Chicago Women's Health Risk Study*

The second data source is the Chicago Women's Health Risk Study, 1995-1998 (CWHRS; Block, 2000). This study was designed to inform practitioners in a number of settings, including medical and criminal justice fields regarding risk identification and intervention strategies. Using a quasi-experimental design, researchers collected data to create two separate databases including a clinic/hospital sample and a homicide sample. Comparisons were made for non-abused and abused women, and for non-lethal and lethal victims. Additional details concerning the specific purpose and goals of the study, the pertinent variables, measurements, and methodology are discussed in Chapter 6.

#### Why the CWHRS?

The CWHRS offers the unique advantage of combining both lethal and non-lethal samples. Further, the nature of the variables in the dataset allow for measuring not only sociodemographics and family dynamics, but also power and coercive control tactics, physical,

stalking, sexual, and other violent and threatening behavior. In addition, the CWHRS allows for a comparison of life-threatening and lethal violence. Given that the data were collected from the Chicago area, specifically from areas plagued with high femicide rates, the CWHRS data offer a unique and different geographic view than the other two sources used, and the respondents are women who are at particularly high risk for death.

The multiplicity of sources relied upon for the lethal sample provides the opportunity to get a more reliable estimate of pregnancy-associated femicide. For example, the inclusion of medical examiner reports provide for more conclusive pregnancy status. According to Horon and Cheng (2005), relying solely on death certificates will result in a vast underestimate of actual pregnancy-related homicides and other sources must be utilized. They cite medical examiner's reports as particularly useful and suggest linking these data with other sources in order to get a more accurate estimate of pregnancy-associated deaths.

Campbell has discussed the limitations of official data for determining pregnancy status in lethal samples (2007). She notes that vital records and coroner/medical examiner reports do not provide conclusive data on pregnancy status since autopsies are not always performed and when they are, the uterus is not always examined. Similarly, relying on SHR data will not account for femicides perpetrated by an ex-boyfriend and also has the same problems associated with pregnancy detection, so both of these sources alone will likely lead to underestimations in pregnancy-associated deaths (Campbell, 2007). However, although these reports are not necessarily conclusive with regard to pregnancy status, medical examiner reports are likely the best source for this information when self-report data are not available, as in the case of femicide victims, particularly in datasets such as this one where the data are linked to other sources. A detailed report of the CWHRS study is provided in Chapter 6.

### *National Violent Death Reporting System*

Coordinated by the Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, the National Violent Death Reporting System (NVDRS), launched in 2002, is a multi-source dataset comprised of data drawn from death certificates, coroner/medical examiner reports, police reports, supplemental homicide reports, and crime labs, as well as data from secondary sources such as fatality review teams, hospitals, and other governmental agencies. It serves as an incident-based monitoring system with the overarching goal of preventing violent deaths. They collect and link data from these sources on all violent deaths occurring in the participating states (16 at this time) including: demographics of both victims and perpetrators, victim-offender relationship, and a variety of contextual variables such as substance use, circumstances leading to the injury, date and location of the incident, and weapon type.

While any one of the individual sources included in the data are useful and have informed research for many years, the collectivity is key in providing the broadest look at the nature of violent deaths in the U.S. As previously noted, the linkage of such data as SHR and medical examiner reports, enriches the reliability of the data and offers a better chance of getting a conclusive pregnancy status since self-report data are not available on lethal samples (Campbell, 2007). According to the CDC, “Individually, these sources provide fragmented data that explain violence only in a narrow context. Together, these sources offer a more comprehensive picture of the circumstances surrounding a homicide or suicide (CDC website).<sup>1</sup> Additional details

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<sup>1</sup> (<http://www.cdc.gov/ncipc/profiles/nvdrs/default.htm>)

concerning the specific purpose and goals of the study, the pertinent variables, measurements, and methodology are discussed in Chapter 7.

### Why the NVDRS?

The NVDRS boasts as being one of the most timely, detailed, complete, and useful sources for information on violent deaths (2005, p. 8). The multiple sources involved make estimates more reliable, and the inclusion of medical examiner reports linked with other data sources provides for more conclusive pregnancy status than death certificates alone. In addition to the multi-source nature, the vast number of areas covered geographically is unique to studies of pregnancy-associated violence, which tend to rely on smaller samples derived from a hospital or clinic. Just as the NVAW survey can provide important context with regard to the pathway to lethality, the NVDRS provides such context for those unfortunate cases that turn deadly.

As noted, utilizing three sources of data will allow for a more thorough investigation of the overarching research question concerning the effect of pregnancy on lethal and non-lethal IPV. The datasets used in the study were chosen based on the contributions each offered to the “bigger picture.” Further, each of these sources offers a variety of assets for the study regarding sample size, representation of various populations, and variable selection for a variety of analyses. However, none of the datasets, or any other existing source of data to date, can offer all the necessary variables or the necessary sample to conclusively determine the effect of pregnancy on IPV. Table 1 illustrates the main characteristics and contributions of each of the datasets included in the analysis, though these features are discussed in much greater detail in the individual chapters for each study.

Table 1. Features of Each Dataset/Research Questions Addressed

	<b>NVAWS</b>	<b>CWHRS</b>	<b>NVDRS</b>
<b>Total Sample of Women</b>	8,000 Non-Lethal	705 Non-lethal 87 Lethal	16,342 Lethal
<b>Data Collection</b>	Nationally representative, random sample telephone survey	Non-lethal: In-person interviews at 4 hospital/clinics in Chicago area Lethal: Linked data from proxy interviews, official and public records, and Chicago Homicide Dataset	Data from 16 states linked from death certificates, medical and criminal justice records, SHR's, crime labs, other secondary sources.
<b>IPV Measured</b>	Physical, sexual, stalking, threats of harm/death, power and control	Physical, sexual, harassment, threats of death, power and control, lethality risk	"Abused," presumed to indicate physical abuse
<b>Non-lethal/Lethal Violence</b>	Non-lethal only	Non-lethal and lethal	Lethal only
<b>Severity of Abuse</b>	Allows for severity measures in terms of minor/severe for physical, attempted/completed acts for sexual, and level of power and control	Allows for severity measures in terms of increased frequency for physical, harassment, power and control, and lethality risk. Comparison for severity also in non-lethal vs. lethal violence	N/A
<b>Victim Characteristics Measured</b>	Age, employment, education, race, income (household, or personal if woman was single)	Age, employment, education, race, income (household)	Age, race, education
<b>Perpetrator Characteristics Measured</b>	Current IP at time of interview, not necessarily referent abuser	Age, employment, education, race,	N/A

	<b>NVAWS</b>	<b>CWHRS</b>	<b>NVDRS</b>
<b>Relationship Status</b>	Marital status categories	Marital status categories	Marital status categories
<b>Relationship State</b>	Whether woman resides with an IP	Whether woman resides with an IP	N/A
<b>Presence of Children/Stepchildren in the Home</b>	Presence of children, but not of stepchildren	Presence of children and presence of stepchildren	N/A
<b>Other Features Utilized for Study</b>	Pregnancy proxy variables: Live birth experience/miscarriage experience	N/A	Cause of death, weapon type

### Operationalizations

The three individual studies include different options for operationalizing pregnancy and abuse based on how the variables are presented in the three datasets. Specific coding strategies are discussed in the respective chapter pertaining to each study. Table 2 illustrates these distinctions.

Table 2. Pregnancy Measures for Each Dataset

	<b>NVAWS</b>	<b>CWHRS</b>	<b>NVDRS</b>
<b>Pregnancy Measure</b>	Pregnancy status is <i>directly</i> measured only within the subsample of women who were physically abused and as an outcome within the subsample of women who were sexually abused. However, live birth and miscarriage history allow for pregnancy-related analysis by proxy.	Every woman interviewed was asked if she was pregnant then or within the past year of interview.  Pregnancy at the time of death or within year of death was determined for the lethal sample by use of official data and proxy interviews.	Each case accounts for whether a woman was pregnant at the time of death or within one year of death. Pregnancy is determined from linked data such as medical examiner reports and official data.
<b>Analysis</b>	All subjects included in comparisons of pregnant and nonpregnant victimizations have been physically abused. The comparison is between those pregnant while physically abused, and those not pregnant while physically abused. However, analyses were conducted on the total VAW sample to study effects of abuse on other reproductive variables, such as miscarriage/stillbirths.	The pregnancy measure allows for comparisons of pregnant vs. nonpregnant women across various types of abuse and various levels (i.e. lethal vs. non-lethal).	Pregnant vs. nonpregnant comparisons can be made for those who were killed and with those abused when killed vs. not abused.

The measures for pregnancy presented some complex conceptual problems. The International Codes for Death, Tenth Revision (i.e. ICD-10) informs individual countries of how to account for maternal mortality and include the following separate options for coding deaths associated with a pregnancy: 1) not pregnant within past year, 2) pregnant at time of death, 3) not pregnant, but pregnant within 42 days of death, 4) not pregnant, but pregnant 43 days to 1 year before death, and 5) unknown if pregnant within the past year (CDC, 2007). These codes

are used to classify pregnancy-related deaths on death certificates. Although death certificates were used as one source for pregnancy status in the CWHRS and NVDRS datasets, the ICD-10 coding for maternal mortality was not retained in either set. Further, the variables measuring pregnancy within the two sets are not the same, precluding the ability to directly compare results for pregnancy-related IPV or femicide.

Terms such as *pregnancy-related intimate partner violence* and *pregnancy-related femicide* (or pregnancy-associated) are used throughout the studies. Within the context of an individual study, these terms will refer to IPV or femicide occurring during or within one-year of pregnancy, as per the definition allowed within each individual study (i.e., Chang et al., 2005; Shadigian & Bauer, 2003).

Multiple dimensions of intimate partner violence are studied between the three datasets, including physical violence, sexual violence, stalking, harassment, threats of serious harm and/or death, and power and control, as well as lethality assessment scores. Some of these are included in each dataset while others are unique to one. Table 3 details the types of abuse studied and the way in which they are measured within each source.



Table 3. Intimate Partner Violence Measures for Each Dataset

	<b>NVAWS</b>	<b>CWHS<sup>1</sup></b>	<b>NVDRS</b>
<b>Physical</b>	Derived from a 12-item modified Conflict Tactics Scale. Studied both dichotomously (i.e. yes/no) and in separate scales to distinguish between minor and severe violence.	Computation of an 11-item modified Conflict Tactics Scale. Studied dichotomously (i.e. yes/no) and in scale form.	Only one dichotomous measure of abuse, presumed to refer to physical abuse, where decedents' records were coded as "abused" or "no, not collected, not applicable, or unknown"
<b>Sexual</b>	Dichotomous variable created from numerous items pertaining to attempted and forced sexual activity to measure yes/no to perpetration of any kind. Additionally, separate variables were created to measure severity by comparing attempted and completed acts.	Dichotomous measure of whether a perpetrator had tried to force the woman into sexual activities.	N/A
<b>Stalking</b>	Derived from an 8-item scale of following/harassment behaviors combined with measures of repetition of perpetration and fear caused for victim. Studied dichotomously (i.e. yes/no).	See harassment	N/A
<b>Threats</b>	One dichotomous item asking respondents if anyone has ever threatened to harm or kill them.	Dichotomous measure of whether a perpetrator had threatened to kill the woman.	N/A
<b>Harassment</b>	See stalking	Computation of 19 items to form scale of following, harassment, coercive perpetrator behaviors. Also studied dichotomously.	N/A
<b>Power and Control</b>	Computation of 11 items to form a scale of coercive perpetrator behaviors.	Computation of 5 items to form a scale of coercive perpetrator behaviors.	N/A
<b>Lethality Assessment</b>	N/A	Derived from 17 items measuring behaviors associated with lethality risk	N/A

<sup>1</sup> A variable measuring "abuse" was provided in the dataset and derived from the three screening questions asked of every respondent. Anyone answering yes to IP-physical or sexual victimization, or who were afraid to return home were coded as "abused." This variable was used in the analyses as well.

### Other Data Sources

The three datasets chosen for the current study are not the only existing sources available for secondary analysis pertaining to IPV and pregnancy. Though there are quite a few sources available for the study of IPV, those including measures for pregnancy-related IPV and/or femicide are scarce relative to the overall number of IPV-related sources. There were other sources considered for the study, including the Pregnancy Mortality Surveillance System (PMSS) and the Pregnancy Risk Assessment Monitoring System (PRAMS).

Operated through the Centers for Disease Control, PMSS consists of death certificates provided by health departments in all 50 states and the District of Columbia for deaths occurring within one year of pregnancy. In addition, other outcome documents such as birth or fetal death certificates are provided when available. CDC epidemiologists then review the documents and determine when a woman's death is pregnancy-related. Reports are compiled and released by the CDC accordingly (i.e. Chang et al., 2003). While the PMSS is a valuable resource for maternal mortality research, it does not include the wealth of information afforded by extensively linked data provided in the CWHRS and NVDRS with regard to maternal deaths. Further, the PMSS data have been relatively well incorporated in the literature on the topic of pregnancy-associated maternal mortality, while neither the CWHRS nor the NVDRS had been at the time of the current study. In fact, this study is among the first to use either the NVDRS or the CWHRS for pregnancy-associated femicide research.

PRAMS is also a CDC surveillance program and was designed expressly to improve the health of mothers and their babies through intervention and reduction in negative pregnancy outcomes. Samples of 1,300 to 3,400 women who recently had a live birth are taken from each state's birth certificate file and are contacted for an interview. The same data are collected in

each of the 37 participating states state to allow comparisons across states. The PRAMS data do include variables to measure abuse before and during pregnancy and IPV-related studies have been conducted using PRAMS data (i.e. Silverman, Decker, Reed, & Raj (2006). However, the PRAMS data are primarily health-centered, while the data sets chosen for this study focus specifically on violence, allowing for more substantive analyses regarding types of violence, levels of severity, etc. (CDC, 2008). While IPV is unmistakably a health issue, the violence-centered focus of the data chosen seemed better suited to address the specific research questions guiding this study. Additionally, like the PMSS data, the PRAMS data have been fairly well established within the pregnancy-associated IPV literature.

In addition to the PMSS and PRAMS data, several other sources exist for secondary analysis pertaining to IPV. However, as noted by Campbell and colleagues, even though the various sources have a great deal to offer IPV researchers, many of them also have important limitations “[relating] to the methods used to operationalize and measure [IPV], the relative dearth of longitudinal data, the poor representation of persons from various minority racial/ethnic groups in the study samples” (2006, p. 4). In addition to these limitations, the absence of a variable establishing pregnancy status precludes many datasets from being used to study pregnancy-related IPV (see Campbell et al., 2006 for a discussion of survey data pertaining to IPV).

The three sources used in the current study were chosen because of their expressed focus on violence toward women. All three include measures for abuse, and while IPV is most certainly a women’s health issue, the health-centered sources available do not allow for the depth of measurement with regard to types of violence that is achievable with the NVAW and CWHR datasets. While the NVDRS data are not conducive to extensive measurement of ante mortem

violence either, these data are newer and have not been used for pregnancy-associated violence studies to date. Therefore, use of the NVDRS presents a unique opportunity to conduct exploratory analysis of these data for use in pregnancy-associate femicide research.

## CHAPTER FIVE: THE NATIONAL VIOLENCE AGAINST WOMEN SURVEY

### Data

This nationally representative study (n = 8,000 women) was conducted to provide crucial information concerning violence against women which had remained limited in the extant literature. According to the researchers, the following were goals of the study: (1) to provide reliable estimates of the prevalence and incidence of various forms of violence against women, including rape, physical assault, and stalking, (2) to provide descriptive data on victims and perpetrators, including male-to-female and female-to-male intimate partners and victims of different racial and ethnic backgrounds, (3) to provide descriptive data on the physical, psychological, and social consequences of violent victimization, including injured victims' use of medical services, (4) to examine the links between threats of violence and actual occurrences of violence, (5) to examine the links between victimization, fear of violence, and coping strategies, (6) to examine how women respond to specific victimization, including their involvement in the criminal justice system, (7) to provide information on violence perpetrated against men and women by same-sex intimate partners, and (8) to provide comparable information on the experiences of men that would permit comparisons of the prevalence of violence and severity of injury suffered by women as opposed to men abused by intimates (p. iv).

Interviews with each respondent included 14 sections to collect data on the various areas outlined above, as well as detailed information pertaining to any victimizations a respondent disclosed having occurred during the lifetime up to the one-year period prior to the interview. The household participation rate was calculated at 72.1 percent in the female survey. In addition, researchers concluded that the sample was representative of the population (U.S. households

with a telephone) from which it was drawn. Although the survey did not include data from those in homes without a telephone, the homeless, or the institutionalized, the researchers concluded that any possible underrepresentation due to these exclusions was minimal due to the overwhelming majority of U.S. households with telephones.

In addition to being nationally representative, the large sample size of women in the NVAW is one of the assets this source offers to researchers. The current study includes analysis of multiple types of abuse and includes controls for a number of sociodemographic characteristics and family dynamics. Of primary interest is the effect of pregnancy on abuse. While pregnancy status was not obtained for each respondent regardless of victimization, respondents disclosing physical violence and/or threats of harm or death were asked if they were pregnant at the time of the most recent incident and women who disclosed sexual assault were asked if their victimization resulted in pregnancy. Consequently, pregnancy outcome was measured for both physical and sexual pregnancy-associated abuse.

In addition to the explicit pregnancy measures, two items were utilized as “pregnancy proxy” variables in the analyses: whether or not the woman has ever had a live birth, and whether she has ever had a miscarriage/stillbirth. Each respondent was asked these questions, allowing for additional use of the total NVAW sample of women who had been abused by a current or former IP on a number of dimensions.

In order to maximize the potential for insight offered by the NVAW survey data to the overall picture concerning pregnancy and IPV, two major sets of analyses were conducted with the NVAW sample. The first set of analyses involved all physical abuse, sexual victimization, stalking victimization, power and control tactics, and threats of harm or death by a current or former IP, and a second, more focused set concerning just those physical assaults occurring

during pregnancy and other victimizations against women who had also been physically abused during a pregnancy. The total sample analyses were conducted first, and began with creating variables to measure abuse types of interest: physical, stalking, and sexual violence, threats of harm or death, and power and control tactics.

### Measures

Computations for physical, sexual, and stalking violence were provided in the NVAW codebook and used in this study. Following is a discussion of those computations as well as the variables used to create threat and power/control variables.

Physical violence occurring during adulthood was determined by counting all responses to the following questions for each woman, which were adapted from the Conflict Tactics Scales (Straus, 1979):

*Did your IP: Throw something at you that could hurt you? Push, grab, or shove you?*

*Pull your hair? Slap or hit you? Kick or bite you? Choke or attempt to drown you?*

*Hit you with some object? Beat you up? Threaten you with a gun? Threaten you with a knife or other weapon besides a gun? Use a gun on you? Use a knife or other weapon besides a gun?*

The variable was recoded to create a dichotomous variable to measure whether or not a woman was a victim of any form of physical abuse.

The stalking variable was created by first counting the following variables for each woman:

*Has your IP: Followed you or spied on you? Sent you unsolicited letters or written*

*correspondence? Made unsolicited phone calls to you? Stood outside your home, school*

*or workplace? Showed up at places you were even though he or she had no business being there? Left unwanted items for you to find? Tried to communicate with you in other ways against your will? Vandalized your property or destroyed something you loved?*

A variable was then created to measure whether a woman had been the victim of any of these acts and that the act(s) had occurred on more than one occasion. Next, the level of fear the act created for the victim was accounted for by creating a composite variable combining a variable asking the woman to rate the level of fear ranging from “not really frightened” to “very frightened” and a separate variable asking the woman if she believed she or someone close would be seriously harmed or killed by the stalker. Finally, the dichotomous stalking variable measuring whether or not a woman was stalked was created so that a woman had to have been the victim of repeated acts of following or harassment and the acts had to have generated fear of harm.

The variable for sexual violence was derived by counting a combination of variables including “yes” or “no” responses to questions about vaginal, oral, or anal penetration by penis, tongue, fingers, or objects, and whether or not force or threat of harm was used by the perpetrator, as well as if any of these things had been attempted but not completed. A dichotomous variable was then formed to measure attempted or completed rape (coded as 1) and no attempted or completed rape (coded as 0).

Verbal threats were measured by relying on one question asking respondents whether or not anyone has ever threatened to harm or kill them (1=yes).



Two separate scales were first created to measure power and control. The first scale was to measure power and control by a current partner and the second scale pertained to a former partner. Each scale involved computing the following variables:

*Is your partner jealous or possessive? Tries to provoke arguments? Tries to limit your contact with family or friends? Insists on knowing who you are with at all times? Calls you names or puts you down in front of others? Makes you feel inadequate? Shouts or swears at you? Frightens you? Prevents you from knowing about or having access to the family income even when you ask? Prevents you from working outside the home? Insists on changing residences even when you don't need or want to?*

Next a variable, *power*, was created where the power scale for current partner abused is used when the woman did not have an intimate partner at the time of the survey but rather responded with information pertaining to a former partner's power and control.

After the abuse victimization variables were created, additional variables were created for each victimization type in order to select those victimizations perpetrated by a current or former intimate partner. Using the offender grids provided in the survey for each victimization type, a new dichotomous variable for each was created where abuse by a current or former IP is coded "1," and abuse by a non-intimate offender or no abuse victimization is coded "0." Frequency distributions for the victimization types perpetrated by a current or former IP are provided in Table 4.

Table 4. Frequency Distribution of Abuse Victimization Type in Total Sample (N=8,000)

	Frequency	Percent
Physical Abuse Victim	2447	30.6
Physically Abused by an IP	1503	18.8
Sexual Assault Victim <sup>1</sup>	1235	17.6
Sexual Assault by an IP <sup>1</sup>	332	4.2
Stalking Victim	651	8.1
Stalked by an IP	464	5.8
Victim of Threats	301	3.8
Victim of Threats by IP	76	1.0

Mean power and control score = 3 (SD=3)

<sup>1</sup> Includes attempted and completed assaults

In addition to the abuse victimization types, other variables in the study include sociodemographic characteristics for the respondent, including age, employment, education, race, income, relationship status, children in the home, whether or not the respondent has had a live birth, and whether or not the respondent has had a miscarriage. Since IP characteristics are limited to the respondent's current IP at the time of the survey, characteristics for the IP were not included in the analysis at this stage.

## Analyses and Results

### *Frequencies of Study Variables*

The first step in analysis was to conduct frequency distributions for the study variables pertaining to physical violence victimizations (n=2,447), presented in Table 5. Frequencies for the overall sample (n=8,000), and those physically abused and pregnant when the abuse occurred (n=150) are also included for reference. Frequencies of the variables pertaining to those physically abused by a current or former IP and those who were pregnant during this abuse are discussed. These frequencies reflect the women's statuses at the time of the interview.

Table 5. Frequency Distribution of Sociodemographics, Family Dynamics, and Pregnancy Proxy Variables

	Overall Sample (n=8,000)	Physically Abused (n=2,447)	Pregnant When Abused (n=150)
R Mean Age	44.2 years (SD 16.1)	42.3 years (SD 12.6)	43 years (SD 14.3)
% Employed	59.0 (4708)	65.1 (977)	56.7 (85)
Education			
% < High School	10.7 (856)	11.5 (172)	18.0 (27)
% High School-Some College	63.9 (5088)	69.4 (1041)	68.7 (103)
% 4-Year-Post Graduate	25.4 (2019)	19.1 (286)	13.3 (20)
Race			
% White	82.2 (6452)	79.2 (1167)	74.1 (109)
% Black	9.9 (780)	11.1 (164)	11.6 (17)
% Other	7.9 (618)	9.6 (142)	14.3 (21)
Median Income	\$25,000-\$35,000 (SD 2.3)	\$20,000-\$25,000 (SD 2.3)	\$20,000-\$25,000 (SD 2.4)
Relationship Status			
% Married/Common-Law	62.9 (4999)	52.1 (782)	55.3 (83)
% Divorced/Separated	13.2 (1052)	33.3 (500)	29.3 (44)
% Widowed	8.5 (678)	4.9 (73)	7.3 (11)
% Single/Never Married	15.4 (1224)	9.7 (145)	8.0 (12)
Lives with an IP	68.4 (5423)	62.9 (942)	70.0 (105)
Children in the Home	46.5 (3702)	55.0 (824)	62.7 (94)
Has Had Live Birth	75.8 (6030)	85.8 (1284)	96.0 (143)
Has Had Miscarriage/Stillbirth <sup>1</sup>	24.0 (1910)	33.2 (495)	34.9 (52)

<sup>1</sup> Overall sample: 68.1% (n=1285) had one miscarriage/stillbirth, 31.9% (n=602) had 2 or more. Physical abuse sample: 63.7% (n=313) had one miscarriage/stillbirth, 36.2% (n=178) had 2 or more. Pregnant when physically abused sample: 56.1% (n=37) had one miscarriage/stillbirth, 44% (n=29) had 2 or more.

Frequencies in parentheses for percentages

Sample size varies due to missing cases

### Age

The age range for women physically abused by a current or former IP was 18 to 88, with a mean age of 42.3 years. For those reporting they were pregnant when abused, the range was 19 to 81, with a mean age of 43 years.

### Employment

The original employment was recoded into two categories as employed full or part-time including military (coded 1), and not employed (coded 0), which included those not working, students, homemakers, and those responding that they did “something else.” More than two-thirds of physically abused respondents were employed full or part-time at the time of the interview, with 56.7% of those pregnant when physically abused reporting full-time or part-time employment.

### Education

Educational attainment was coded as less than high school, high school to some college, and 4 year degree to postgraduate. Of the physically abused respondents, 11.5% attained less than a high school diploma, 69.4% had a high school diploma to some college, and 19.1% attained 4 year to postgraduate education. By comparison, for those pregnant when abused, 18.0% attained less than a high school diploma, 68.7% had a high school diploma to some college, and 13.3% attained 4 year to postgraduate education.

### Race and Ethnicity

Race and ethnicity included White, Black, and “other,” which was recoded to include Asian or Pacific Islander, American Indian or Alaskan Native, and Mixed race. Of the

physically abused women, 79.2% were White, 11.1% were Black, and 9.6% of were classified as “other.” For those pregnant when abused, 74.1% of physically abused respondents were White, 11.6% were Black, and 14.3% were classified as “other.”

### Income

Questions regarding household income were asked separately for women who lived alone and women who lived with other individuals. Income was calculated so that if a woman lived alone or with children only, her personal income was used, and if she resided with other adults, the total household income was used. The categories include less than \$5,000, \$5,000 to \$10,000, \$10,000 to \$15,000, \$15,000 to \$20,000, \$20,000 to \$25,000, \$25,000 to \$35,000, \$35,000 to \$50,000, \$50,000 to \$80,000, and \$80,000 or more. The median income category for both physically abused and those pregnant when abused was \$20,000 to \$25,000.

### Relationship Status

Relationship status categories include married/common-law, divorced/separated, widowed, and single/never married. Of the physically abused women, 52.1% were married/common-law, 33.3% divorced or separated, 4.9% widowed, and 9.7% single and never married. For those pregnant when abused, 55.3% were married/common-law, 29.3% divorced or separated, 7.3% widowed, and 8% single and never married.

### Relationship State

Relationship state was measured by whether or not the woman lived with an IP. Of the women reporting physical abuse, 62.9% resided with an IP and 70% who were pregnant when abused resided with an IP. A variable was created to make distinctions of residence with an IP

based on relationship status (i.e. married or common-law and residing with an IP), but was not conducive to inclusion in analyses because of low response frequencies in multiple categories. For example, less than 5% of respondents were married or common-law but not residing with an IP, divorced or separated and residing with an IP, or single/widowed and residing with an IP. There were no conceptually sound options for collapsing these categories, so the dichotomous variable measuring whether or not a woman resided with an IP at the time of the interview was used in analyses.

### Children in the Home

The presence of children was measured dichotomously where 1=children in the home, and 0=no children in the home. Of those reporting physical abuse, 55% had children in the home at the time of the interview, with 62.7% of those pregnant during abuse reporting children in the home.

### Births

The birth history for women was measured dichotomously where 1=she has had a live birth, and 0=she has not had a live birth. Of the woman reporting physical abuse, 85.8% have had a live birth, with 96% of those pregnant when abused reporting a live birth.

### Miscarriage/Stillbirth

The occurrence of miscarriage/stillbirths was measured dichotomously in the current study where 1=she has had a miscarriage/stillbirth, and 0=she has not had a miscarriage/stillbirth. Miscarriage/stillbirth was experienced by 33.2% of the physically abused respondent's (with 36.2% of those having experienced two or more miscarriages or stillbirths), and 34.9% of those

pregnant when abused reported having had this experience (44.2% of these women have had two or more). In comparison, 24% of women in the overall sample have experienced a miscarriage or stillbirth (31.9% have had two or more).

### *Total NVAW Sample Analyses*

The first phase of NVAW survey multivariate analyses were conducted on the total sample (n=8,000). Although pregnancy as a specific variable is not available in the full sample, each respondent was asked if she had ever had a live birth and if she had ever had a miscarriage/stillbirth. These dichotomous variables are used as “pregnancy proxy” variables in this phase of analysis. While the NVAW survey allows for analysis of lifetime victimizations, the current study focuses on physical, stalking, sexual, power and control, and threats of violence occurring during adulthood by a current or former intimate partner.

Multicollinearity diagnostics were conducted for all study variables, revealing no multicollinearity issues in any of the models. Variance inflation factors for each regression were examined and the highest VIF among the models was 3.03 (in the power and control model). The highest VIF for the other four victimization types, coded dichotomously, was 2.54, all of which are within the recommended range for quantitative criminology research (Fisher & Mason, 1981). All of the models in the analyses were significant.

After the preliminary analyses, a series of regression analyses were conducted on the entire NVAW sample to test the effects of sociodemographic, family dynamics, and the pregnancy proxy variables on each of the types of abuse committed by a current or former IP. A progressive modeling technique was employed with the first set of models for each victimization



type including R's sociodemographics and family characteristics, then adding the "pregnancy proxy" variables in subsequent steps in the models.

### Predicting Victimization Type

The following analyses address the research questions pertaining to the associations between victim sociodemographic characteristics, relationship status and state, and presence of children in the home to predict IP-perpetrated abuse. The first set of regressions involved victimization type as the dependent variable with no distinction for level of severity for physical abuse, stalking, sexual abuse, and threats of harm/lethal violence. The results for the logistic regressions predicting victimization types by sociodemographic and family dynamic variables are presented in Tables 6 and 7. Table 6 includes IP physical and stalking victimization as dependent variables, with sexual violence and threats of violence in Table 7.

Table 6. Logistic Regression Coefficients Predicting IP Physical and Stalking Victimization Type by Sociodemographics, Family Dynamics, and Pregnancy Proxy Variables

	Physical (n=5675) Step 1		Physical Step 2		Stalking (n=5675) Step 1		Stalking Step 2	
	SE	Exp(B)	SE	Exp(B)	SE	Exp(B)	SE	Exp(B)
R Age	.003	.992*	.004	.982***	.005	.981**	.006	.967***
R Employed	.080	1.116	.080	1.123	.125	.995	.126	1.008
R < High School <sup>1</sup>	.122	.969	.124	.951	.203	.776	.204	.731
R 4-Year-Post Grad <sup>1</sup>	.088	.674***	.089	.720***	.144	.687**	.145	.743*
R Black <sup>2</sup>	.117	1.022	.118	1.012	.191	.694	.192	.683*
R Other <sup>2</sup>	.126	1.204	.127	1.239	.216	.797	.217	.812
Income	.018	.961*	.018	.962*	.028	.964	.029	.967
Divorced/Separated <sup>3</sup>	.136	6.037***	.137	5.749***	.181	6.004***	.183	5.611***
Widowed <sup>3</sup>	.201	1.364	.202	1.378	.368	1.076	.369	1.099
Single/Never Married <sup>3</sup>	.153	.822	.157	1.007	.226	1.171	.223	1.518
Children in the Home	.082	1.232**	.096	.881	.128	1.184	.156	.749
R Lives with an IP	.131	1.502**	.132	1.396*	.174	1.265	.176	1.151
R Had Live Birth	-	-	.118	2.019***	-	-	.202	2.515***
R Had Miscarriage/Stillbirth	-	-	.077	1.549***	-	-	.118	1.761***
Constant	.253	.223			.053	.073		
-2 log likelihood	5337.457		5263.251		2572.478		2524.271	
Step X <sup>2</sup>			74.207***				48.207***	
Model X <sup>2</sup>	478.016***		552.223***		237.297***		285.504***	
Nagelkerke	.126		.145		.105		.126	

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

<sup>1</sup> compared to high school diploma to some college; <sup>2</sup> compared to White; <sup>3</sup> compared to married/common-law

## Physical Abuse

In the first model, where IP physical abuse victimization is predicted by sociodemographics and family dynamics, six independent variables emerged as significant predictors of physical abuse: age, education, income, relationship status, having children in the home, and residing with an IP. The odds of IP physical abuse are significantly decreased as age increases (OR=.992). Women with at least a four-year college degree have lower odds of physical abuse by an IP compared to women with a high school diploma alone (OR=.674). Higher income is associated with lower odds of physical IP abuse (OR=.961). Being divorced or separated is associated with significantly higher odds of IP physical abuse (OR=6.037). Finally, the odds of physical abuse by an IP are increased by both having children in the home (OR=1.232), and by residing with an IP (OR=1.502).

In the second step of the physical abuse model, age, education, income, relationship status, and residing with an IP were again significant and with roughly the same odds ratios, but having children in the home was no longer statistically significant. Having had a live birth was significantly associated with increased odds of IP physical abuse (OR=2.019), as was having had a miscarriage/stillbirth (OR=1.549). Both models and both steps in the models were significant at the .001 level. The pseudo  $R^2$  indicates the independent variables explain about 13% of the variance in IP-perpetrated physical abuse in step one, and about 15% of the variance in step two.

## Stalking

In step one of the stalking models, three variables emerged as significant predictors of IP-perpetrated stalking: age, education, and relationship status. Older women had lower odds of intimate partner stalking (OR=.981). The odds of stalking victimization are significantly

decreased by attaining at least a 4-year college degree compared to a high school diploma alone (OR=.687). The odds of being stalked by an IP were increased significantly by being divorced or separated compared to being married or in a common-law relationship (OR=6.004).

In step two, the same variables were significant again, with roughly the same odds ratios, but in step two, race was also significant, as Black women in the sample had lower odds of stalking by an IP than white women (OR=.683). Additionally, having experienced a live birth was associated with higher odds of IP stalking victimization (OR=2.515), as was having experienced a miscarriage/stillbirth (OR=1.761). Both models and both steps in the models were significant at the .001 level, and the pseudo  $R^2$  indicates the control variables explain just over 10% of the variance in IP-perpetrated stalking victimization in both models.

Table 7. Logistic Regression Coefficients Predicting IP Sexual and Threats Victimization Type by Sociodemographics, Family Dynamics, and Pregnancy Proxy Variables (n=5675)

	Sexual Step 1		Sexual Step 2		Threats Step 1		Threats Step 2	
	SE	Exp(B)	SE	Exp(B)	SE	Exp(B)	SE	Exp(B)
R Age	.006	.998	.007	.989	.012	.999	.014	.988
R Employed	.146	.945	.146	.952	.286	1.126	.288	1.170
R < High School <sup>1</sup>	.213	1.031	.214	.991	.363	1.174	.363	1.121
R 4-Year-Post Grad <sup>1</sup>	.172	.683*	.173	.721	.604	.163**	.605	.177**
R Black <sup>2</sup>	.252	.552*	.254	.536**	.352	1.353	.353	1.283
R Other <sup>2</sup>	.230	1.085	.231	1.101	.372	1.933	.372	1.958
Income	.034	.963	.034	.963	.065	.924	.065	.925
Divorced/Separated <sup>3</sup>	.206	6.134***	.208	5.715***	.431	3.617**	.432	3.060**
Widowed <sup>3</sup>	.384	1.280	.385	1.287	1.107	.281	1.106	.262
Single/Never Married <sup>3</sup>	.281	1.157	.288	1.389	.489	1.890	.495	2.256
Children in the Home	.154	1.248	.180	.945	.310	1.465	.363	1.038
R Lives with an IP	.204	1.796**	.206	1.663**	.389	.905	.390	.763
R Had Live Birth	-	-	.227	1.712**	-	-	.439	1.837
R Had Miscarriage/Stillbirth	-	-	.134	1.912***	-	-	.262	2.928***
Constant	.062	.050			.125	.012		
-2 log likelihood	2030.346		2000.068		643.491		624.151	
Step X <sup>2</sup>			30.278***				19.341***	
Model X <sup>2</sup>	141.117***		171.395***		66.788***		86.129***	
Nagelkerke	.077		.094		.099		.128	

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

<sup>1</sup> compared to high school diploma to some college; <sup>2</sup> compared to White; <sup>3</sup> compared to married/common-law

## Sexual Violence

Table 7 presents the results of logistic regression analyses to predict IP-perpetrated sexual violence and threats of violence/death by an IP. In the first model, results from step one are presented, where sexual abuse victimization is predicted by sociodemographic and family dynamic variables. Four variables emerged as significant predictors of IP-perpetrated sexual abuse: education, race, relationship status, and residing with an IP. Attaining at least a 4-year college degree is associated with decreased odds of IP sexual victimization compared to a high school diploma (OR=.683). Black women in the sample had lower odds of sexual abuse by an IP compared to White women (OR=.552). Being divorced or separated was associated with higher odds of sexual abuse (OR=6.134), as was residing with an IP (OR=1.796). While this combination of findings is counterintuitive, the reason may be that some women were abused by both an ex-partner at some point and a by a cohabitating partner at the time of the interview. This is because respondents reported violence by multiple partners, but sociodemographic questions pertained only to current partners.

Step two also revealed race, relationship status and state as significant predictors, with similar odds (education was not significant in step two). In addition, both pregnancy proxy variables were significant predictors of sexual abuse. Having had a live birth was associated with increased odds of sexual victimization (OR=1.712), as was having had a miscarriage/stillbirth (OR=1.912). Both models and both steps were significant at the .001 level. The pseudo  $R^2$  indicates the control variables explain about 7% of the variance in IP-perpetrated sexual abuse in step one, and 9% of the variance in step 2.

## Threat of Violence

In the final two models in the logistic regression series predicting victimization, threats of harm/death are predicted. In step one, two variables emerged as significant predictors of threats of harm or death: education and relationship status. As with the other victimization types, higher educational attainment is associated with lower odds of threat victimization (OR=.163). Those who are divorced/separated have higher odds of threat victimization compared to those who are married (OR= 3.617).

In step 2, the same two sociodemographic variables were significant with very similar odds ratios. In addition, having suffered a miscarriage/stillbirth increases the odds of threats by an IP compared to not having experienced a miscarriage or stillbirth (OR=2.928). Both models and both steps were significant at the .001 level. The pseudo  $R^2$  indicates the control variables explain about 10% of the variance in step one, and about 13% in step two.

Table 8. OLS Regression Coefficients for the Estimated Effects of Sociodemographics, Family Dynamics, and Pregnancy Proxy Variables on Power and Control

	SE	Step 1 b	$\beta$	SE	Step 2 b	$\beta$
R Age	.007	-.129***	-.027	.007	-.170***	-.036
R Employed	.163	-.007	-.044	.162	-.009	-.056
R < High School <sup>1</sup>	.219	.022	.209	.217	.017	.163
R 4-Year-Post Grad <sup>1</sup>	.177	-.058**	-.458	.176	-.049*	-.386
R Black <sup>2</sup>	.222	-.036	-.373	.221	-.033	-.337
R Other <sup>2</sup>	.279	.034	.442	.277	.034	.445
Income	.036	-.113***	-.150	.036	-.113***	-.150
Divorced/Separated <sup>3</sup>	.252	.053	.348	.250	.054	.356
Widowed <sup>3</sup>	.311	-.234***	-1.882	.308	-.222***	-1.782
Children in the Home	.167	.013	.082	.176	-.030	-.194
R Lives with an IP	.250	.051	.328	.248	.046	.295
R Had Live Birth		-		.201	.081***	.726
R Had Miscarriage/Stillbirth		-		.145	.100***	.685
Constant		5.856			5.556	
R <sup>2</sup>		.132			.148	
Change in R <sup>2</sup>					.017***	
N		5675			5675	

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

<sup>1</sup> compared to high school diploma to some college; <sup>2</sup> compared to White; <sup>3</sup> compared to married/common-law



## Power and Control

OLS regression was used to estimate the effects of sociodemographics, family dynamics, and the pregnancy proxy variables on power and control. Results are presented in Table 8.

Sociodemographics and family dynamics were included in the first step, and four variables were significant in predicting power and control: age, education, income, and relationship status.

Increase in age was associated with lower levels of power and control (-.129). Greater educational attainment was also associated with lower levels of power and control (-.058), as was higher income category (-.113). Being a widow compared to being married or common-law was also associated with lower levels of power and control (-.234). The  $R^2$  indicates that 13% of the variance in power and control scores is explained by the independent variables in the step one model.

Step two in the OLS model produced very similar results as step one. Age, education, income, and relationship status were again significant, and both pregnancy proxies were as well. Having experienced live birth is associated with increased power and control (.081), and having experienced a miscarriage or still birth is also positively associated with power and control (.100). The  $R^2$  indicates that about 15% of the variance in power and control scores is explained by the independent variables in the step two model. In addition, the change in  $R^2$  from the first step to the second (.017) was significant at the .001 level.

Table 9. Logistic Regression Coefficients Predicting Miscarriage/Stillbirth by Sociodemographics, Family Dynamics, IP Physical, Stalking, and Sexual Victimization (N=5699)

	Physical		Physical		Stalking		Stalking		Sexual		Sexual	
	SE	Step 1 Exp(B)	SE	Step 2 Exp(B)	SE	Step 1 Exp(B)	SE	Step 2 Exp(B)	SE	Step 1 Exp(B)	SE	Step 2 Exp(B)
R Age	.003	1.026***	.003	1.027***	.003	1.026***	.003	1.027***	.003	1.026***	.003	1.026***
R Employed	.073	1.059	.074	1.054	.073	1.059	.074	1.062	.073	1.059	.073	1.062
R < High School <sup>1</sup>	.111	1.140	.111	1.147	.111	1.140	.111	1.154	.111	1.140	.111	1.139
R 4-Year-Post Grad <sup>1</sup>	.079	.783**	.079	.804**	.079	.783**	.079	.792**	.079	.783**	.079	.791
R Black <sup>2</sup>	.108	1.290*	.109	1.290*	.108	1.290**	.109	1.316**	.109	1.290*	.109	1.321
R Other <sup>2</sup>	.125	.976	.125	.956	.125	.976	.125	.985	.125	.976	.125	.973
Income	.017	1.012	.017	1.015	.017	1.012	.017	1.014	.017	1.012	.017	1.014
Divorced/Separated <sup>3</sup>	.137	1.863***	.140	1.573**	.137	1.863***	.139	1.678***	.137	1.863***	.139	1.696
Widowed <sup>3</sup>	.178	1.401	.178	1.364	.178	1.401	.178	1.375	.178	1.401	.179	1.364
Single/Never Married <sup>3</sup>	.159	.638**	.159	.640**	.159	.638**	.160	.627**	.160	.638**	.160	.624
Children in the Home	.079	1.775***	.079	1.762***	.079	1.775***	.079	1.774***	.079	1.775***	.079	1.771***
R Lives with an IP	.135	1.791***	.135	1.746***	.135	1.791***	.135	1.770***	.135	1.791***	.136	1.737
Physical Abuse	-	-	.076	1.611***	-	-	-	-	-	-	-	-
Stalking	-	-	-	-	-	-	.117	1.832***	-	-	-	-
Sexual Abuse	-	-	-	-	-	-	-	-	-	-	.133	1.967***
Threats	-	-	-	-	-	-	-	-	-	-	-	-
Power and Control	-	-	-	-	-	-	-	-	-	-	-	-
Constant	.253	.045			.031	.325			.031	.325		
-2 log likelihood	6078.348		6040.339		6078.348		6052.777		6078.348		6053.741	
Step X <sup>2</sup>			38.008***				25.571***				24.607***	
Model X <sup>2</sup>	271.700***		309.708***		271.700***		297.271***		271.700***		296.307***	
Nagelkerke	.069		.079		.076		.076		.069		.075	

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

<sup>1</sup> compared to high school diploma to some college; <sup>2</sup> compared to White; <sup>3</sup> compared to married/common-law

### Predicting Likelihood of Miscarriage/Stillbirth

Continuing with analyses to address the research questions pertaining to the associations between a woman's sociodemographic and family characteristics and pregnancy-associated IP-perpetrated abuse, the next major set of analyses involves using the dichotomous variable concerning miscarriage/stillbirth as the dependent variable and the victimizations types as primary independent variables. A two-step model was constructed for each victimization type as a predictor of miscarriage/stillbirth. The first step in each model includes sociodemographic and family dynamic variables, with the second step adding each of the respective victimization types. The results for models pertaining to physical, stalking, and sexual abuse by an IP are presented in Table 9, with threats of violence and power and control in Table 10.

The results in step one of each of the models pertaining to physical, stalking, sexual, and threats of IP-perpetrated abuse were very similar, if not identical. Given the similarities of step one for each of these models, only the step one results for the first model will be discussed in detail. The specific odds ratios for each model are listed in Tables 9 and 10. The power and control models differ slightly and are discussed accordingly.

The first two models in Table 9 pertain to sociodemographic, family dynamic variables, and physical abuse as predictors of having experienced a miscarriage/stillbirth. Beginning with step one, age, education, race, relationship status, children in the home, and residing with an IP were significant predictors of miscarriage/stillbirth. Increases in age were associated with increased odds of having experienced a miscarriage or stillbirth (OR=1.026). Attaining at least a 4-year college degree compared to a high school diploma was associated with lower odds (OR=.783). Compared to White women, Black women experienced higher odds of

miscarriage/stillbirth (OR=1.290). Divorced/separated women had higher odds of miscarriage/stillbirth (OR=1.863), while single/never married women had decreased odds (OR=.638). Further, having children in the home increased the odds of physical abuse victimization (OR=1.775), as did residing with an IP (OR=1.791). The pseudo  $R^2$  for step one indicates the control variables explain about 7% of the variance in miscarriage/stillbirth as a dependent variable.

Physical abuse was added as an independent variable in step two, and it is associated with significantly higher odds of experiencing miscarriage/stillbirth (OR=1.791). The pseudo  $R^2$  for step two indicates the control variables explain about 8% of the variance in miscarriage/stillbirth as a dependent variable. Both steps and both models were significant at the .001 level.

In the second set of models, stalking is added as an independent variable in step two and is associated with increased odds of miscarriage/stillbirth (OR=1.832). Both steps and both models were significant at the .001 level.

In the third set of models, sexual abuse victimization is included as an independent variable and is significantly associated with higher odds of miscarriage/stillbirth (OR=1.967). Both steps and models were significant at the .001 level.

Table 10. Logistic Regression Coefficients Predicting Miscarriage/Stillbirth by Sociodemographics, Family Dynamics, IP Threats of Victimization, and Power and Control

	Threats Step 1		Threats Step 2		Power and Control Step 1		Power and Control Step 2	
	SE	Exp(B)	SE	Exp(B)	SE	Exp(B)	SE	Exp(B)
R Age	.003	1.026***	.003	1.026***	.005	1.023***	.005	1.025***
R Employed	.073	1.059	.073	1.057	.120	1.139	.120	1.144
R < High School <sup>1</sup>	.111	1.140	.111	1.137	.154	1.303	.155	1.281
R 4-Year-Post Grad <sup>1</sup>	.079	.783**	.079	.793**	.132	.820	.133	.850
R Black <sup>2</sup>	.108	1.290*	.109	1.284*	.157	1.259	.158	1.300
R Other <sup>2</sup>	.125	.976	.125	.960	.200	1.140	.202	1.096
Income	.017	1.012	.017	1.014	.027	.998	.027	1.011
Divorced/Separated <sup>3</sup>	.137	1.863***	.137	1.818***	.181	1.086	.183	1.059
Widowed <sup>3</sup>	.178	1.401	.178	1.417	.226	.796	.229	.926
Single/Never Married <sup>3</sup>	.159	.638**	.160	.629**	-	-	-	-
Children in the Home	.079	1.775***	.079	1.772***	.123	1.526**	.124	1.522**
R Lives with an IP	.135	1.791***	.135	1.799***	.181	1.354	.183	1.322
Threats	-	-	.258	3.019***	-	-	-	-
Power and Control	-	-	-	-	-	-	.016	1.084***
N	5699				1998			
Constant	.031	.325			.048	.451		
-2 log likelihood	6078.348		6060.813		2441.549		2417.084	
Step X <sup>2</sup>			17.534***				24.466***	
Model X <sup>2</sup>	271.700***		289.234***		34.963***		59.429***	
Nagelkerke	.069		.074		.024		.041	

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

<sup>1</sup> compared to high school diploma to some college; <sup>2</sup> compared to White; <sup>3</sup> compared to married/common-law

The fourth set of models to predict miscarriage/stillbirth involved threats of harm or death by an intimate partner. The first step again showed nearly the same results as step one in the previous three models. In the second step, threats are added as a predictor, and results reveal that experiencing threats of violence and death by an IP is associated with significantly higher odds of miscarriage/stillbirth (OR=3.019).

In the final model in Table 10, results for step one differ from the previous four models in that the single/never married category was excluded (no cases), and power and control is added in step two as a predictor of miscarriage/stillbirth. The results for step one reveal that only age and having children in the home are significant predictors. Older age was again significantly associated with higher odds of miscarriage/stillbirth (OR=1.025), and having children in the home also increased the odds (OR=1.522). The pseudo  $R^2$  for this model indicates 2% variance explained.

In the second step, power and control was added as a predictor. Age and children in the home were significant predictors with about the same odds as in step one. Like the other forms of abuse by an IP, a greater number of power and control tactics in a relationship increased odds of miscarriage/stillbirth (OR=1.084). The pseudo  $R^2$  for this model indicates 4% variance explained. Both steps and both models are significant at the .001 level.

#### Interaction Effects

Several analyses were conducted (not shown) to determine whether there was an interaction between power and control and the other types of abuse, since power and control repeatedly emerged as significant. These included models to predict the odds of miscarriage/stillbirth by sociodemographics, family dynamics, and each of the five types of

abuse victimization within a single model. Also, the interaction effects of power and control with each of the four additional victimization types of interest were tested. However, none of the models produced significant results for any of the interaction variables. The number of victimizations was also considered. A logistic regression predicting the odds of miscarriage/stillbirth with the number of victimizations as well as sociodemographics, family dynamics, and power and control showed that while power and control was significant, the new victimization variable was not significant.

### Predicting Severity of Physical Abuse

To address the research questions pertaining to how pregnancy and severity of abuse are correlated, the next set of analyses involved testing the effects of sociodemographics, family dynamics, and pregnancy proxy variables on the severity of abuse. The power and control scale inherently includes a measure of severity, with increasing scores representing higher levels of power and control. Physical abuse and sexual abuse were the only other victimization types with measures of severity.

Physical abuse was divided into minor and severe abuse based on the list of responses pertaining to physical abuse derived from the Conflict Tactics Scales (Straus, 1979). Minor abuse includes the following items:

*Did your IP: Throw something at you that could hurt you? Push, grab, or shove you?*

*Pull your hair? Slap or hit you?* Severe abuse includes the following items: *Did your*

*IP: Kick or bite you? Choke or attempt to drown you? Hit you with some object? Beat*

*you up? Threaten you with a gun? Threaten you with a knife or other weapon besides a*

*gun? Use a gun on you? Use a knife or other weapon besides a gun?*

Table 11. Logistic Regression Coefficients Predicting Severity of IP Physical Abuse by Sociodemographics, Family Dynamics, and Pregnancy Proxy Variables

	Minor Physical (N=5032)		Minor Physical		Severe Physical (N=4898)		Severe Physical	
	Step 1		Step 2		Step 1		Step 2	
	SE	Exp(B)	SE	Exp(B)	SE	Exp(B)	SE	Exp(B)
R Age	.003	.989**	.004	.978***	.004	.987**	.004	.974***
R Employed	.083	1.071	.084	1.063	.095	1.027	.096	1.026
R < High School <sup>1</sup>	.127	.952	.128	.936	.143	.962	.144	.943
R 4-Year-Post Grad <sup>1</sup>	.091	.659***	.092	.703***	.112	.529***	.114	.566***
R Black <sup>2</sup>	.123	1.016	.124	1.003	.143	.934	.144	.924
R Other <sup>2</sup>	.132	1.219	.134	1.256	.153	1.154	.155	1.210
Income	.019	.962*	.019	.963*	.022	.940**	.022	.940**
Divorced/Separated <sup>3</sup>	.147	7.664***	.148	7.297***	.157	7.555***	.158	7.257***
Widowed <sup>3</sup>	.210	1.516	.211	1.523*	.240	1.434	.242	1.466
Single/Never Married <sup>3</sup>	.161	1.022	.166	1.262	.187	.850	.192	1.072
Children in the Home	.085	1.271**	.100	.906	.098	1.286**	.117	.860
R Lives with an IP	.141	1.656***	.143	1.534**	.154	1.412*	.156	1.299
R Had Live Birth	-	*	.123	2.009***	-	-	.146	2.298***
R Had Miscarriage/Stillbirth	-	-	.081	1.658***	-	-	.092	1.802***
Constant	.034	.296			.039	.194		
-2 log likelihood	4900.750		4822.834		3855.531		3775.179	
Step X <sup>2</sup>			77.916***				80.352***	
Model X <sup>2</sup>	508.680***		586.596***		495.382***		575.734***	
Nagelkerke	.146		.167		.163		.188	

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

<sup>1</sup> compared to high school diploma to some college; <sup>2</sup> compared to White; <sup>3</sup> compared to married/common-law



Logistic regression models were constructed to predict the odds of minor and severe physical abuse by an IP. The results are presented in Table 11. In the first step of each model, sociodemographics and family dynamics are included as independent variables. The second step involves adding the two pregnancy proxy variables (live birth and miscarriage/stillbirth). Each of the steps and models were significant at the .001 level.

Step one of both the minor and severe physical abuse models were nearly identical. Age, education, relationship status, children in the home, and residing with an IP were significant. In the first model predicting minor physical abuse, increased age was associated with lower odds of minor violence (OR=.989). Attaining at least a 4-year degree is also associated with decreased odds of minor physical abuse (OR=.659), as is higher income category (OR=.962). Women who are divorced or separated experience much higher odds of minor physical abuse compared to married women (OR=7.664). Having children in the home is associated with higher odds (OR=1.271), as is residing with an IP (OR=1.656). The pseudo  $R^2$  for this model indicates 15% variance explained.

In the second step, pregnancy proxy variables were added. The same sociodemographics and family dynamics were significant as in the first step with nearly identical odds ratios, but being widowed emerged as an additional significant predictor of having increased odds of minor physical abuse (OR=1.525). Both pregnancy proxy variables were also significant. Women who have had a live birth experience higher odds of minor physical abuse victimization (OR=2.009), and those who have had a miscarriage or stillbirth also have higher odds (OR=1.658). The pseudo  $R^2$  for this model indicates about 17% variance explained.

The second set of models were constructed to predict severe IP physical abuse victimization. The variables in the models mirror those used in the analysis of minor physical

abuse. Step one of the severe physical abuse models were very similar to step one in the minor physical abuse models in that the same variables emerged as predictors. The pseudo  $R^2$  for this model indicates about 16% variance explained.

In step two of the severe physical abuse models, age, education, income, relationship status, and both pregnancy proxy variables were significant. The coefficients for these significant variables were very similar or identical to their coefficients in step one. Having children in the home was *not* significant in step two. Finally, having had a live birth was significantly associated with increased odds of severe physical abuse (OR=2.298), and having experienced a miscarriage/stillbirth also increased odds of severe physical abuse (OR=1.802). The pseudo  $R^2$  for this model indicates about 19% of the variance explained.

Table 12. Logistic Regression Coefficients Predicting Miscarriage/Stillbirth by Sociodemographics, Family Dynamics, and IP Physical Abuse Severity

	SE	Exp(B)	SE	Exp(B)
R Age	.003	1.030***	.003	1.030***
R Employed	.080	1.150	.081	1.115
R < High School <sup>1</sup>	.118	1.133	.121	1.125
R 4-Year-Post Grad <sup>1</sup>	.084	.827*	.086	.824*
R Black <sup>2</sup>	.117	1.321*	.122	1.281*
R Other <sup>2</sup>	.138	.914	.142	.906
Income	.018	1.015	.019	1.016
Divorced/Separated <sup>3</sup>	.154	1.459**	.158	1.306
Widowed <sup>3</sup>	.191	1.299	.197	1.248
Single/Never Married <sup>3</sup>	.183	.571**	.184	.590**
Children in the Home	.085	1.748***	.086	1.855***
R Lives with an IP	.150	1.646**	.154	1.629**
Minor Physical Abuse	.080	1.737***	-	-
Severe Physical Abuse	-	-	.091	1.886***
N	5056		4920	
Constant	.033	.321	.033	.312
-2-log likelihood	5320.112		5105.669	
Model X <sup>2</sup>		309.708***		297.271***
Nagelkerke	.083		.086	

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

<sup>1</sup> compared to high school diploma to some college; <sup>2</sup> compared to White; <sup>3</sup> compared to married/common-law

### Predicting Miscarriage/Stillbirth by Severity of IPV

In the next set of models in this phase of the NVAW study, the odds of experiencing miscarriage/stillbirth were predicted using sociodemographics, family dynamics, and severity of

physical abuse. Table 12 presents results from the logistic regression models pertaining to minor and severe physical abuse. All of the models were significant at the .001 level.

In the first model, where minor physical abuse was included, age, education, race, relationship status, children in the home, residing with an IP, and minor physical abuse by an IP emerged as significant predictors of having experiencing a miscarriage/stillbirth. Increased age was associated with increased odds (OR=1.03). Greater educational attainment was associated with decreased odds (OR=.827). Black women had higher odds of miscarriage/stillbirth compared to White women in the sample (OR=1.321). Being divorced or separated was associated with increased odds (OR=1.459), while being single or never married decreased odds (OR=.571). Having children in the home was associated with higher odds of miscarriage/stillbirth (OR=1.748), as was residing with an IP (OR=1.646). Finally, minor physical abuse victimization by an IP presents increased odds of suffering miscarriage/stillbirth (OR=1.737). The pseudo  $R^2$  for this model indicates about 8% variance explained.

The second model in Table 12 differed slightly from the first model. Age, education, and race were significant, with nearly identical odds ratios as in the model with minor physical abuse. However, in the second model, where severe physical abuse was included, only those women who were single and never married experienced decreased odds of miscarriage/stillbirth compared to married respondents. Having children in the home and residing with an IP were again significant with very similar odds ratios, and like minor physical abuse, being a victim of severe physical IP abuse emerged as a significant predictor of having had a miscarriage/stillbirth (OR=1.886). The pseudo  $R^2$  for this model indicated about 9% of the variance was explained.

### Severity of Sexual Abuse

Severity of sexual abuse perpetrated by a current or former IP was determined by dividing the dichotomous sexual assault variable into two new variables, one each for attempted and completed sexual assault. These variables were created and regressions identical to the physical severity were estimated to measure the effects of severity of sexual violence on miscarriage/stillbirth. However, due to the small ratio of respondents who had been victims in either of these categories compared to those who had not, it was impossible to construct meaningful models. In an attempt to reconcile the issue, a dichotomous variable for relationship status was created measuring married/not married, and the models were rerun. The same issues repeatedly emerged with subsequent attempts to rectify the problem. Therefore, the analyses concerning severity of sexual abuse are limited to bivariate level analyses to examine the associations between IP-perpetrated attempted and completed sexual assault and sociodemographics, family dynamics, and pregnancy.

A t-statistic was estimated, revealing a significant difference in the mean age of women who were victims of attempted IP rape compared to those who were not victims of an attempted rape by an IP ( $t=3.986$ ,  $p<.001$ ). The mean age of women victimized by IP-perpetrated attempted rape (AR) was 39.5 years, and 44.5 years for women who were not AR victims. There was also a significant relationship between AR victimization and relationship status ( $X^2=12.4454$ ;  $df=1$ ;  $p<.001$ ). Of the women who were married, .2% were victims of attempted rape, compared to .7% of women not married (divorced/separated, single, and never married were collapsed into “not married”), indicating a higher risk for unmarried women. Similarly, residing with an IP (at the time of the interview) and AR victimization were significantly associated ( $X^2=3.797$ ;  $df=1$ ;  $p=.05$ ), with .3% of the women who resided with an IP reporting

attempted rape perpetrated by an IP, compared to .6% who did not reside with an IP, indicating a higher risk for women who did not reside with an IP at the time of the interview. Bivariate analyses not producing significant relationship results with AR include: employment, education, income, race, children in the home, having experienced a live birth, and having experienced a miscarriage/stillbirth.

The bivariate analyses for completed rape (CR) victimization indicated a few additional significant relationships than those observed for AR. A t-test again revealed a significant difference in age between women who are victims of completed rape by an IP compared to those who are not victims of a completed rape by an IP ( $t=2.303$ ,  $p<.05$ ). The mean age of for IP-perpetrated CR victims (42.14) was slightly higher than the mean age of 45.16 for women not victimized by CR by an IP. Other significant relationships with CR victimization include education ( $X^2=10.383$ ;  $df=2$ ;  $p<.01$ ), where 4.9% of women who had attained less than a high school degree reporting completed IP-perpetrated rape, compared to 4.9% of those with a high school diploma and 3.0% of women with at least a four-year degree reporting completed IP rape victimization. Relationship status was significant ( $X^2=33.129$ ;  $df=1$ ;  $p<.001$ ). Of the women who are married or in common-law relationships, 3.3% reported completed IP rape compared to 6.5% of women who were not married at the time of the interview. Relationship state was again significant ( $X^2=8.695$ ;  $df=1$ ;  $p<.001$ ), with 3.9% of women residing with an IP reporting completed rape by an IP, compared to 5.6% of women not residing with an IP. These findings are similar to AR victims, where unmarried and non-cohabitating women have higher occurrences of CR than women who were married and/or residing with a partner at the time of the interview.

Unlike the AR analyses, there was a significant relationship between CR victimization and having children in the home ( $X^2=16.558$ ;  $df=1$ ;  $p<.001$ ), with 5.6% of women with children in the home reporting CR by an IP compared to 3.4 % of those with no children in the home, indicating that having children in the home at the time of the interview correlates with greater occurrence of CR by an IP at some point. Both pregnancy proxy variables were significant in this set of analyses. A greater percentage of women who have had a live birth reported CR victimization by an IP, with 5.2% of those having experienced live birth compared to 2.1% of women who have not had a live birth ( $X^2=25.705$ ;  $df=1$ ;  $p<.001$ ). Similarly, 7.7% of women who have experienced miscarriage or stillbirth reported completed rape victimization by an IP, compared to 3.3% of women who have not had a miscarriage or stillbirth ( $X^2=51.799$ ;  $df=1$ ;  $p<.001$ ). Bivariate analyses not producing significant relationship results with CR include: employment, income, and race.

#### *Effects of Pregnancy on Abuse Victimization*

The second major phase of analyses in the NVAW survey is designed to specifically address the research questions pertaining to the relationship between pregnancy and abuse victimization, including sociodemographic and family dynamic variables, and taking into account the severity of abuse. The previous analyses utilized “pregnancy proxy” variables to include in analyses of the total NVAW sample to take advantage of the robust data provided by this nationally representative sample. The purpose of this phase of analyses is to examine actual pregnancy during abuse.

Using the variable provided which asked each woman if she was pregnant when physically abused and the physical abuse variable coded for offender type, a new dichotomous

variable was created where 1= physically abused by a current or former IP when pregnant and 0= not pregnant when physically abused by a former IP. This new variable serves as the major variable for the subsequent analyses. The following is a discussion of the various descriptive analyses conducted with regard to pregnancy and IPV in the NVAW sample.

Of the 8,000 women surveyed for the NVAW study, 2.2% (n=179) were pregnant when they were physically abused, with 150 of those victimized by a current or former IP (1.9% of the total NVAW sample).<sup>2</sup> Of those 150 women who were pregnant when physically abused by an IP, 86.6% (n=129) resulted in a live birth. Of the 13.4% of pregnancies not resulting in live birth (n=20), 15.0% (n=3) resulted in abortion, 10.0% (n=2) in still birth, and 55.0% (n=11) in miscarriage.<sup>3</sup>

The only other context in which women surveyed were asked about pregnancy was in the subsample of women who reporting having been raped. Of the 332 women who were raped by a current or former IP, 13.1% (n=33) became pregnant as a result of the incident. Of those, 77.8% (n=28) resulted in a live birth. Of the remaining 22.2% that did not result in a live birth, 50% resulted in abortion (n=4), and 50% (n=4) resulted in miscarriage.<sup>4</sup> Table 13 presents the pregnancy outcomes for those physically abused while pregnant and those whose sexual assault resulted in pregnancy. A bivariate test conducted to determine the association between pregnancy-associated physical and sexual IP violence did not produce significant results.

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<sup>2</sup> An additional four women in the survey were pregnant when threatened by an IP, three of which were IP-perpetrated threats. This small number precludes the ability to conduct further analyses on pregnancy-related threats, and none of the other victimization types were measured for pregnancy-association.

<sup>3</sup> The numbers do not add up to 150 due to missing cases.

<sup>4</sup> Due to missing cases on the “live birth” variable, the numbers for non-live birth outcomes exceeds 5.



Table 13. Pregnancy Outcomes for Physical and Sexual IPV

Physically Abused While Pregnant (N=150)\*

	<u>% (N)</u>
Live Birth	86.6 (129)
Abortion <sup>1</sup>	15.0 (3)
Miscarriage <sup>1</sup>	55.0 (11)
Stillbirth <sup>1</sup>	10.0 (2)

Sexual Abuse Resulted in Pregnancy (N=33)\*

	<u>% (N)</u>
Live Birth	77.8 (28)
Abortion <sup>2</sup>	50.0 (4)
Miscarriage <sup>2</sup>	50.0 (4)
Stillbirth <sup>2</sup>	0

<sup>1</sup> These percentages based on the 13.4% of pregnancies that did not result in live birth.

<sup>2</sup> These percentages based on the 22.2% of pregnancies that did not result in live birth.

\*These numbers do not add up to 100 due to missing cases.

Analyses were also conducted to determine what other types of abuse victimizations were suffered at the hands of a current or former IP by women who had been physically abused when pregnant. Women were asked about a number of victimization types and about a number of offenders for each type of violence when applicable. When victimized by multiple offenders, the detailed questions pertaining to the violence used the most recent offender as the referent offender. Therefore, it is not possible to match a current versus former IP across multiple

victimization types (i.e. a former boyfriend could have committed physical violence, with a separate former boyfriend having stalked the woman). Although it is not possible to discern if the same offender committed both the pregnancy-related physical abuse and the other type(s) of abuse a woman might have experienced, and also not possible to discern if the other type of abuse occurred during pregnancy, determining the frequency of other types of IPV suffered by a woman, as well as the significance of the relationships between these victimizations and pregnancy-related violence is noteworthy.

The sample was first restricted to those who had been pregnant when physically abused by a current or former IP. Frequencies of the remaining types of abuse were then obtained, presented in Table 14.

Table 14. Frequency Distributions and Bivariate Test Statistics of IP Victimization Suffered by Victims of Pregnancy-Associated IP Physical Violence by an Intimate Partner (N=150)

	Percent (frequency)	Test Statistic
Stalking	26.7 (40)	$X^2=1.218^{***}$ (df=1)
Threats of Harm/Death	2.7 (4)	$X^2=4.787^*$ (df=1)
Sexual Abuse	16.7 (25)	$X^2=60.207^{***}$ (df=1)
Mean Power and Control Score = 6.37 (SD = 2.49)		$t=-13.270^{***}$

Of the 150 women abused physically during pregnancy, 26.7% (n=40) had also experienced stalking, 2.7% (n=4) had experienced threats of harm or death, and 16.7% (n=25) had been sexually abused, all by a current or former intimate partner. In addition, the mean power and control score for women abused when pregnant (6.37) is nearly twice the mean score of 3.34 for the entire NVAW sample of women. With regard to distinctions between minor and severe

physical abuse, 96.7% (n=145) of the women pregnant when physically abused were victims of minor abuse, and 73.3 experienced severe physical abuse.

Next, bivariate analyses were conducted to test the significance of association between pregnancy-associated physical IP abuse and each of the other types of IP violence. Of the women who had been stalked by a current or former IP, 8.6% had also been abused when pregnant by a current or former IP, compared to 1.5% of women who had not experienced IP stalking ( $X^2=1.218$ ;  $df=1$ ), indicating a higher occurrence of IP stalking victimization for women who have been abused while pregnant. Of the women who had experienced IP-perpetrated sexual violence, 7.5% had also been physically abused while pregnant, compared to 1.6% who had not experienced IP sexual assault ( $X^2=60.207$ ;  $df=1$ ), indicating a higher occurrence of IP-perpetrated sexual assault for women also abused when pregnant. Of the women who had been threatened with serious harm or death by a current or former IP, 5.3% had also been physically abused during pregnancy by a current or former IP, compared to 1.8% of women who had not been threatened ( $X^2=4.787$ ;  $df=1$ ), again indicating a higher occurrence of serious threats for women who have also endured pregnancy-associated IPV. All of the chi square analyses were significant at the .05 level or better. Finally, a t-statistic was estimated for power and control and pregnancy-associated physical abuse, indicating a significant relationship between the two ( $t=13.270$ ;  $p<.001$ ), and suggesting that women who have been victims of IPV during pregnancy have higher levels of power and control than women who have not experienced pregnancy-associated IPV.

### *Predicting Pregnancy During Physical Abuse*

A series of logistic regression analyses were conducted as well, with pregnant when physically abused by an IP as the dependent variable. All of the models were significant at the .05 level or better. As the results for these analyses were not substantially different from the analyses using the pregnancy proxy variables, the major differences between the two are noted but not shown in a table.

- Age was *not* significant in any of the models predicting pregnancy when physically abused.
- Being divorced or separated was a significant predictor at a rate of two to three times higher on average than in the miscarriage models.
- The other sociodemographic and family dynamic variables were very similar in these models as in the miscarriage models.
- With regard to the abuse victimization types, the series of models predicting pregnant when physically abused were very similar to the models using the pregnancy proxy.
- The pregnancy model revealed stalking by an IP to be a significant predictor of having been abused while pregnant. The pregnancy model also revealed sexual assault as a significant predictor with over a three-fold increase in odds of being pregnant when abused ( $p < .001$ ), similar to the model predicting miscarriage. Power and control revealed nearly identical odds as in the miscarriage model (OR=1.3).

## Discussion and Conclusions

The analyses conducted with the NVAW data represent the first major step in unraveling the bigger picture with regard to pregnancy-associated IPV. Although the data presented certain challenges, particularly by lacking a direct measure of pregnancy for each respondent, the variables available did allow for a relatively robust study nonetheless, contributing important findings toward the overall study of pregnancy-associated physical violence, other types of violence suffered by women who have been abused during a pregnancy, and the outcomes of abuse-related pregnancies.

The potential for studying the correlations of pregnancy in this nationally representative sample was maximized by utilizing pregnancy-related variables when more direct measures of pregnancy were unavailable, and creating a number of combination variables to predict odds of five separate IP victimization types: physical, sexual, stalking, threats of harm or death, and power and control, while controlling for sociodemographics, family dynamics, and reproductive history-related variables. In addition, miscarriage and pregnancy-associated physical abuse odds were predicted using the same controls.

The most prevalent type of abuse among the NVAW sample of women is physical abuse, both in the general and IP-perpetrated categories. While sexual assault is the second most prevalent generally, stalking is more commonly perpetrated by a current or former IP than sexual assault, with threats of serious harm or death as the least common. The mean power and control score in relationships is 3 (on a scale from 0 to 11), but in physically abusive relationships, that score more than doubles, indicating power and control is highly correlated with abuse in IP relationships. Since power and control cannot be directly compared to physical abuse in terms of

prevalence (physical is measured dichotomously, power and control is measured on a scale), it is not possible to say if power and control is more prevalent than physical abuse. However, the results of these analyses reveal that this is certainly a possibility.

With regard to sociodemographic characteristics, women who have experienced pregnancy-related physical abuse were employed at only slightly lower rates than women in general, and about 10% less than women who had not experienced abuse during pregnancy. They were more likely to have less than a high school education, about equally as likely to have a high school diploma, and less likely to have a college degree or more than women in general and physically abused women, and were less likely to be White compared to the other groups. There were no significant income differences.

Family dynamic-related variables revealed greater differences. Both women who had experienced IP-perpetrated physical abuse and those pregnant when abused were less likely to be married when interviewed, and much more likely to have been divorced/separated. In fact, the odds of being a victim of any of the five types of abuse analyzed were three to over six fold higher for divorced and separated women than for married women or those in a common-law relationship. However, women who had experienced abuse during pregnancy were slightly more likely than those who did not to reside with a partner at the time of the interview, and were more likely to have children in the home.

Women who had been victimized by IPV during pregnancy had higher rates of live birth experience and miscarriage. In fact, the miscarriage rate is 11% higher for those having been pregnant during physical abuse than not abused at all in this sample. The difference in miscarriage between physically abused and pregnant when abused women was just 2%,

suggesting physical abuse in general presents an increased risk for miscarriage, not just abuse during pregnancy, compared to no physical abuse.

Several regression models were constructed to measure the effect of sociodemographics, family dynamics, and reproductive variables concerning live birth and miscarriage (i.e pregnancy proxy variables) on victimization type using a progressive modeling technique to encompass each of the three groups of controls and each of the five types of IP-perpetrated abuse. The analyses produced support for prior findings in some cases, with some new compelling findings as well.

Beginning with sociodemographics, higher age was associated with lower odds of physical abuse, stalking, and lower levels of power and control, consistent with previous findings concerning age and IPV (Shadigian & Bauer, 2004). Also consistent with previous findings regarding education, having a four-year degree or higher was associated with lower odds of every type of abuse (Campbell, 2004; Datner, Wiebe, Brensinger, & Nelson, 2007). The one exception to this across ten models is with regard to sexual abuse when reproductive variables are included; education was not significant in this model. According to all of the models predicting stalking and sexual assault, being Black was associated with lower odds of victimization, compared to being White, which is in contrast to prior research finding Black women at higher risk for IPV, both for pregnancy-associated abuse and abuse in general (Anderson, 1997; Chang et al., 2005). On the other hand, concerning threats of serious harm or death, Black women are more than twice as likely to have been victimized than White respondents. The findings concerning lower risk for Black women could be attributed to sampling since most previous studies rely on hospital/clinic samples. This study is one of few using a nationally representative sample.

Income was a significant predictor of physical abuse and power and control in that higher income was associated with lower levels of these types of abuse, consistent with previous findings (Anderson, 1997; Cunradi, Caetano, & Schafer, 2002). With the exception of power and control, being divorced or separated was a significant predictor of every type of violence perpetrated by a current or former IP. It is important to again contextualize these findings by reiterating that the variables measured concerning the characteristics of respondents were based on their status *at the time of the interview*. Questions concerning abuse victimization were based on perpetration by a current and former IP, so a woman who was divorced at the time of the interview may or may not have been divorced from the same partner by whom she was abused. However, despite the impossibility of determining causal order, this result suggests a strong possibility that many of the women interviewed who had experienced IPV managed to escape the abusive partner. Residing with an IP at the time of the interview was a significant predictor of physical and sexual abuse, but not other abuse types.

Having children in the home was significantly correlated with physical abuse, until the model was expanded to include live birth and miscarriage, both of which were significantly correlated with physical abuse as well as every other type of abuse. The only exception is with threats, where having had a miscarriage or stillbirth was a significant predictor, but having had a live birth was not. In every model where significant, live birth and miscarriage present at least a two-fold increase in IP victimization risk, indicating a strong correlation between pregnancy experience and abusive IP relationships.

Miscarriage/stillbirth was also used as a dependent variable in a separate series of analyses. In these models, increased age was associated with an increased likelihood of having experienced a miscarriage, which is not surprising given that more childbearing years would



produce greater opportunities to have experienced a miscarriage or stillbirth. As with experiencing abuse, those with higher education had significantly lower odds of miscarriage/stillbirth. This could be due to higher levels of income earned and, thus, greater resources for medical and social intervention to circumvent miscarriage risk, even in an abusive relationship. This may interact with race, as Black respondents were found to have significantly greater likelihood of miscarriage/stillbirth experience than White women. This could be attributed to less access to resources and care for Black women compared to White, where socioeconomic status and race/ethnicity are sometimes confounded in research (Jasinski, 2004, p. 53). Those who were divorced/separated, those with children in the home, and those residing with an intimate partner had greater odds of having experiencing miscarriage/stillbirth.

A separate set of models constructed to test the effects of each victimization type on odds of miscarriage/stillbirth revealed patterns essentially mirroring those of the model containing sociodemographics and family dynamics alone. In each of the models where a single victimization type was added, the victimization type was a significant predictor of miscarriage/stillbirth, indicating that physical, stalking, and sexual abuse, as well as threats of violence and power and control are all significant predictors in that victims of any one of these types of abuse was more likely to have suffered a miscarriage/stillbirth compared to someone who had not experienced one of these IP victimizations.

Models controlling for level of severity of physical abuse revealed findings similar to physical abuse as a broad category, and both minor and severe physical abuse were significant predictors of miscarriage/stillbirth. While severity of sexual assault by an IP could not be measured on a multivariate level due to the low rate of victimizations, bivariate analyses revealed that most respondents who had been victims of attempted sexual assault by an IP were

divorced at the time of the interview, though half also resided with an IP at the time of the interview. On the other hand, more of the victims of IP-perpetrated completed sexual assault were married at the time of the interview and over half resided with an IP and had children in the home. Other variables significantly associated with completed rape victimization included education, where most of the women had completed high school to some college, having children in the home, and both pregnancy proxy variables. An overwhelming 89% of the completed rape victims had children in the home, and 42% of the women had experienced a miscarriage or stillbirth. While these rates were similar for those experiencing attempted rape, those relationships were not significant in the attempted rape analyses.

Outcomes of pregnancies occurring in physically abusive relationships or as a result of sexual abuse were examined, revealing devastating consequences. While most women had live births in both groups of victimization, 19% of those physically abused when pregnant and 50% of those impregnated by a sexual assault had abortions. Nearly 70% of those physically abused and 50% of the sexual assault victims had miscarriages in those pregnancies, and an additional 13% of the pregnancy-associated physical abuse victims had a stillborn baby. These effects of physical and sexual abuse are startling reminders of the potentially catastrophic effects of abuse on pregnancy (Campbell, 1998). Although the current study does not include measures of mother's physical and emotional health associated with the abuse and pregnancy, experts have found women to suffer in a number of ways as a result of pregnancy-associated abuse (Campbell, 1998), and given the frequency of these events in the current sample, it is likely such effects would be found among the women studied here.

There are several limitations in the current study. Pregnancy status was only determined for women who disclosed physical abuse victimization, therefore limiting the scope of the study.

However, through the use of proxy variables to measure pregnancy-related experience (i.e. live birth and miscarriage), the analyses were still illuminating and those analyses involving the pregnancy proxy variables produced results very similar to those involving pregnancy as a direct measure. As much of the data available to study pregnancy-associated IPV is less than ideal (Jasinski, 2004), this study has important implications for future research with regard to making use of proxy variables to study pregnancy and IPV.

Another limitation of this study concerns characteristics of the woman and IP. Since respondent's sociodemographic and family characteristics were determined for their status at the time of the interview, it is not possible to determine what these were at the time of abuse. For example, a respondent may be married to a non-abusive partner, be employed, and have children in the home, but her abuse experience may have involved sexual abuse by a former boyfriend. As a result, these results reflect the current characteristics and are not necessarily reflective of the characteristics at the time of the abuse, since some women disclosed abuse by a former partner. For this reason as well, IP characteristics were not included in the analyses since the current partner is not always the referent abuser in the interview. Finally, severity of abuse is measured in power and control, physical abuse, and sexual abuse, but could not be determined for stalking or threats. Future research should consider level of severity for these types of abuse as well.

This study has revealed powerful correlations between IPV and pregnancy, both in pregnancy as a risk factor for physical violence, stalking, sexual violence, serious threats of violence, and in power and control levels,. Additionally, each of these types of violence presented significant odds of experiencing miscarriage/stillbirth. These findings underscore the need for attention to pregnancy-related IPV by policy makers and practitioners, both in medical and social contexts. In addition, researchers must continue work to discover the correlations of

pregnancy and IPV, and to make use of proxy variables when available as a way to utilize existing data to study this phenomenon. When collecting original data in any context concerning women and abuse, researchers should ask every respondent if she is pregnant, or if she has been pregnant within the past year. This allows for a direct measure of the effects of pregnancy on IPV.

When all types of abuse are considered simultaneously, power and control is the only significant predictor of miscarriage, and the only significant predictor of having been physically abused when pregnant. This implication is crucial for understanding the dynamic of pregnancy-associated abuse, in that power and control may have been overshadowed by other types of abuse in terms of prevalence and consequences. In fact, power and control scores are double for those in physically abusive relationships during pregnancy than for women in controlling relationships in general. Tests for interaction between power and control and physical abuse (as well as the other types) revealed no interaction effects. Thus, power and control has emerged as a key component in the pregnancy-associated abuse puzzle. Given its strength as a predictor of miscarriage, the devastating effects of power and control cannot be minimized.

Women who are pregnant when physically abused by an IP and those pregnant as a result of an IP-perpetrated rape suffer high rates of miscarriage, abortion, and for the physically abused, stillbirth. These findings are consistent with previous research emphasizing the catastrophic consequences of pregnancy in an abusive relationship (Campbell, 1998), and echo the plea by researchers for urgent attention to pregnancy as a dangerous time for women with regard to IPV. Although the sample in the current study is limited to non-lethal violence, studies examining lethality during pregnancy have found high risks of death at the hands of an IP for women during and within one year of pregnancy. Understanding pregnancy as a risk for IPV

and making necessary changes in policy, practice, and research, may quite literally be a matter of life or death.

## CHAPTER SIX: THE CHICAGO WOMEN'S HEALTH RISK STUDY

### Data

The CWHRS is comprised of two separate datasets; a hospital/clinic sample and a homicide sample. For the hospital/clinic (i.e. non-lethal sample), researchers randomly screened 2,616 women ages 18 years and older at four separate medical facilities in Chicago who were patients at the facility for any reason, not just those who were there to be treated for IPV-related injuries. All four of these locations were in areas where femicide rates were particularly high.

Each woman was asked three screening questions pertaining to physical abuse, sexual abuse, and fear of her IP within the past year. If a woman answered “yes” to any of the three questions she was coded as an abused woman (i.e. AW), and if she answered “no” to all of them, she was coded as a non-abused woman (NAW). The researchers purposefully oversampled abused women, interviewing every woman who screened as abused and randomly selecting 30 percent of the women who screened as non-abused for comparison. The final hospital/clinic sample consisted of 705 women, 497 of whom were abused. Interviews were conducted at the medical facilities during 1997 and 1998, with a follow-up interview for 66 percent of the women within one year of the initial interview.

Data from the homicide sample were collected through a variety of sources for 87 IP homicides occurring in 1995 or 1996 in Chicago. Proxy interviews were conducted in-person with friends, family members, or other parties who knew about the relationship between the victim and offender and using the same questionnaire as was used in interviews for the non-lethal sample. In addition, data were linked from the Chicago Homicide Dataset, criminal justice and medical examiner records, media, and other sources to fill in information not gathered

through proxy interviewees. The resulting dataset for the homicide sample includes the same information as was gathered for the non-lethal sample with additional homicide-specific variables. Of the 87 lethal cases, 28 involved female-perpetrated incidents, and 2 were female same-sex couples. These 30 cases were omitted from the analyses due to the focus on pregnancy-associated homicide victimization (neither of the two women in the same-sex cases were pregnant when killed). This resulted in a final sample of 57 femicide cases.

The CWHRS data provide a more thorough analysis of pregnancy-associated IP violence since each woman was asked about her pregnancy status at the time of the interview and within the year prior to the interview, and pregnancy status at the time of death or within one year prior to death was established for the lethal sample. Analyses were conducted to measure the effects of pregnancy on risk for physical abuse, harassment, sexual abuse, threats of death, power and control, and lethality risk score for both lethal and non-lethal samples, and the data were merged in order to further investigate pregnancy-associated lethal and non-lethal violence.

### Measures

Pregnancy in the current study is measured as pregnant or not pregnant, and, consistent with previous literature (i.e., Chang et al., 2005; Shadigian & Bauer, 2003), the pregnancy variable accounts for those pregnant at the time of the initial interview or within one year of the interview. The homicide sample contains a pregnancy variable as well, accounting for those who were pregnant one year prior to the interview or homicide.

Using the variable to measure whether a woman was abused (the screening variable used by interviewers to determine if a respondent was abused or not), and the variable to measure whether she was pregnant at the time of the interview or at any point within the past year, a new

variable was created from the two for the hospital-clinic sample to measure abuse and pregnancy status of each woman interviewed. The variable was designed to measure four possible groups of women in the hospital-clinic sample: not abused/not pregnant, abused/pregnant, abused/not pregnant, and pregnant/not abused. Lethal violence victims were coded as pregnant or not pregnant at the time of death or within the past year.

Next, a series of variables were created to measure several dimensions of abuse provided in the CWHRS data for both the non-lethal and lethal samples, including physical abuse, harassment, sexual abuse, threats of death, and power and control. In addition, Campbell's Danger Assessment (1993) was used to compute a lethality risk score. Continuous variables provided in the CWHRS dataset were used to measure levels of physical abuse, harassment, power and control, and lethality risk. Dichotomous variables were created for death threats and sexual abuse from variables provided. Identical abuse victimization variables were created for the non-lethal and lethal samples. Additionally, a dichotomous variable for each dimension of abuse was created to measure whether or not each woman had experienced any of the types of abuse or not.

### *Physical Abuse*

The measure for physical abuse was derived from a modified version of the Conflict Tactics Scale (Johnson, 1996). The scale includes the following variables on the physical abuse scale with a range of 0 to 11 where a higher score indicates more of the acts were experienced:

*Has IP: Threatened to hit R? Thrown anything at R? Pushed/grabbed/shoved R?*

*Slapped R? Kicked/bit/hit with fist? Hit R with an object? Beat R repeatedly? Choked*

*R? Threatened R with a knife? Threatened R with a gun? Forced R into sexual activity?*



### *Harassment*

Harassment is a broadly measured continuous variable drawn from the work of Sheridan (1992), who defines harassment as, “a persistent pattern of behavior by a male intimate partner that is intended to bother, annoy, trap, emotionally wear down, threaten, frighten, and/or terrify the women in order to control her behavior” (as cited in Block, 20000, p. 6). This expansive scale includes the following items for a range of 0 to 19:

*Did IP: Scare R with a weapon? Threaten to harm pet? Hurt R’s pet on purpose?  
Threaten to kill himself? Call and hang up on R? Leave threatening messages? Try to  
get R fired from work? Follow R? Sit in car/stand outside of home? Destroy R’s  
belongings? Frighten/threaten family? Threaten to harm kids if R left? Threaten to take  
kids if R left? Leave notes on R’s car? Threaten to kill R? Show up without warning?  
Force R into sex? Frighten/threaten friends? Threaten to hit R?*

### *Power and Control*

Power and Control is a scale constructed of the following items for a range of 0 to 5 (Johnson, 1996):

*Was IP jealous in past year? Did IP limit contact with family? Insist on knowing where  
R was? Call R names/put R down? Hide family income from R?*

### *Lethality Assessment*

Using the Campbell Danger Assessment (1993), a lethality risk score was derived from the following items, for a range of 0 to 17 where a higher score indicates more of the acts were experienced:

*Did the physical violence against R increase in past year? Did the physical violence increase in severity? Has IP ever used/threatened to use a weapon? Tried to choke R? Force R to have sex? Controlled R's daily activities? Ever beat R while pregnant? Violent/constantly jealous of R? Threaten to kill R? R/proxy believe IP is capable of killing? IP use drugs? IP now/ever have alcohol problems? IP threaten/try to commit suicide? R ever threaten/try to commit suicide? IP violent outside of the home? IP reported for child abuse? IP ever been arrested?*

#### *Threat of Death/Sexual Abuse*

Finally, threat of death was measured dichotomously using a variable where women (or proxies in the lethal sample) were asked if IP ever threatened to kill the woman, and sexual abuse was measured dichotomously where women (or proxies) were asked if IP ever tried to force the woman into sexual activities. Although the screening variable used to determine if respondents were abused or not also included sexual abuse, the question pertaining to whether a woman had been forced into sexual activity was also examined separately and used as the variable for sexual violence.

In addition to the abuse victimization types, other variables in the study include sociodemographic characteristics for the woman and her intimate partner, including age, race, education, employment, household income, relationship status, whether the woman and her partner reside together, whether there are children in the home shared by the woman and her IP, and whether there were step-children of the male IP's in the home.

## Analyses and Results

### *Victimization Types*

Frequency distributions for the victimization types are provided in Table 15 for the non-lethal and lethal samples for both pregnant and not pregnant women. The variables for physical violence, harassment, power and control, and lethality risk were dichotomized for this descriptive analysis to determine the number of respondents who had been victimized by any of these types of abuse at any level. These figures do not indicate a level of severity abuse, but rather if a woman was a victim or not. Bivariate tests were also conducted for each, but none of the results were significant at that level.

Table 15. Frequency Distributions of IP-Perpetrated Abuse Victimization Types

	Non-Lethal Sample (n=705)			Lethal Sample (n=57)		
	Pregnant (n=201)	Not Pregnant (n=504)	Total Non-Lethal (n=705)	Pregnant (n=7)	Not Pregnant (n=37)	Total Lethal (n= 57)
Physical	137 (68.5%)	350 (71.3%)	496 (70.7%)	7 (100%)	30 (81.1 %)	40 (70.2%)
Harassment	153 (76.1%)	386 (78.5%)	549 (77.9%)	7 (100%)	23 (62.2%)	32 (56.1%)
Power and Control	161 (80.5%)	411 (83.7%)	582 (82.9%)	7 (100%)	30 (81.1%)	42 (73.7%)
Lethality Risk	158 (78.6%)	405 (82.3%)	572 (81.1%)	7 (100%)	33 (89.2%)	42 (73.7%)
Death Threats	53 (26.5%)	140 (28.6%)	195 (27.9%)	4 (66.7%)	11 (40.7%)	16 (44.4%)
Sexual Abuse	44 (22.0%)	128 (26.2%)	174 (24.9%)	3 (50.0%)	7 (28.0%)	10 (31.2%)

\* Sample size different due to missing cases

In the non-lethal sample, pregnant women were less likely to indicate that they had been abused on all victimization types compared to women who were not pregnant, though the disparity between the frequencies is quite low. Conversely, pregnant women in the lethal sample had higher incidence for every type of abuse victimization than those who were not pregnant when killed, and the disparity between the two groups within the lethal sample was greater than that in the non-lethal sample.

#### *Frequencies of Study Variables*

Frequencies of all study variables for the non-lethal and lethal samples were conducted and are presented in Table 16. As with the abuse victimization variables, the sociodemographic and family dynamic variables were coded identically for both samples.

Table 16. Frequency Distribution of Sociodemographics, Family Dynamics Variables

	Non-Lethal Sample (n=705)			Lethal Sample (n=57)
	Abused	Not Abused	Overall	Overall
R Mean Age	30.72 (SD 9.07)	32.54 (SD 10.59)	31.26 years (SD 9.58)	32.16 years (SD 8.39)
IP Mean Age	33.89 (SD 9.98)	35.71 (SD 12.36)	34.42 (SD 10.76)	34.79 years (SD 8.94)
<b>R Race</b>				
% Black	70.3 (341)	63.6 (126)	68.4 (467)	66.7 (38)
% White	8.0 (39)	9.1 (18)	8.3 (57)	15.8 (9)
% Hispanic	21.6 (105)	27.3 (54)	23.3 (159)	17.5 (10)
<b>IP Race</b>				
% Black	71.4 (344)	64.1 (127)	69.3 (471)	66.7 (38)
% White	5.2 (25)	7.6 (15)	5.9 (40)	15.8 (9)
% Hispanic	23.4 (113)	28.3 (56)	24.9 (169)	17.5 (10)
<b>R Education</b>				
% High School +	52.0 (258)	61.8 (128)	54.9 (386)	62.2 (28)
<b>IP Education</b>				
% High School +	59.9 (258)	68.1 (124)	62.3 (382)	21.6 (8)
<b>R Employment</b>				
% Employed Full-Time	18.9 (93)	26.1 (53)	21.0 (146)	35.4 (17)
% Employed Part-Time	9.3 (46)	11.3 (23)	9.9 (69)	16.7 (8)
% Not employed	71.7 (353)	62.6 (127)	69.1 (480)	47.9 (23)

	Non-Lethal Sample (n=705)			Lethal Sample (n=57)
	Abused	Not Abused	Overall	Overall
<b>IP Employment</b>				
% Employed Full-Time	54.7 (249)	70.3 (137)	59.4 (386)	47.4 (18)
% Employed Part-Time	7.5 (34)	4.6 (9)	6.6 (43)	7.9 (3)
% Not employed	37.8 (172)	25.1 (49)	34.0 (221)	44.7 (17)
Median Household Income	2 (SD 2)	3 (SD 1.22)	2 (SD 1.60)	3 (SD 1.40)
<b>Relationship Status</b>				
% Married/CL/Engaged	23.3 (115)	32.4 (67)	26.0 (182)	29.2 (14)
% Divorced/Separated	17.8 (88)	14.0 (29)	16.7 (117)	20.8 (10)
% Single/Widowed	58.8 (290)	53.6 (111)	57.3 (401)	50.0 (24)
Lives with an IP	33.1 (164)	47.6 (99)	37.4 (263)	51.0 (25)
Children in the Home	64.5 (285)	65.0 (134)	64.7 (419)	58.3 (28)
Stepchildren in the Home	26.7 (131)	26.2 (54)	26.5 (185)	32.7 (16)

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Frequencies in parentheses for percentages

Sample size varies due to missing cases

Income categories include (1) less than \$5,000 (2) \$5,999 to 9,999 (3) \$10,000 to 19,999 (4) 20,000 to 29,999 (5) 30,000 to 39,999 (6) \$40,000+

### Age

The age range for women in the non-lethal sample was 18 to 67 years old, with a mean age of 31.26. Women in the lethal sample ranged from 18 to 54 years old, with a mean age of 32.16. IP's in the non-lethal sample ranged from 16 to 73 years old, with mean age of 34.42. IP's in the lethal sample ranged from 17 to 55 years old, with a mean age of 34.79.

### Race and Ethnicity

Race and ethnicity was categorized as Black, White, or Hispanic. More than two-thirds of the women in the non-lethal sample were Black, less than 10% were White, and 23% were Hispanic, with a greater percentage of abused women as Black compared to women who were not abused. More than two-thirds of the women in the lethal sample were Black, with only about 16% White and 18% Hispanic.

Of the IP's in the non-lethal sample, over two-thirds were Black, only about 6% were White, and one quarter were Hispanic, and more of the IP's in the abusive subsample were Black. Similarly, more than two-thirds of the IP's in the lethal sample were Black, while White and Hispanic IP's each comprised less than 20% of the sample.

### Educational Attainment

Educational attainment was originally coded to include a variety of categories ranging from no schooling to post graduate degree attainment, with several categories in between. Due to low responses in most categories, education was recoded dichotomously as "less than a high school degree" and "high school degree or greater." In the non-lethal sample, 45.1% of women and 37.7% of their male intimate partners had attained less than a high school education. Both



abused women and their IP's had lower educational attainment compared to women who were not abused and their IP's. In the lethal sample, nearly two-thirds of the women had at least a high school diploma, while more than three-quarters of the IP's had attained less than a high-school education.

### Employment Status

Employment status was coded as full-time, part-time, or unemployed. Most of the women in the non-lethal sample were unemployed, with 21.0% employed full-time and about 10% employed part-time. Just over one-third of IP's in the non-lethal sample were unemployed, with 59.4% employed full-time and 6.6% part-time. Abused women had higher percentages of unemployment compared to non-abused women. A greater percentage of male partners in the non-lethal sample were employed full-time. In the lethal sample, nearly one-half the women killed were unemployed at the time of their death, with about one-third employed full-time and less than 20% employed part-time. Nearly half of the IP's in the lethal sample were employed full-time with about 45% not employed full-time and less than 10% employed part-time.

### Household Income

Household income categories included: less than \$5,000, \$5,000 to 9,999, \$10,000 to 19,999, \$20,000 to 29,999, \$30,000 to 39,999, and \$40,000 or more. The median household income category in the non-lethal sample, abused subsample was between \$5,000 and \$9,999. The median for the subsample of not abused women was one category higher at \$10,000 to 19,999. The median income category in the lethal sample was also between \$10,000 and 19,999.

### Relationship Status

The original variable for relationship status was recoded as single/widowed, married/common-law/engaged, or separated/divorced to collapse those categories with low response rates. More than one-half of respondents in the non-lethal sample were single or widowed, 26.0% were married, common-law, or engaged, though fewer abused women were married compared to women who were not abused, and 16.7% overall were separated or divorced. In the lethal sample, half were single or widowed, about 30% were married, common-law status, or engaged, and about 21% were separated or divorced.

### Relationship State

Relationship state was measured by whether the woman lived with an intimate partner or not. Of the women in the non-lethal sample who were not abused, over one-third lived with an IP, though fewer abused women resided with an IP at the time of the interview. Over half of the women in the lethal sample resided with an IP at the time of death.

### Children

The presence of children in the home was measured by a dichotomous variable coded to reflect whether or not the woman and her intimate partner had children in common that resided in the home. Nearly two-thirds of women in the non-lethal sample and over half of the women in the lethal sample shared children with their IP.

### IP Stepchildren

The presence of stepchildren in the home was measured using a dichotomous variable coded for whether or not the woman has children in the home who are not the biological children

of her intimate partner. More than one-quarter of women in the non-lethal sample, and one-third of women in the lethal sample had children sired by another partner.

### *Sociodemographics and Family Dynamics Associated with Pregnancy-Related Violence*

The next step of analysis addresses the first set of research questions pertaining to which characteristics of victims and perpetrators and family dynamics are associated with pregnancy-related non-lethal and lethal IPV. These include, specifically: 1) what characteristics of victims and perpetrators, including age, race, educational attainment, employment status, and income are associated with pregnancy-associated IPV and femicide; 2) how the relationship status and state of a couple interact with pregnancy to increase risk for pregnancy-associated IPV and femicide; 3) how the presence of children in the home, including children not sired by the male partner, affect the risk for pregnancy-associated IPV and femicide.

To accomplish this, the distributions of these characteristics were determined for each group of women in the hospital-clinic sample using a categorical variable which measures abuse and pregnancy statuses. Using the general abuse variable (AW/NAW) provided in the CWHRS hospital/clinic dataset (i.e. non-lethal) and based on how each respondent was screened, four categories were created, including not abused/not pregnant (20.5%; n=142), abused/pregnant (19.8%; n=137), abused/not pregnant (50.5%; n=350), and pregnant/not abused (9.2%; n=64). The results for the descriptive analyses within the non-lethal sample are presented in Table 17.

Table 17. Sociodemographic Characteristics and Family Dynamics Associated with Pregnancy-Related Non-Lethal IPV

	<sup>1</sup> NA-NP (n=142)	A-P (n=137)	A-NP (n=350)	NA-P (n=64)
R Mean Age*	35.96 years (SD 10.55)	24.64 years (SD 5.90)	33.30 (SD 8.94)	25.17 years (SD 5.85)
IP Mean Age	39.47(SD 12.43)	28.90 years (SD 8.33)	36.01 (SD 9.87)	27.63 (SD 7.29)
R Race*				
% Black	73.1 (98)	65.9 (89)	72.1 (245)	43.5 (27)
% White	10.4 (14)	6.7 (9)	8.5 (29)	6.5 (4)
% Hispanic	16.4 (22)	27.4 (37)	19.4 (66)	50.0 (31)
IP Race*				
% Black	73.1 (98)	68.9 (91)	72.2 (247)	43.5 (27)
% White	9.0 (12)	.8 (1)	7.0 (24)	4.8 (3)
% Hispanic	17.9 (24)	30.3 (40)	20.8 (71)	51.6 (32)
R Education				
% High School +	61.7 (87)	53.3 (73)	52.1 (182)	62.5 (40)
IP Education*				
% High School +	74.4 (90)	62.9 (73)	58.6 (180)	55.0 (33)
R Employment*				
% Employed Full-Time	29.5 (41)	15.7 (21)	20.4 (71)	19.4 (12)
% Employed Part-Time	11.5 (16)	6.7 (9)	10.6 (37)	9.7 (6)
% Not employed	59.0 (82)	77.6 (104)	69.0 (240)	71.0 (44)
IP Employment*				
% Employed Full-Time	68.9 (91)	51.2 (64)	56.0 (181)	75.4 (46)
% Employed Part-Time	3.8 (5)	8.0 (10)	7.4 (24)	6.6 (4)
% Not employed	27.3 (36)	40.8 (51)	36.5 (118)	18.0 (11)

	<sup>1</sup> NA-NP (n=142)	A-P (n=137)	A-NP (n=350)	NA-P (n=64)
Median Household Income	\$5,000-\$9,999 (SD 1.60)	\$5,000-\$9,999 (SD 1.65)	\$5,000-\$9,999 (SD 1.60)	\$5,000-\$9,999 (SD 1.45)
Relationship Status*				
% Married/CL/Engaged	28.4 (40)	27.7 (38)	22.0 (76)	42.2 (27)
% Divorced/Separated	16.3 (23)	8.8 (12)	22.0 (76)	9.4 (6)
% Single/Widowed	55.3 (78)	63.5 (87)	56.1 (194)	48.4 (31)
Lives with an IP*	44.4 (63)	34.8 (47)	32.6 (114)	54.7 (35)
Children in the Home*	57.4 (81)	73.8 (93)	60.3 (185)	84.1 (53)
Stepchildren in the Home	27.9 (39)	21.6 (29)	28.5 (99)	23.4 (15)

<sup>1</sup>NA-NP=Not Abused-Not Pregnant; A-P=Abused-Pregnant; A-NP= Abused-Not Pregnant; NA-P=Not Abused-Pregnant

\*Denotes a significant relationship at the bivariate level

Frequencies in parentheses for percentages

Sample size varies due to missing cases

In addition, distributions of these characteristics were also determined for the homicide sample comparing women who were pregnant (15.9%; n=11) versus not pregnant (84.1%; n=58), and are presented in Table 18. While the individual results for the frequencies of each of the variables across the six categories of pregnancy and abuse statuses for the two samples are not discussed within this text, they are presented in Tables 17 and 18, and the relationships which were significant at the bivariate level are discussed individually as follows.

Table 18. Sociodemographic Characteristics and Family Dynamics Associated with Pregnancy-Related Femicide

	Pregnant When Killed (n=7)	Not Pregnant When Killed (n=37)
R Mean Age	23.57 years (SD 4.65)	32.78 years (SD 8.52)
IP Mean Age	27.14 years (SD 6.82)	35.43 years (SD 9.24)
<b>R Race</b>		
% Black	71.4 (4)	64.9 (24)
% White	0 (0)	16.2 (6)
% Hispanic	28.6 (2)	18.9 (7)
<b>IP Race</b>		
% Black	71.4 (4)	64.9 (24)
% White	0 (0)	16.2 (6)
% Hispanic	28.6 (2)	18.9 (7)
<b>R Education</b>		
% High School +	57.1 (4)	60.0 (21)
<b>IP Education</b>		
% < High School	100.0 (5)	71.4 (20)
<b>R Employment</b>		
% Employed Full-Time	42.9 (3)	32.4 (12)
% Employed Part-Time	14.3 (1)	18.9 (7)
% Not employed	42.9 (3)	48.6 (18)
<b>IP Employment</b>		
% Employed Full-Time	40.0 (2)	55.2 (16)
% Employed Part-Time	20.0 (1)	6.9 (2)
% Not employed	40.0 (2)	37.9 (11)
Median Household Income	\$10,000 and 19,999 (SD 2.07)	\$10,000 and 19,999 (SD 1.35)
<b>Relationship Status</b>		
% Married/CL/Engaged	28.6 (2)	27.8 (10)
% Divorced/Separated	0 (0)	25.0 (9)
% Single/Widowed	71.4 (5)	47.2 (17)
Lives with an IP	57.1 (4)	45.9 (17)
Children in the Home	85.7 (6)	55.6 (20)
<u>Stepchildren in the Home</u>	42.9 (3)	29.7 (11)

Frequencies in parentheses for percentages  
Sample size varies due to missing cases

### *Bivariate Analysis Findings*

Bivariate analyses were conducted to test the relationships between the sociodemographic and family dynamics variables and the pregnancy/abuse variable in the non-lethal sample, and between pregnant/not pregnant in the lethal sample. Significant variables identified in the non-lethal sample included respondent age, respondent and IP race, IP education, respondent and IP employment, relationship status, relationship state, and children in the home. The non-significant relationships associated with abuse/pregnancy status for the non-lethal sample included: IP age, respondent education, income, and having stepchildren in the home. None of the variables were significant at the bivariate level for the lethal sample.

While bivariate results are not shown in a separate table, those variables presented in Table 17 with significant bivariate relationships are denoted with an asterisk (\*) within the table. The test statistics and results for the bivariate analyses are discussed below.

#### Age

An analysis of variance revealed a significant difference in mean ages between women in the four categories of abuse/pregnancy status in the non-lethal sample, where those not pregnant were older than pregnant women in both abuse categories, and the abused/pregnant women represent the youngest group ( $F=58.897, p<.001$ ). Post-hoc tests identified significant age differences for all comparisons of the abuse/pregnancy status variable except abused/pregnant and not abused/pregnant. Women who were abused/ pregnant and not abused/pregnant were significantly younger than those in the other two categories. Women who were abused/not pregnant were significantly older than women in all the other categories.



## Race

The modal race category is Black across the categories of abuse/pregnancy status, with Black women having comprised the highest percentage of every abuse/pregnancy status category except for not abused/pregnant. Nearly three-quarters of the not abused/not pregnant subsample of women, over 65% of the abused/pregnant subsample, and nearly three-quarters of the abused/not pregnant were Black women. Hispanic women represented half of the women in the not abused/pregnant group, with Black women comprising 43.5%. White women comprised the lowest percentage in each of the four categories ( $X^2=33.200$ ;  $df=6$ ;  $p<.001$ ). The frequencies for the IP race categories were nearly identical to that of the women in every pregnancy/abuse category ( $X^2=39.698$ ;  $df=6$ ;  $p<.001$ ).

## Education

The intimate partners of women in every category were most likely to have attained less than a high school diploma. Of the women who were not abused/not pregnant, three quarters of their IP's had less than a high school diploma, 63% of IP's of women in the abused/pregnant category, over half in the abused/not pregnant category, and over half of IP's in the not abused/pregnant category had also attained less than a high school diploma ( $X^2=10.652$ ;  $df=6$ ;  $p<.05$ ).

## Employment

Regarding employment, both respondents' and their IPs employment statuses were significantly related to the women's abuse/pregnancy status when employment was collapsed into "employed" and "unemployed." A greater percentage of women in every category of

abuse/pregnancy status were unemployed. Over half of women in the not abused/not pregnant category, over three-quarters of women who were abused and pregnant, 69% who were abused and not pregnant, and over 70% who were not abused and pregnant were unemployed ( $X^2=11.218$ ;  $df=3$ ;  $p<.05$ ).

Women in every category were most likely to have an IP who was employed. Nearly three quarters of the IP's of women in the not abused/not pregnant category, over half in the abused and pregnant category, over 60% in the abused but not pregnant category, and over 80% of women in the not abused/pregnant category had IP's who were employed ( $X^2=13.123$ ;  $df=3$ ;  $p<.01$ ).

#### Relationship Status and State

The variable for relationship status was collapsed into “married” and “not married” categories, and was significant at the bivariate level with abuse/pregnancy status. Most of the women in each pregnancy/abuse status category were not married. Of the women who were not abused/not pregnant, nearly three-quarters were not married, while nearly three-quarters of women in the abused/pregnant category, over three-quarters in the abused/not pregnant category, and over half in the pregnant/not abused were not married. ( $X^2=12.143$ ;  $df=3$ ;  $p<.01$ ).

Relationship state was also significantly related to abuse/pregnancy status. Of the women who were not abused/not pregnant, nearly half resided with an IP. Over one-third of women who were abused and pregnant resided with an IP, over one-third in the abused and not pregnant category and over half of women in the not abused/pregnant resided with an IP. ( $X^2=14.969$ ;  $df=3$ ;  $p<.01$ ).

### Children in the Home

A greater percentage of women in each category had children in their homes. In fact, well over half of the women in each category had children in the home, and the highest percentage was found in the not abused/pregnant category, where 84% had children in the home. ( $X^2=20.880$ ;  $df=3$ ;  $p<.001$ ).

#### *Mean Abuse Scores and Frequency Distributions in Entire CWHRs Sample*

The next analyses conducted were designed to assess the mean scores of each of the continuous abuse variables (physical, harassment, power and control, and lethality risk) and frequency distributions for the dichotomous abuse variables (death threats and sexual violence) for pregnant and not pregnant women for the entire CWHRs sample. Results from these analyses are presented in Table 19.

Table 19. Abuse Victimization Mean Scores and Frequency Distributions for Entire CWHRs Sample

	Not Abused (n=208)	Non-Lethal (n=497)	Lethal (n=57)
<b>PREGNANT</b>			
Physical	.0156 (SD=.13)	5.154 (SD=3.19)	7.43(SD=2.57)
Harassment	.73 (SD=1.13)	5.10 (SD=3.70)	4.57 (SD=3.78)
Power/Control	1.06 (SD=1.28)	3.25 (SD=1.59)	3.71 (SD=1.11)
Lethality Risk	.859 (SD=1.15)	6.35 (SD=4.12)	7.86 (SD=4.34)
Death Threats	-	39.0% (53)	66.7% (4)
Sexual Violence	-	32.4% (44)	50.0% (3)
<b>NOT PREGNANT</b>			
Physical	.0282 (SD=.336)	5.43(SD=3.131)	4.70 (SD=3.67)
Harassment	.94 (SD=1.590)	5.68 (SD=3.884)	3.05 (SD=3.67)
Power/Control	1.01 (SD=1.288)	3.57 (SD=1.477)	2.32 (SD=1.78)
Lethality Risk	.831 (SD=1.209)	7.07 (SD=4.03)	5.24 (SD=4.03)
Death Threats	3.6% (5)	38.7% (135)	40.7% (11)
Sexual Violence	-	36.7% (128)	28.0% (7)

Maximum scores: physical=11, harassment=19, power/control=5, lethality risk=17  
 Frequencies for death threats and sexual violence in parentheses.

Beginning with the pregnant subsample, the highest mean score for physical abuse was among lethally abused women (7.43 of a maximum 11). The highest score for harassment was among non-lethally abused women (5.10 of a maximum 19). The highest score for power and control was with lethally abused women (3.71 of a maximum 5), and the highest lethality risk score was among lethally abused women (7.86 of a maximum of 17). Both death threats and sexual violence were more common for the lethally abused group of women within the pregnant subsample.

In the subsample of women who were not pregnant, non-lethally abused women scored the highest in all dimensions of abuse with the exception of death threats. Slightly more women in the lethal subsample were threatened with death compared to the non-lethal subsample.

Bivariate analyses were conducted to test for significance between pregnancy and abuse statuses for the lethal and non-lethal samples. The only significant result was an independent samples t-test comparing the mean scores on the power and control scale for pregnant and not pregnant women within the lethal sample. A significant difference was found between the means of the two groups ( $t = -.2713$ ;  $df = 12.72$ ;  $p < .05$ ). The mean of pregnant women ( $\bar{x} = 3.71$ ;  $SD = 1.11$ ) was significantly higher than the mean of non-pregnant women ( $\bar{x} = 2.32$ ,  $SD = 1.78$ ) on the power and control scale.

### *Predicting Non-Lethal Abuse Victimization*

The final research question pertains to pregnancy-associated dimensions of abuse. To test the effect of pregnancy on the risk for each of the abuse victimizations (physical, harassment, power and control, lethality risk, death threats, and sexual abuse) numerous analyses were conducted. After determining the mean scores and frequencies for victimizations suffered

by women in the non-lethal and lethal samples (presented in 6.5), bivariate analyses were conducted to examine the significance of the relationship between pregnancy with each type of non-lethal abuse as well as with lethality. When measuring pregnancy dichotomously as “pregnant” and “not pregnant,” none of the bivariate relationships were significant at the .05 level in either the non-lethal or lethal samples. However, when the pregnancy/abuse categorical variable was used to conduct bivariate analyses of the victimizations, every type of victimization was significantly related to the pregnancy/abuse status at the .000 level in both samples. This is expected given the likelihood of multicollinearity since the abuse variable used in the combination was derived from three screening questions concerning abuse: one pertaining to physical abuse, one to sexual abuse, and one to fear of the IP. Although power and control, various dimensions of harassment, and lethality risk were not directly accounted for in the abuse screening variable, these victimizations were also significant at the .000 level.

An analysis of variance for the continuous measure of abuse showed a variety of significant relationships. With regard to physical abuse, women who were pregnant when killed had the highest mean physical abuse score, followed closely by women who were abused/not pregnant. For power and control, harassment, and lethality risk, women who were abused but not pregnant had the highest mean power and control score, but in each case that group was closely followed by less than one point by women who were abused and pregnant.

With death threats and sexual abuse, 66.7% of those women killed when pregnant received threats of death, compared to 40.7% of women who were not pregnant when killed (women in every other category were less likely to experience death threats or sexual abuse).

Next, a series of multivariate analyses were conducted to test the effects of sociodemographics, family dynamic variables, and pregnancy on the amount of physical

violence, power and control, harassment, and lethality risk, and to test effects on the likelihood of experiencing threats of death or sexual violence in the hospital/clinic (i.e. non-lethal) sample of women. These regressions were not conducted for the lethal sample due to lack of a comparison group.

OLS regression analysis was used to predict the amount of physical abuse, harassment, power and control, and lethality risk score. Logistic regression was used to predict verbal threats of death and sexual abuse<sup>5</sup>. Each of the models included the same set of independent variables and used the same progressive modeling technique, where step one included sociodemographics and family dynamics, and step two included the addition of pregnancy.

Multicollinearity diagnostics were conducted for each model. Respondent race and IP race were determined to be problematic, with tolerances of <2 in every model and variance inflation factors of 5.0+. A crosstab revealed that the women in the survey were predominantly partnered intraracially, so only the respondent's race was included in the regression analyses. Deletion of the IP race variable resolved the multicollinearity issues and lowered all variance inflation factors to below 4.0. All of the models were significant the .01 level or higher.

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<sup>5</sup> A separate logistic regression model was constructed for the abuse screening variable, but none of the coefficients in the model were significant.

Table 20. OLS Regression Coefficients for the Estimated Effects of Sociodemographics, Family Dynamics, and Pregnancy on Non-Lethal Physical Abuse

	Step 1			Step 2		
	SE	b	$\beta$	SE	b	$\beta$
R Age	.020	-.069	-.025	.021	-.078	-.028
IP Age	.004	.018	.002	.004	.018	.001
R White <sup>1</sup>	.608	-.053	-.667	.609	-.053	-.673
R Other <sup>1</sup>	.502	-.112	-.965	.503	-.111	-.957
R Education <sup>2</sup>	.350	-.130**	-.928	.351	-.129**	-.921
IP Education <sup>2</sup>	.369	-.071	-.510	.370	-.070	-.504
R Employment	.354	-.047	-.344	.357	-.049	-.359
IP Employment	.361	-.171***	-1.267	.361	-.172***	-1.274
Income	.107	-.023	-.050	.107	-.024	-.051
Single <sup>3</sup>	.474	.079	.556	.475	.078	.546
Divorced/Separated <sup>3</sup>	.588	.136*	1.324	.588	.136*	1.326
Children in the Home	.400	-.119*	-.858	.402	-.117*	-.846
Stepchildren in the Home	.410	.053	.407	.410	.053	.403
R Lives with an IP	.409	-.030	-.209	.411	-.028	-.196
Pregnant	-	-	-	.399	-.019	-.149
Constant		6.388		6.523		
R <sup>2</sup>		.132		.133		
Change in R <sup>2</sup>				.000		
N		705		705		

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

<sup>1</sup> compared to Black; <sup>2</sup> compared to < than high school diploma; <sup>3</sup> compared to married/common-law



## Physical Abuse

OLS regression was used to estimate the effects of the independent variables on amount of physical abuse. The results are presented in Table 20. Sociodemographics and family dynamics were included in the first step, and four independent variables were significant in predicting physical abuse: the woman's educational attainment, IP employment level, relationship status, and children in the home.

For women, having a high school diploma or greater was associated with lower levels of physical abuse ( $\beta = -.928$ ), compared to not having a high school diploma. IP employment was associated with lower levels of physical abuse perpetrated against the female partner ( $\beta = -1.267$ ). Being divorced or separated compared to being married was associated with a higher level of physical abuse ( $\beta = 1.324$ ), and having children in the home was associated with lower levels ( $\beta = -.858$ ). The  $R^2$  indicated that 13% of the variance in physical abuse score was explained by the independent variables in the step one model. The results for the second model were nearly identical to the step one model, but pregnancy was not a significant predictor, and the change in  $R^2$  from the first step to the second step was not significant.

Table 21. OLS Regression Coefficients for the Estimated Effects of Sociodemographics, Family Dynamics, and Pregnancy on Non-Lethal Harassment

	Step 1			Step 2		
	SE	b	$\beta$	SE	b	$\beta$
R Age	.022	-.090	-.037	.024	-.119*	-.049
IP Age	.004	-.002	.000	.004	-.005	.000
R White <sup>1</sup>	.695	-.039	-.561	.695	-.041	-.582
R Other <sup>1</sup>	.574	-.083	-.808	.574	-.079	-.773
R Education <sup>2</sup>	.400	-.153**	-1.237	.400	-.150**	-1.209
IP Education <sup>2</sup>	.422	-.055	-.452	.422	-.052	-.425
R Employment	.405	-.036	-.303	.407	-.044	-.363
IP Employment	.412	-.158***	-1.331	.412	-.161***	-1.358
Income	.122	.076	.183	.122	.073	.177
Single <sup>3</sup>	.541	.089	.706	.542	.084	.667
Divorced/Separated <sup>3</sup>	.672	.138*	1.520	.671	.139*	1.528
Children in the Home	.457	-.119*	-.972	.458	-.113*	-.922
Stepchildren in the Home	.468	.051	.440	.468	.049	.426
R Lives with an IP	.467	-.064	-.508	.468	-.057	-.456
Pregnant	-	-	-	.455	-.069	-.610
Constant		6.946		7.495		
R <sup>2</sup>		.118		.121		
Change in R <sup>2</sup>				.004		
N		705		705		

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

<sup>1</sup> compared to Black; <sup>2</sup> compared to < than high school diploma; <sup>3</sup> compared to married/common-law

## Harassment

OLS regression results for harassment are presented in Table 21. In the first step, a woman's educational attainment, IP employment, relationship status, and children in the home were all significant predictors of harassment. Having a high school diploma or greater was associated with lower levels of harassment ( $\beta = -.153$ ), as was employment on the part of an IP ( $\beta = -.158$ ). Compared to married, being divorced or separated was associated with higher harassment levels ( $\beta = .138$ ), and having children in the home was associated with lower levels ( $\beta = -.119$ ). The  $R^2$  in both models indicated that 12% of the variance was explained.

Step two produced very similar results, and respondent age also emerged as a significant predictor in that higher age was associated with lower harassment levels ( $\beta = -.119$ ). Pregnancy was not a significant predictor, and the change in  $R^2$  from the first step to the second step was not significant.

Table 22. OLS Regression Coefficients for the Estimated Effects of Sociodemographics, Family Dynamics, and Pregnancy Non-Lethal Power and Control

	Step 1			Step 2		
	SE	b	$\beta$	SE	b	$\beta$
R Age	.011	-.007	-.001	.011	-.047	-.009
IP Age	.002	-.009	.000	.002	-.012	.000
R White <sup>1</sup>	.331	-.080	-.530	.330	-.082	-.544
R Other <sup>1</sup>	.273	-.032	-.147	.273	-.027	-.125
R Education <sup>2</sup>	.190	-.114*	-.426	.190	-.109*	-.408
IP Education <sup>2</sup>	.201	-.071	-.269	.201	-.066	-.252
R Employment	.193	-.081	-.316	.193	-.091	-.354
IP Employment	.196	-.111*	-.432	.196	-.115*	-.449
Income	.058	.040	.045	.058	.036	.041
Single <sup>3</sup>	.258	.056	.209	.257	.050	.184
Divorced/Separated <sup>3</sup>	.320	.123*	.633	.319	.124*	.638
Children in the Home	.218	-.040	-.150	.218	-.031	-.119
Stepchildren in the Home	.223	.033	.133	.222	.031	.125
R Lives with an IP	.222	-.067	-.250	.223	-.059	-.218
Pregnant	-	-	-	.216	-.093	-.382
Constant		3.364		3.708		
R <sup>2</sup>		.077		.084		
Change in R <sup>2</sup>				.007		
N		705		705		

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

<sup>1</sup> compared to Black; <sup>2</sup> compared to < than high school diploma; <sup>3</sup> compared to married/common-law

## Power and Control

OLS regression results for power and control are presented in Table 22. Respondent education, IP employment, and relationship status were significant predictors. Having a high school diploma or greater corresponded to lower levels of power and control victimization ( $\beta = -.114$ ). An employed IP was also associated with lower levels ( $\beta = -.111$ ) compared to not employed. Compared to being married, being divorced or separated was associated with higher levels of power and control ( $\beta = .123$ ). The  $R^2$  in both models indicated that 8% of the variance was explained. The second model was very similar, producing the same significant predictors, but pregnancy was not a significant predictor of power and control and the change in  $R^2$  was not significant.

Table 23. OLS Regression Coefficients for the Estimated Effects of Sociodemographics, Family Dynamics, and Pregnancy on Lethality Risk in Non-Lethal Cases

	Step 1			Step 2		
	SE	b	$\beta$	SE	b	$\beta$
R Age	.024	-.031	-.014	.026	-.057	-.026
IP Age	.005	-.018	.002	.005	.016	.002
R White <sup>1</sup>	.756	-.003	-.040	.756	-.004	-.061
R Other <sup>1</sup>	.624	-.048	-.512	.624	-.045	-.478
R Education <sup>2</sup>	.435	-.110*	-.966	.436	-.107*	-.939
IP Education <sup>2</sup>	.459	-.137**	-1.227	.459	-.134**	-1.201
R Employment	.440	-.064	-.583	.443	-.070	-.640
IP Employment	.448	-.165***	-1.511	.448	-.167***	-1.537
Income	.133	.014	.037	.133	.011	.030
Single <sup>3</sup>	.589	.004	.034	.589	.000	-.003
Divorced/Separated <sup>3</sup>	.730	.063	.759	.730	.064	.768
Children in the Home	.497	-.156**	-1.390	.499	-.151**	-1.342
Stepchildren in the Home	.509	.069	.649	.509	.068	.636
R Lives with an IP	.508	-.121*	-1.050	.510	-.115*	-1.001
Pregnant	-	-	-	.496	-.060	-.581
Constant		8.565		9.087		
R <sup>2</sup>		.125		.128		
Change in R <sup>2</sup>				.003		
N		705		705		

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

<sup>1</sup> compared to Black; <sup>2</sup> compared to < than high school diploma; <sup>3</sup> compared to married/common-law

## Lethality Risk

In the final OLS regression to predict non-lethal victimization, lethality risk results for are presented in Table 23, showing a few additional predictors from those in the previous OLS models. Respondent and IP education, IP employment, children in the home, and residing with an IP were significant predictors.

Having a high school diploma or greater was again a significant predictor of lower lethality risk level ( $\beta = -.110$ ), as was an IP having a high school diploma or greater ( $\beta = -.137$ ), an additional finding pertaining to lethality risk compared to the other models. IP employment was again significantly associated with lower risk ( $\beta = -.165$ ). Finally, having children in the home corresponded to lower risk of lethality ( $\beta = -.156$ ), as did residing with an IP ( $\beta = -.121$ ). The second model in the lethality risk series was very similar to the first model, and the additional pregnancy variable was not a significant predictor of lethality risk. The  $R^2$  in both models indicated that about 13% of the variance was explained by the independent variables, and the change in  $R^2$  in the second step was not significant.

Finally, logistic regression analyses were conducted to predict both sexual abuse and threats of death. Although the model was significant, none of the variables in the sexual abuse regression models were significant predictors of sexual abuse. Therefore, only the results for threats of death are presented in Table 24.

Table 24. Logistic Regression Coefficients Predicting Threats of Death in Non-Lethal Cases by Sociodemographics, Family Dynamics, and Pregnancy (n=442)

	Threats Step 1		Threats Step 2	
	SE	Exp(B)	SE	Exp(B)
R Age	.015	.972	.016	.968*
IP Age	.005	.998	.005	.997
R White <sup>1</sup>	.643	.203**	.644	.199**
R Other <sup>1</sup>	.390	.477	.390	.486
R Education <sup>2</sup>	.255	.728	.255	.736
IP Education <sup>2</sup>	.266	.739	.267	.748
R Employment	.269	.979	.271	.956
IP Employment	.256	.541*	.257	.534*
Income	.079	.978	.079	.976
Single <sup>3</sup>	.356	.784	.356	.770
Divorced/Separated <sup>3</sup>	.432	1.441	.431	1.451
Children in the Home	.302	.473**	.302	.480*
Stepchildren in the Home	.311	1.184	.312	1.176
R Lives with an IP	.297	1.218	.298	1.236
Pregnant	-	-	.295	.796
Constant	.732	3.413		
-2 log likelihood	449.070		448.465	
Step X <sup>2</sup>			.605	
Model X <sup>2</sup>	35.580***		36.186**	
Nagelkerke	.116		.118	

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

<sup>1</sup> compared to Black; <sup>2</sup> compared to < than high school diploma; <sup>3</sup> compared to married/common-law



Three independent variables emerged as significant predictors of the odds of a woman being threatened with her life at the hands of an IP in the first step of the modeling: The woman's race, the IP's employment, and whether there are children in the home. The odds of being threatened were significantly lower for White women compared to Black women (OR=.203). Having an employed IP was associated with lower odds of being threatened compared to an IP who was not employed (OR=.541). Having children in the home was also associated with lower odds (OR=.473). The second model was similar, but the woman's age was an additional predictor, where higher age corresponds to lower odds of death threats by an IP (OR= .968). The pregnancy variable was again not a significant predictor. The pseudo R<sup>2</sup> indicated about 12% of variance was explained in both models.

### Predicting Lethality

In a final step to predict victimization, the hospital/clinic (i.e. non-lethal) and homicide datasets were merged to predict homicide. After the data were merged, a new variable was created to measure lethality in two categories: not lethally abused (i.e. not abused and abused but not killed), and lethally abused. Lethality was predicted using the same sociodemographic, family dynamic, and pregnancy variables used in the previous regression modeling. Results are presented in Table 25.

Table 25. Logistic Regression Coefficients Predicting Lethality by Sociodemographics, Family Dynamics, and Pregnancy for all CWHRS Subjects (n=464)

	Lethality Step 1		Lethality Step 2	
	SE	Exp(B)	SE	Exp(B)
R Age	.031	1.000	.033	.991
IP Age	.009	.997	.009	.997
R White <sup>1</sup>	.740	2.096	.745	2.124
R Other <sup>1</sup>	.820	.372	.817	.393
R Education <sup>2</sup>	.546	1.140	.548	1.160
IP Education <sup>2</sup>	.563	.127***	.566	.127***
R Employment	.525	4.189**	.527	4.012**
IP Employment	.557	1.093	.559	1.076
Income	.161	1.226	.161	1.230
Single <sup>3</sup>	.755	.590	.748	.595
Divorced/Separated <sup>3</sup>	.755	1.112	.748	1.115
Children in the Home	.616	.810	.620	.841
Stepchildren in the Home	.592	1.321	.595	1.340
R Lives with an IP	.615	.978	.612	1.001
Pregnant	-	-	.705	.520
Constant	1.550	.044		
-2 log likelihood	141.739		140.802	
Step X <sup>2</sup>			.937	
Model X <sup>2</sup>	29.301**		30.238**	
Nagelkerke	.198		.205	

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

<sup>1</sup> compared to Black; <sup>2</sup> compared to < than high school diploma; <sup>3</sup> compared to married/common-law

Logistic regression was used to first test the effects of the independent variables on odds of lethality. Although the addition of pregnancy in the second step was again not a significant predictor, two sociodemographic variables were significant in both models, with almost identical

odds ratios: IP education and a woman's employment. The pseudo R indicates about 20% of variance in the dependent variable is explained by the independent variables.

Having an IP who had at least a high school diploma corresponded to lower odds of lethality for women (OR= .127). Contrary to the previous findings, a *woman's* employment was a significant predictor, where employed women were over four times as likely to be killed by an IP than women who were not employed (OR= 4.189). The result concerning a woman's employment presents further evidence in support of the notion that a power differential favoring a woman can present potentially deadly consequences at the hands of her intimate partner.

### Discussion and Conclusions

These analyses of the Chicago Women's Health Risk Study conclude the second phase of the overall study designed to address the risks associated with pregnancy and IPV. These data offer the opportunity to study both non-lethal and lethal IP violence, to include the characteristics of intimate partner's within the analyses, to examine multiple dimensions of abuse including physical, sexual, harassment, threats of death, power and control, as well as to examine correlations of pregnancy and lethality risk.

The overall sample consisted of 762 women, 705 in the non-lethal sample, and 57 women who were killed at the hands of a male intimate partner. Frequency distributions for the victimization types showed women in the non-lethal sample suffering higher rates of every type of abuse, with the exception of death threats and sexual abuse, when compared to the sample of women killed by an IP. This may be due to women in the non-lethal sample self-reporting, whereas proxy sources were used for the lethal sample and the actual presence of violence in those relationships could have been overlooked.

Pregnant women in the non-lethal sample experienced lower rates of violence compared to women who were not pregnant, but these disparities were very slight (less than 5% difference on every dimension between pregnant/not pregnant women). In the lethal sample, pregnant women suffered higher rates of abuse on every dimension. The disparities within the lethal sample between pregnant women and those not pregnant when killed were greater compared to the non-lethal sample. This indicates that pregnant women were not protected from lethal violence within the homicide sample, that in fact, they suffered abuse at higher rates than women who were not pregnant. Similarly, the slight differences within the non-lethal sample indicate little to no protection from IPV during pregnancy for those women as well.

The next set of analyses involved determining which respondent and IP sociodemographic characteristics and family dynamics are associated with non-lethal and lethal IPV for pregnant and not pregnant subsamples. Frequency distributions were determined and tested for significance at the bivariate level, with the overall sample divided into sub-samples based on the abuse and pregnancy statuses of each woman.

From the distributions of these characteristics, several noteworthy results emerged, beginning with age. Those who were pregnant when abused compared to pregnant and not abused had a mean age of almost nine years younger, while those killed when pregnant were almost ten years younger than those not pregnant when killed. This age disparity may reflect a natural pattern in childbearing years (i.e. Jasinski & Kaufman Kantor, 2001) but the mean ages for those not pregnant when abused/killed are still well within childbearing years. This finding concerning age is consistent with previous literature where younger women are at greater risk for both lethal and non-lethal IPV (i.e. Shadigian & Bauer, 2004).

In addition, IP mean age was also lower for pregnant and abused or killed women compared to women who were not pregnant in the two samples. The IP's of pregnant and abused women were reportedly about seven years younger than partners of abused women who were not pregnant, and men who killed their female partners were about eight years younger than men who killed women who were not pregnant. Again, given the younger ages typically associated with childbearing, as well as the homogeneous nature with which the women and men in these samples are partnered, this finding is not that surprising. However, like with victim age, the IP age finding is consistent with previous research suggesting younger men are more likely to abuse and/or kill their partners than men who are older (i.e. Campbell et al., 1997).

The findings regarding each race were relatively consistent across all the categories of abuse and pregnancy. White women and White IP's consistently had the lowest percentages in each category of abuse and pregnancy. Although there were only 11 women killed when pregnant, the results still show the vast majority of victims and offenders were Black, followed by Hispanic. This is consistent with previous literature concerning race (i.e. Anderson, 1997; Chang et al., 2005), but also not surprising given that the majority of women and their IP's represented in the two samples were Black.

Also consistent with previous findings, attaining at least a high school education was associated with less non-lethal abuse, both during pregnancy and while not pregnant (Campbell, 2004; Datner, Wiebe, Brensinger, & Nelson, 2007). The homicide offenders in general had much lower educational attainment than the women in the homicide sample. None of those who killed pregnant women had attained a high school diploma, compared to nearly one-third of men who killed women who were not pregnant. This finding suggests support for a lethality risk presented when educational disparity favors the female partner (Lambert & Firestone, 2000).

Regarding employment, women were most likely to be unemployed in every category of abuse and pregnancy in the non-lethal sample. Nearly half of women in both categories of lethal abuse were unemployed, but many were also employed full-time. The IP's in the non-lethal sample were most likely to be employed full-time in every category of abuse/pregnancy status. Of the men who killed pregnant women, an equal number were not employed as were employed full-time. Over half of the women who were killed and not pregnant had IP's who were employed full-time. Even still, nearly 40% of their IP's were unemployed, revealing high IP unemployment levels in the overall lethal sample. The lethality risk associated with unemployment has been established previously (i.e. Campbell, 2007).

Median household income was consistent across all categories of the non-lethal sample and the lethal sample, but the median income was slightly *higher* for the overall lethal sample. Nevertheless, the median income for both samples was very low. Findings concerning low income and IPV risk have been established in previous research (Anderson, 1997; Cunradi, Caetano, & Schafer, 2002), but these findings contribute to the scant literature concerning pregnancy-associated IPV and income.

More women in every category from both the non-lethal and lethal sample were single, while divorced and separated were represented as the lowest in every category. This would indicate that most of the women had not been married before. This is consistent with previous findings which suggest that unmarried women are at the greatest risk for lethal and non-lethal IPV (Martin et al., 2004; Tjaden & Thoennes, 2000), but the disproportionate number of single women may lead to somewhat biased results. Further, while experts have found common-law women to be at the greatest risk for IPV (Dawson & Gartner, 1998), the data in this study do not

allow for separate examination of this category due to the low number of respondents reporting common-law status.

Relationship state was measured by whether or not a woman resided with her intimate partner. In the non-lethal sample, higher percentages of women who were not abused resided with partners, regardless of pregnancy status, compared to women in within the categories of abuse (i.e. pregnant and abused/ pregnant and not abused). This indicates that women who reside with a partner may be at a lower risk of non-lethal IPV. This finding is in contrast to previous findings suggesting cohabitating or common-law women may be at a higher risk for IPV (Dawson & Gartner, 1998). However, over half of the women in the lethal sample resided with an IP. Given that most of the women in both samples were not married and many resided with an IP, these findings suggest the possibility that many of the couples in the samples were cohabitating, but did not qualify or identify as common-law. This would lend support to the notion that those in common-law relationships have higher risk of IPV, particularly concerning the risk for femicide (Dawson & Gartner, 1998).

Finally, most of the households represented in both samples have children in the home shared by the partners. The group with the highest percentage of children in the home in the non-lethal sample was in the category where the women were not abused/pregnant (84%). Over 80% of women who were pregnant when killed had children in the home. Consistent with previous research findings, these results do show a correlation between children in the home and IPV, particularly with femicide (Campbell et al., 2003; Campbell et al., 2004), though the high number of women not abused with children in the home indicate the presence of children could also be associated with lower levels of abuse.

The differences are very slight between the abuse/pregnancy categories and between women who were pregnant or not when killed based on the presence of children in the home sired by another man. Prior findings have demonstrated a significant correlation between having stepchildren of the man in the home and being abused/killed (Campbell, 2003; Wilson, Daly, & Johnson, 1995). Although there were no significant differences with regard to stepchildren across the groups in these samples, there were still a relatively large number of homes represented where stepchildren of the IP resided (26.5% in the non-lethal sample and 33% in the lethal sample), indicating a correlation.

The next analyses addressed the severity of various types of IPV. Using the resulting dataset when the non-lethal and lethal samples were merged, mean scores were determined for physical abuse, harassment, power and control, and for lethality risk, accounting for each potential category of abuse (i.e. not abused, non-lethal abuse, and lethal abuse), and compared scores for pregnant and non-pregnant women. Since each of these dimensions of abuse was measured on a continuous scale, severity was assessed through mean scores in comparison to the range of each. Levels of severity cannot be determined for sexual abuse and death threat victimizations, as only dichotomous (i.e. yes/no) measurements are available.

For women who were screened as “not abused,” scores were still obtained for each dimension of abuse, though the scores were relatively minute compared to abused and killed women (all scores were 1 or less). In the subsample of pregnant women, those in the lethal category had the highest levels of abuse for every victimization type, except for harassment, where non-lethally abused women had slightly higher mean scores. In the subsample of women who were not pregnant, those abused but not killed had the highest scores on every dimension, except for death threats, where the women who were killed had greater frequency. When each



type of abuse was compared across the three abuse status categories and for pregnant versus not pregnant statuses, pregnant women in the lethal sample had higher mean scores and frequencies on every abuse dimension except for harassment, where non-lethally abused women had higher mean scores. These findings suggest pregnant women are indeed at a higher risk for lethal IPV, and that their deaths are often preceded by severe violence at the hands of their IP's.

In the category of women who were abused but not killed by an IP, women who were not pregnant scored higher on every dimension of abuse compared to pregnant women, though the disparity in scores was relatively small. In fact, the differences of each mean were less than one point on every dimension between pregnant women and those who were not pregnant, providing further evidence that very little, if any protection from IPV is offered to women during pregnancy, including the category of women who were screened as not being abused at all.

The final stage of the CWHRS study involved multivariate analyses to predict each of the abuse dimensions within the non-lethal sample and to predict lethality within the entire CWHRS sample of women. To summarize these results:

- Increase in age was associated with decreased odds of being threatened with death by an IP.
- Women who had at least a high school diploma had lower levels of physical violence, harassment, power and control, and lethality risk.
- Having an IP with at least a high school diploma was associated with lower levels of lethality risk and lower odds of homicide victimization for women.
- Having children in the home corresponded to lower levels of physical abuse, harassment, lethality risk, and lower odds of receiving death threats by an IP.
- White women (compared to Black women) had lower odds of death threats.

- Being divorced or separated was associated with higher levels of physical violence, harassment, and power and control.
- Women who were employed experienced higher odds of being killed by an IP compared to those who were not employed.

The findings pertaining to a woman's age, race, educational attainment, and relationship status are consistent with previous literature, as discussed in previous sections. The finding in the current study concerning children in the home is unique, in that previous researchers have determined children in the home to present an increase in levels of abuse or odds of victimization (Campbell et al., 2003). One explanation for this finding could be that most of the households represented in both samples have children in the home, accounting for all dimensions of abuse. Therefore, since there was not a significant difference across groups of women aggregated by abuse status and pregnancy status, the finding could be in part a result of the sampling rather than of having children in the home in and of itself.

Another significant finding was that women who were employed had higher odds of being killed compared to women who were not killed by an IP. Although the current analyses did not address status inconsistency, a similar finding was produced using these data in previous research (Taylor & Nabors, forthcoming), where the explanation for this increased odds may be the danger associated with the power differential presented by employment to women. The plausibility of this explanation is further supported by the fact that most of the IP's in the lethal sample were not employed (see Taylor & Nabors, forthcoming, for an extensive explanation of the risks for IP femicide associated with status incompatibility using the CWHRS data).

While pregnancy was not a significant predictor of any form of abuse within the lethal and non-lethal sample, analyses on the univariate and bivariate level do support the notion that

there is indeed a correlation. The examination and comparison of mean scores for each continuous level of abuse indicated very similar scores for pregnant women and those who were not pregnant, with women who were pregnant when killed by an IP scoring higher on *every* dimension of abuse except one (harassment). Perhaps the lack of significant findings regarding pregnancy as a predictor at the multivariate level can be attributed to the purposeful oversampling of abused women by 70%, or due to the extremely low median income, which could mitigate the significance of pregnancy as a risk factor. Although the findings presented through this research indicate a correlation between pregnancy and risk for IP femicide, further research is warranted to continue investigating this issue and to achieve more conclusive results.

The differences between the women in this sample who were abused and those who were killed are minimal. Further, the differences between pregnant women and those who were not with regard to IPV are also very minimal. While pregnancy did not emerge as a predictor of higher levels or odds of IPV, it also did not emerge as a predictor of lower levels or odds of victimization. From lower level analyses, pregnancy was determined as not only associated with IPV, but very little difference exists between women who were pregnant and those who were not pregnant in this sample. Therefore, pregnancy should not be seen as a protective period for this population of women or those populations with similar characteristics.

These findings underscore the importance of providing information and training on the correlations of pregnancy and IPV and appropriate intervention measures to medical professionals, social service providers, law enforcement and other criminal justice personnel, and victim advocates who may encounter pregnant women in the course of their work. The results from this study indicate a particular urgency with regard to populations of women from areas plagued by IP homicides, and which are predominantly Black, lower income, lower educated,

and un/underemployed. In addition, as with women in general, being divorced or separated from an IP presents an additional element of risk for lethal and non-lethal IPV.

## CHAPTER SEVEN: NATIONAL VIOLENT DEATH REPORTING SYSTEM

### Data

The NVDRS data are gathered from a number of sources from 16 participating states and numerous counties within the U.S. The sixteen states and other participating counties represented in the 2005 NVDRS comprise 31.6% of the 2004 U.S. population (Karch et al., 2008). State health departments notify the NVDRS of violent deaths from those coded as such on their incoming death certificates. NVDRS researchers then add to the information provided in death certificates and other sources provided by state health departments with a number of sources, including law enforcement and medical records, to make up a complete case within the NVDRS incident-based system (NVDRS Codebook, 2005).

The NVDR data are divided into three sections: (1) violent death incident data containing nine variables pertaining to characteristics of deaths including counts, types of deaths, and weapons involved, for example (2) suspect data, consisting of ten demographic and geographic variables pertaining just to suspects, and (3) death data, consisting of 34 variables pertaining to a number of victim and incident characteristics. The three separate data files are designed to prohibit linking between them to protect confidentiality; therefore only the death data file is analyzed in the current study. Information pertaining to victims and the incident characteristics of interest are contained within this file.

The original NVDRS death data file contains 16,342 cases for women and men, victims and suspects (in cases where the offender committed suicide after an incident), and for a variety of victim/offender relationships. In addition, the dataset accounts for a number of types of

violent deaths including suicide, homicide, and unintentional deaths such as accidental firearm discharge.

The first step in the study was to reduce the sample to only women who were victims of intimate partner-perpetrated violent deaths. After these filters were employed, removing from the sample male victims, suspects who committed suicide after a homicide, and those non-intimate partner events, reducing the overall NVDRS to 361 cases.

The next step was to examine the manner of death options within the subsample provided in a “manner of death” variable. The remaining categories after the filters were imposed included “suicide,” “homicide, including terrorism,” “unintentional firearm deaths,” and “undetermined intent.” Since suicides are irrelevant for the current purposes and the single unintentional case in the subsample precludes the ability to examine intentionality in depth, this particular variable was used as an additional filter to further restrict the sample to only homicides. This in turn omitted the two suicides, one unintentional firearm discharge, and four deaths of undetermined intent from further analyses, bringing the subsample size to 354 cases.

As with the previous two studies, the association between pregnancy and homicide is of main interest, while demographic variables and crime characteristics are also analyzed. Although the explicit set of research questions used to guide the previous two studies cannot be fully explored with these data, they still allow for relevant descriptive analyses to better understand pregnancy-associated femicide using an exploratory approach with this newer, innovative data source.

## Measures

The variables included in the current study are: pregnancy, history of abuse, cause of death, weapon type, age, race, marital status, and education.

### Pregnancy

Pregnancy is measured in the NVDRS data as pregnant at the time of or within one year of death. In addition, the variable for pregnancy includes categories for “not pregnant within the last year,” “not pregnant, not otherwise specified,” “not applicable,” and “unknown if pregnant within past year.” The coding is similar to the ICD-10 codes for pregnancy-related death (discussed in Chapter 4), but the categories for not pregnant in the ICD-10 codes (pregnant within 42 days of death or pregnant 43 days to one year before death) were combined in the NVDRS data. In addition, the “not applicable” category in the NVDRS data presents a limitation due to an unknown number of pregnancies in these cases.

Although there are likely cases of pregnant women contained within these “not pregnant” options, there is no way to determine for sure. For example, even after omitting the men from the sample, there were still nine cases coded as “not applicable” with regard to pregnancy and no explanation as to why or what “not applicable” means. Speculatively, it could be that none of the pregnancy-related boxes were checked on the death certificate, that the medical examiner did not document pregnancy during an autopsy (or could not determine pregnancy), or there could be some association with age or having undergone a hysterectomy, for example, but an explicit explanation is not given. Therefore, cases coded as not pregnant were left as such and cases coded as not applicable or unknown were coded as missing. In addition to a dichotomous “pregnant/not pregnant” variable, a combination variable was created to measure four possible

groups of women within the sample: not abused/not pregnant, abused/pregnant, abused/not pregnant, and pregnant/not abused.

### History of Abuse

History of abuse is simply coded in the dataset dichotomously as “no, not collected, not applicable, or unknown,” or “yes.” The does not allow for separating “not collected, not applicable, or unknown” as missing data and examining “no” compared to “yes,” so the original coding provided by the NVDRS remained as such for the current study.

### Cause of Death

Cause of Death includes categories such as “assault (homicide) by hanging, strangulation, and suffocation,” “assault (homicide) by discharge of firearms,” “assault (homicide) by sharp object,” and “assault (homicide) by all other and unspecified means.” While most or all of these causes likely stem from intentional deaths, given the frequencies of intentional and unintentional categorization discussed above, utilizing this variable still allows for more context to be understood. In addition, *weapon type* is measured in a separate variable and is also included in the analysis for context. The analyses of these data are restricted to descriptives because of the disproportionate number of missing cases and small responses in several categories.

### Age

Age is presented in categories beginning with 0-14 years, and then from 15 to 19, each subsequent category includes a five-year range up to 75+ years. Categories were collapsed to account for low responses in the lower and higher categories, and for more parsimonious



presentation and interpretation. The new categories included ages 0 to 24, followed by ten-year age ranges of 25 to 34, 35 to 44, and so on, ending with ages 55+.

### Race

Race is categorized as White, Black, and “Other.”

### Marital Status

Marital Status includes categories representing married, single/never married, widowed, and divorced/separated.

### Educational Attainment

*Educational attainment* categories include less than high school diploma, high school to some college, and four-year degree or higher.

## *Analyses and Results*

The coding for abuse and pregnancy presented some challenges for the analyses, and thus, limitations for the study. Many more cases involve unknown statuses for both pregnancy and abuse than those where such statuses were known. The abuse variable in particular is coded in the NVDRS dataset such that “not abused” also includes not collected, not applicable, and unknown, precluding the ability to omit the cases where the status is not known. Although those cases coded as not applicable and unknown with regard to pregnancy were coded separately within the NVDRS data and omitted from analysis, difficulty in establishing pregnancy status still likely leads to underestimates.

Pregnancy and abuse statuses should be interpreted as known versus unknown pregnancy status and known versus unknown abuse status, rather than pregnant/not pregnant, and abused/not abused. Given the low numbers of known pregnancy and known abuse, these results are presented with caution. Readers should consider these important limitations when interpreting results presented here. Further, results should be considered underestimates, the degree to which cannot be determined.

There were 10 recorded pregnancies (6.6% of the sample) and 144 women who were coded as not pregnant (93.4%). There are 59 cases (16.7% of the sample) coded as “abused” and 301 (83.3%) coded as “not abused.” Frequency distributions were determined for victim age, race, marital status, education, cause of death and weapon type, for women who were pregnant at the time of death or within one year of death, those who were not, and for the overall subsample of women killed by an intimate partner. Results are presented in Table 26.

Table 26. Frequency Distributions for Sociodemographics and Incident Characteristics for Pregnant and Not Pregnant IP Homicide Victims

	Pregnant (n=10)	Not Pregnant (n=141)	Overall (n=354)
<b>Age*</b>			
0 to 24	30.0 (3)	12.8 (18)	16.9 (60)
25 to 34	50.0 (5)	19.1 (27)	23.4 (83)
35 to 44	20.0 (2)	30.5 (43)	31.4 (111)
45 to 54	-	17.0 (24)	14.7 (52)
55+	-	20.6 (29)	13.6 (48)
<b>Race</b>			
White	90.0 (9)	68.8 (97)	65.3 (231)
Black	10.0 (1)	28.4 (40)	30.5 (108)
Other	-	2.8 (4)	4.2 (15)
<b>Marital Status*</b>			
Married	10.0 (1)	47.4 (65)	44.7 (155)
Single/never married	60.0 (6)	22.6 (31)	28.0 (97)
Widowed	-	9.5 (13)	7.8 (27)
Divorced/separated	30.0 (3)	20.4 (28)	19.6 (68)
<b>Education</b>			
Less than HS diploma	50.0 (4)	27.5 (19)	34.1 (43)
HS to some college	25.0 (2)	50.7 (35)	42.9 (54)
4 year degree or more	25.0 (2)	21.7 (15)	23.0 (29)
<b>Cause of Death</b>			
Hanging/strangulation/ Suffocation	16.7 (1)	10.7 (11)	9.0 (25)
Firearm	66.7 (4)	59.2 (61)	65.1 (181)
Sharp object	-	16.5 (17)	15.8 (44)
Other means	16.7 (1)	13.6 (14)	10.1 (28)
<b>Weapon Type</b>			
Firearm	40.0 (4)	58.7 (81)	61.3 (214)
Sharp/blunt object	20.0 (2)	21.0 (29)	18.9 (66)
Hanging	20.0 (2)	8.0 (11)	7.2 (25)
Other/combination	20.0 (2)	12.3 (17)	12.6 (44)

Sample sizes vary due to missing cases

Frequencies in parentheses for percentages

\*Denotes significant relationship at the bivariate level

Half of the pregnant women who were killed were between 25 and 34 years of age. A chi-square estimate reveals this relationship between pregnancy status and age to be statistically significant ( $X^2=10.292$ ;  $df=4$ ;  $p<.05$ ). Most of the women killed when pregnant were White (90%). Over half were single or never married (60%), with nearly one-third divorced or separated. The relationship between pregnancy status and marital status was statistically significant ( $X^2=9.435$ ;  $df=3$ ;  $p<.05$ ). Half of the subsample of pregnant women had less than a high school education. More than two-thirds were killed as a result of being shot with a firearm.

Of the women who were killed but not pregnant, 43% were 35 to 44 years of age, less than 20% were 24 or younger, and the remaining age groups had roughly one-quarter each of the remaining sample. Over two-thirds were White, and most of the remaining women were Black. Nearly half were married, nearly one-third single/never married followed closely by those who were divorced/separated, and about 10% were widowed. Over half the women in this subsample had high school diplomas to some college, with just under one-third attaining less than high school education, and about 22% with a four-year degree or higher. As with those pregnant when killed, most of the women killed were shot with less than 20% each in the remaining categories for cause of death. Finally, besides the majority who were killed with a firearm, just over 20% involved sharp or blunt instruments as weapons, with the remaining 20% involving hanging or some other weapon/combination of weapons. None of the other characteristics were significantly associated with pregnancy status aside from age and marital status.

In the next set of analyses, frequency distributions were examined for victim age, race, marital status, education, cause of death and weapon type, for women within each of the four

categories for the pregnancy/abuse categorical variable<sup>6</sup>. Results for these analyses are presented in Table 27 and discussed below, though sample sizes should be considered with the interpretations, as three of the four samples have very low numbers of women represented within them.

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<sup>6</sup> Chi-square analyses were conducted for each variable and the pregnancy/abuse status categorical variable, revealing age to be the only statistically significant variable with the pregnancy/abuse status ( $X^2=27.268$ ;  $df=12$ ;  $p=.01$ ).

Table 27. Frequency Distributions for Sociodemographics and Incident Characteristics Associated with Pregnancy-Related IP Femicide

	<sup>1</sup> NA-NP (n=123)	A-P (n=4)	A-NP (n=18)	NA-P (n=6)
<b>Age*</b>				
0 to 24	13.0 (16)	-	11.1 (2)	50.0 (3)
25 to 34	18.7 (23)	100.0 (4)	22.2 (4)	16.7 (1)
35 to 44	28.5 (35)	-	44.4 (8)	33.3 (2)
45 to 54	17.1 (21)	-	16.7 (3)	-
55+	22.8 (28)	-	5.6 (1)	-
<b>Race</b>				
White	65.9 (81)	100.0 (4)	88.9 (16)	83.3 (5)
Black	30.9 (38)	-	11.1 (2)	16.7 (1)
Other	3.3 (4)	-	-	-
<b>Marital Status</b>				
Married	47.1 (56)	-	50.0 (9)	16.7 (1)
Single/never married	21.8 (26)	50.0 (2)	27.8 (5)	66.7 (4)
Widowed	10.9 (13)	-	-	-
Divorced/separated	20.2 (24)	50.0 (2)	22.2 (4)	16.7 (1)
<b>Education</b>				
Less than HS diploma	27.8 (15)	33.3 (1)	26.7 (4)	60.0 (3)
HS to some college	51.9 (28)	33.3 (1)	46.7 (7)	20.0 (1)
4 year degree or more	20.4 (11)	33.3 (1)	26.7 (4)	20.0 (1)

	<sup>1</sup> NA-NP (n=123)	A-P (n=4)	A-NP (n=18)	NA-P (n=6)
<b>Cause of Death</b>				
Hanging/strangulation/ suffocation	11.2 (10)	100.0 (1)	7.1 (1)	-
Firearm	61.8 (55)	-	42.9 (6)	80.0 (4)
Sharp object	15.7 (14)	-	21.4 (3)	-
Other means	11.2 (10)	-	28.6 (4)	20.0 (1)
<b>Weapon Type</b>				
Firearm	61.2 (74)	-	41.2 (7)	66.7 (4)
Sharp/blunt object	19.8 (24)	25.0 (1)	29.4 (5)	16.7 (1)
Hanging	8.3 (10)	50.0 (2)	5.9 (1)	-
Other/combination	10.7 (13)	25.0 (1)	23.5 (4)	16.7 (1)

Sample sizes vary due to missing cases

Frequencies in parentheses for percentages

\*Denotes significant relationship at the bivariate level

Beginning with women who were not abused and not pregnant when killed (N=123), the age distribution was relatively even among the five age categories, with ages 35 to 44 the most common. Two-thirds of this subsample were White women, followed by just less than one-third Black women. Nearly half were married and over one-half had a high school diploma to some college. Nearly two-thirds were killed by being shot, with about 16% struck with a sharp object, and the remaining divided evenly between those who were hanged/strangled/suffocated, and those who were killed by other means (e.g., poisoning).

Of the four women who were classified as abused and pregnant when killed, all were between 25 and 34 years of age, all were White, half were single/never married, half were divorced or separated, and the levels of education were divided by one-third having attained each level (one was missing). One was killed by hanging, strangulation, or suffocation, with the other three cases missing a cause of death code. Regarding weapons, half were hanged, with the other two having incidents involving sharp or blunt objects, or some other weapon or combination of weapons.

Of the 18 women who were abused but not pregnant when killed, nearly half were 35 to 44 years of age, followed by over 20% who were 25 to 34 years of age. All but two women were White, half were married, and nearly half had attained a high school diploma to some college. Shooting deaths were again the most common (43%), followed by “other means” and killed with a sharp object. Firearms were used in most (over 40%), followed by objects and other means, with one hanging.

Of the six women who were not abused but were pregnant when killed by an IP, half were from 0 to 24 years of age, all but one were White, over two-thirds were single/never married, and over half had less than a HS diploma. Four of these were firearm deaths, one was



by other means, and besides the four firearms, each of the other weapons categories were used in at least one case.

Finally, a crosstab for pregnancy and abuse statuses was conducted and tested for significance. Of those women who were not pregnant at the time of death or within one year of death, 87.2% (n=123) were also not abused prior to death, while 12.8% (n=18) were abused. Of those women who were pregnant, 60% were abused (n=6). A chi-square analysis indicated a statistically significant relationship between pregnancy and abuse statuses at the time of death ( $X^2=5.564$ ;  $df=1$ ;  $p<.05$ ). These results are presented in Table 28.

Table 28. Crosstabulation of Known Pregnancy and Abuse Statuses for Women Killed by an Intimate Partner

	Pregnant (n=10)	Not Pregnant (n=144)
Abused	40% (n=4)	12.8% (n=18)
Not Abused	60% (n=6)	87.2% (n=123)

Test Statistic:  $X^2=5.564$ ;  $df=1$ ;  $p<.05$

### *Discussion*

The NVDRS data were used in the third phase of the overall project as a means of providing descriptive analyses for an exclusively lethal sample of women killed by an IP. Since the NVDRS is a newer source of data, it also allowed for an exploratory evaluation of the data for use in femicide research. Although there were problems with the estimates of pregnancy and abuse statuses, the analyses revealed interesting relationships between the sociodemographic characteristics of femicide victims, crime characteristics, and pregnancy and abuse statuses.

Analyses consisted of univariate and bivariate level examinations of age, race, marital status, education, cause of death, and weapon type for women who were pregnant at the time of death or within one year of death compared to those who were not pregnant. The first set of analyses examined these characteristics for pregnant versus not pregnant women with no distinction for abuse status, with the second set of analyses considering abuse status in conjunction to pregnancy status.

Although a low number of pregnancies were recorded for the women, the bivariate test of significance between abuse and pregnancy indicates a statistically significant relationship where women who had been identified as pregnant at the time of death or within one year of death were more likely *not* to be abused prior to death, though 40% were abused. Those who were not pregnant also were less likely to be abused, though 12.8% of those identified as pregnant when they were killed by an IP were abused. Again, “not abused” may also mean undetermined status of abuse.

Pregnant women killed are about ten years younger than those who are not pregnant when killed, regardless of abuse status. This finding is consistent to previous literature where younger women are at a higher risk for pregnancy-associated femicide, and where the age range is characteristic for childbearing (Jasinski & Kaufman Kantor, 2001; Shadigian & Bauer, 2004).

With well over half of the overall sample consisting of White women and women of other races comprising less than 5% of the overall sample, not surprisingly, White was the most common race in every category in both sets of analyses and Black was the second most common.

Within the overall sample, nearly half the women were married, but over half the women who were pregnant when killed, including those who were abused and those who were not abused were single or never married at the time of death. While this finding regarding marital

status is consistent with previous findings of unmarried women at the greatest risk for femicide (Martin et al., 2004), the additional consideration of a pregnancy provided in this study offers further insight. These results suggest a pregnancy occurring in a non-marital partnership could have presented an increased risk for the femicide compared to women who were married when killed. Although additional context is not provided concerning household income or any IP characteristics, studies have shown unintended or unplanned pregnancies to increase risk (Jasinski 2001). These findings warrant further investigation concerning pregnancy in a non-marital relationship as a risk factor for femicide.

Pregnancy appears to be correlated with lower education within this sample, based on the finding that women who were pregnant when killed had less education compared to those who were not pregnant when killed by an IP. Previous findings have also supported lower educational attainment as a risk for femicide in general and in pregnancy-associated femicide (Campbell, 2004; Datner, Wiebe, Brensinger, & Nelson, 2007).

Finally, shooting deaths were the most common cause of death for women in every category in the study except for those who were abused and pregnant. This trend concerning firearms deaths mirrors the overall trend in the U.S. (Fox & Zawitz, 2007).

This particular study is plagued by several significant limitations. First, since pregnancy as a risk factor is of key interest, the problems associated with pregnancy as a variable in the data are particularly important. Of the 354 women in the subsample who were killed by an IP, pregnancy status was “unknown” in 194 cases. Though not presented in the findings, characteristics of those cases were examined to compare to those known to be pregnant or not pregnant. There were no clear patterns, as certain distributions mirrored those of the pregnant subsample (i.e. educational attainment), others mirrored those of the not pregnant subsample (i.e.

age, marital status), and the remaining were consistent with both (i.e. race, cause of death, weapon type). It is likely that there were more cases of pregnancy-associated femicide in the sample than are reported due to the significantly high number of unknown pregnancies.

If medical practitioners, medical examiners, and homicide detectives were working more diligently to identify pregnancy in female homicide victims, perhaps as a staple characteristic to identify in all female victims, rates of pregnancy-associated femicide would become not only be more accurate, they would also likely reflect higher numbers than are currently found in the literature. The limitations of these types of data (i.e. death certificates) with regard to the accuracy of pregnancy status of deceased women has been noted, and the resulting underestimates of pregnancy-associated femicides because of these limitations has been discussed (Campbell, 2007; Horon and Cheng, 2005).

Abuse status is also problematic in the study, since abuse was only recorded or known for 59 cases. The remaining 295 cases are comprised of those who were not abused, those with no abuse status collected, abuse as “not applicable,” or unknown. This prevents researchers from indentifying a crucial contextual factor concerning femicide. A history of abuse has been identified as a risk factor for femicide in previous studies, but the NVDRS data do not currently allow for reliable estimates of those cases involving abuse prior to death. In addition, the term “abuse” offers little context. Since “abuse” is subjective, one may consider only physical violence resulting in injury as abuse, while another may consider severe psychological abuse as “abuse.”

These estimates concerning pregnancy and abuse in this study are likely substantial underestimates due to the problems associated with these variables. This study is considered exploratory and these results should be interpreted and applied with extreme caution. While the

NVDRS shows promise as a valuable tool in femicide research as the NVDRS project continues to evolve and improve, certain developments will enhance its value to femicide research. First, the ability to link data for offenders and victims provides researchers with the ability to examine characteristics of both in an effort to identify important risk factors for femicide. Next, standardization of definitions for pregnancy at the time of death and refinements in determining pregnancy on the part of homicide detectives and medical examiners will aid in determining more accurate prevalence rates. Finally, standardizing definitions for abuse, providing significantly greater context with regard to abuse, such as type of abuse (i.e. physical, sexual, psychological), and improving the detection of a context of abuse will provide for more accurate determination of risk factors and correlations between a context of IP-perpetrated abuse and femicide.

## CHAPTER EIGHT: DISCUSSIONS AND CONCLUSIONS

Using three separate and unique sources of data, this study was designed to address: a) the associations between pregnancy-related violence and femicide with sociodemographic characteristics of victims and offenders and with family dynamics, b) how pregnancy affects the risk for threats of violence, power and control tactics, physical violence, stalking, sexual violence, and femicide, and c) how pregnancy contributes to increased severity of abuse. Findings, limitations, and strengths of the studies were discussed individually in Chapters 4-6. This chapter will serve to highlight the overall patterns of significant findings across the studies collectively for the purpose of identifying what this study has contributed to the literature on pregnancy-associated non-lethal and lethal IPV.

### Pregnancy

Overall, the results from these three individual studies show that there is indeed a strong correlation between pregnancy and IPV, though the evidence regarding risk for lethality was weaker than in non-lethal IPV, warranting further investigation. With the National Violence Against Women study, an exclusively non-lethal sample, pregnancy (both as a proxy variable and as a direct pregnancy measure) was a statistically significant predictor of a greater likelihood of *every* type of abuse victimization studied: physical abuse, stalking, sexual abuse, threats of harm or death, and power and control tactics. Stalking, sexual abuse, and threats of harm/death, were also significant predictors of being physically abused during pregnancy, and increases in power and control scores corresponded with increases in likelihood of physical abuse during pregnancy. Additionally, every victimization type studied was a statistically significant predictor of a greater likelihood of miscarriage/stillbirth.

The relationship between pregnancy and IP power and control emerged as a key finding, in that the mean power and control score for women who were physically abused while pregnant was twice the score for women in the overall NVAW sample. Further, when every victimization type was included within a single regression model, power and control emerged as the only significant predictor of having been physically abused while pregnant.

The Chicago Women's Health Risk Study, based on both non-lethal and lethal IPV cases, also revealed powerful correlations between pregnancy and various types of non-lethal IPV, including physical abuse, harassment, sexual abuse, verbal threat of death, lethality risk, and power and control. Pregnancy did not emerge as a significant predictor of any abuse type or of femicide in the regression analyses. However, when pregnancy and abuse statuses were combined as a single abuse/pregnancy variable, this status was significantly related to every victimization type. Additionally, frequency distributions and individual abuse mean score comparisons by pregnant versus not pregnant status in both subsamples revealed significant relationships.

In the non-lethal sample, the differences concerning the various dimensions of victimization between pregnant and not pregnant women were miniscule, indicating very little to no protection at all for pregnant women with regard to the several types of victimization studied. The femicide sample showed a clear and alarming difference by pregnancy status, where pregnant women had much higher frequencies and far greater mean scores on every dimension of abuse compared to women who were not pregnant when killed by an IP. However, the lack of statistical significance for pregnancy as a risk in more sophisticated analyses in the lethal sample indicates the need for further research to continue exploring the relationship between pregnancy and intimate partner femicide.

In the exclusively lethal sample, the National Violent Death Reporting System, the results concerning pregnancy when killed by an IP are marked by important limitations, most especially concerning the determination of pregnancy status. Since the variable measuring pregnancy is less than ideal and the methods used by those who complete death certificates are so inconsistent concerning pregnancy status, there were only ten cases of pregnancy-associated IP femicide that were identified as such in this sample. The analysis comparing those pregnant when killed to those who were not pregnant when killed showed that pregnancy is highly correlated with IPV prior to IP femicide.

The results of these three studies collectively show a significant statistical correlation between pregnancy and increased risk of IP abuse on many dimensions, including physical abuse, stalking and harassment, sexual abuse, threats of serious harm and death, lethality risk, and power and control. Even in cases where those who were pregnant had lower abuse frequencies or lower scores on scales measuring severity of violence, the differences were so slight that pregnant women are shown little to no protection from IPV. Pregnancy was not shown to be a predictor of IP femicide, though analyses did reveal correlations between pregnancy and IPV prior to death. Ideally the CWHRS and NVDRS femicide samples would have been comparable to determine the differences these data sources showed in risk for pregnancy-associated femicide. Unfortunately the limitations discussed in Chapter 7 with regard to the NVDRS pregnancy-status made this comparison impossible. However, both the CWHRS and NVDRS studies revealed a clear correlation between pregnancy and higher likelihood of IPV prior to femicide, though not necessarily during the pregnancy.



### Sociodemographic and Family Dynamic Characteristics

For each of the data sources, sociodemographic and family dynamic characteristics of women and, in the CWHRS study, their intimate partners, were studied to determine relationships between these characteristics and pregnancy-associated IPV and femicide.<sup>7</sup>

#### *Non-Lethal Physical Abuse*

The following are points of summary concerning the statistically significant sociodemographic and family dynamic patterns associated with IP physical abuse and pregnancy:

- Youth is highly correlated with pregnancy-associated non-lethal physical IP violence, as supported by each of the three studies. In response to Gelles' (1990) concerns regarding pregnancy and abuse risk being a spurious relationship due to age, age was included in the multivariate models in these analyses. Despite adequately controlling for age, it was still consistently a significant predictor.
- The findings regarding race and physical abuse are less clear; race was not significantly related to pregnancy-associated physical abuse in the NVAW study, but the race for both women and their intimate partners was significantly related to pregnancy-associated abuse in the CWHRS and NVDRS studies. Black was the modal race category in the CWHRS sample and White was the modal race category in the NVDRS study. The

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<sup>7</sup> It should be noted that in the CWHRS study, pregnancy was not a significant predictor of any type of victimization, including lethality. While certain sociodemographic and family dynamic characteristics were statistically significant predictors of the various victimization types, there was no distinction for pregnancy-associated versus not pregnancy-associated violence in these regressions; therefore, the summary points pertaining to CWHRS findings reflect those identified through bivariate level analyses where the characteristics were tested for significance with abuse and pregnancy statuses. Further, while the "abuse" variable in the CWHRS includes physical abuse, sexual abuse, and fear, the CWHRS findings are included only in the physical abuse section.

finding from the CWHRS study supports the notion that Black women may have inadequate interventions in place to escape a violent relationship, given the high abuse and IP femicide rates present in the geographic areas from which the samples were drawn. Also, the low employment rates within the sample may be associated with race to produce the increased risk (Campbell, 2007). It is difficult to make conclusions regarding the finding that White women were at a greater risk for IP homicide from the NVDRS findings due to the problems associated with analyzing these data. However, BJS statistics for IP homicide also reflect greater numbers of White female victims (Fox & Zawitz, 2007). As noted by Jasinski (2001), differences in samples, etc. make it very difficult to conclusively determine the nature of racial and ethnic differences.

- Higher educational attainment for women was shown to be associated with significantly decreased risk of pregnancy-associated physical violence (and physical violence in general) in the NVAW study. Educational attainment of women and of their intimate partners was significantly related to abuse/pregnancy status in the CWHRS study, but most women overall had at least a high school education and most of their partners had less than a high school education.
- Employment statuses for women and for their intimate partners were significantly associated with abuse/pregnancy status in the CWHRS, but most women in the CWHRS were unemployed and most of the men were employed.
- Higher income was associated with decreased risk of non-lethal physical violence, as revealed in the NVAW study.
- Being divorced or separated (compared to married) was associated with increased risk for physical abuse in the NVAW and CWHRS studies.

- Residing with an intimate partner presented increased odds of physical abuse in the NVAW study, and was significantly related to abuse/pregnancy status in the CWHRS, where less of the abused women resided with an IP compared to those who were not abused (regardless of pregnancy status).
- Having children in the home was significantly associated with increased odds of physical abuse in the NVAW study and was significantly associated with abuse/pregnancy status in the CWHRS study, where most women had children in the home.

### *Non-Lethal Stalking*

The NVAW study revealed that the odds of pregnancy-associated IP stalking are decreased by greater educational attainment, odds are lower for Black women compared to White women, and that odds are increased by being divorced or separated compared to married.

### *Non-Lethal Sexual Abuse*

The NVAW results indicated that odds of pregnancy-associated sexual abuse are decreased with greater educational attainment, odds are lower for Black women, and that women who are divorced or separated and those who reside with an IP have increased odds.

### *Non-Lethal Threat of Harm/Death*

Women in the NVAW sample who had greater educational attainment had lower odds of experiencing pregnancy-associated threats of serious harm or death, and women who were divorced or separated had higher odds.

### *Non-Lethal Power and Control*

Three sociodemographic and family dynamic characteristics were associated with significantly lower levels of power and control for women in the NVAW sample: greater educational attainment, higher income, and being a widow compared to married.

### *Lethality*

Since none of the sociodemographic or family dynamic characteristics emerged as significantly associated with lethality in the CWHRs study, only the NVDRS significant results will be discussed in this context. The NVDRS study revealed that pregnant femicide victims

were significantly younger than women who were not pregnant when killed. While race was a significant factor, most of the women in the sample were White. Women who were pregnant when killed were more likely to be single compared to women who were not pregnant, and those who were not pregnant when killed had significantly higher education attainment than pregnant femicide victims.

### *The Bigger Picture*

The ability to compare the similarities and differences across the three studies is limited by certain issues pertaining to the data and results of the analyses. First, the NVDRS data did not include several of the variables included in the other two datasets (e.g., income, relationship state, children in the home), so while a particular characteristic may have been significantly related to pregnancy-associated IPV in the NVAW and CWHRS studies, the NVDRS data preclude the ability to analyze certain characteristics and, thus, compare those women to the women in the other samples. Second, given that none of the sociodemographic or family dynamic variables in the lethal CWHRS sample were significant, the ability to meaningfully compare the CWHRS findings with the other sources is not possible.

One overall theme that emerges from this study is that data matter. The lack of significant findings in the CWHRS study, for example, may be attributed to the fact that the sample was purposefully homogenous for the most part - it was a targeted sample by design. The researchers purposefully gathered data from areas with documented high femicide rates, and these areas contained women and their male intimate partners who were predominantly Black, impoverished, of lower educational attainment, and marked by high rates of unemployment. It is plausible that any of these factors, let alone the collective homogeneity, could mitigate the

statistical significance of pregnancy as a risk factor for non-lethal and lethal violence in the sample. It is impossible to know if pregnancy would have otherwise been significantly related to abuse or femicide in this population, but the findings from the NVAW study indicate that perhaps it would.

Of the three sources of data used, the NVAW represents the most general in that it is a nationally representative sample. Pregnancy emerged as a key factor in the increased risk of every type of IP-perpetrated abuse studied. This was true of both pregnancy proxy variables in the general sample, and an actual pregnancy variable in the subsample of women who had been physically abused by an IP. Given the prominence of pregnancy-associated violence in this representative sample, it is possible that pregnancy does indeed increase risk generally, but that the risk may be obscured by certain sociodemographic characteristics such as poverty.

The NVDRS data preclude the ability to accurately discern the risk of pregnancy associated with IP femicide. While there is a clear significant correlation between pregnancy and ante mortem IP abuse, from which the femicide could have stemmed, the problems discussed previously concerning the measure of pregnancy seriously limit the inferential qualities of these data as they are currently available.

While being younger, not married (i.e. divorced, separated, widowed), residing with an IP, and having children in the home were shown to significantly increase the risk of non-lethal and lethal pregnancy-associated IPV in all three studies (or just the NVAW and CWHRS studies in cases where a characteristic was not included in the NVDRS), there were more differences in findings than similarities across the three studies.

First, race was not a significant factor in the NVAW study, but was in the CWHRS and NVDRS studies. As noted previously, this could be attributed to the disproportionate

representation of certain race categories within the samples. Similarly, a woman's educational attainment was significant only in the CWHRS study, which again could be attributed to the homogenous patterns of educational attainment for the CWHRS sample. Employment was significant only in the CWHRS, and income only in the NVAW (income was not measured in the NVDRS study). These differences could have more to do with the characteristics of the data than the actual characteristics of the women or their intimate partners.

Certain findings from the three studies warrant special attention. First, there is clear evidence of pregnancy as a risk factor for all types of non-lethal IPV, and evidence warranting further investigation of the risk for pregnancy-associated lethal IPV based on bivariate analyses, indicating the pervasive nature of this risk across multiple dimensions of abuse. The findings from the NVAW study in particular indicate that power and control may warrant particularly close attention.

The mean power and control score for women who were abused when pregnant was *double* that for the general sample of women. Given this and the fact that power and control emerged as the *only* significant predictor of pregnancy-associated abuse when every type was examined together in a single model, the potential prominence and danger of this dynamic cannot be ignored.

In a recent study of over 800 couples in divorce mediation, researchers used incidents such as choking, suffocation, and head injuries as measures of attempted femicide. A context of power and control was identified in 50 to 60% of the couples, compared to physical violence in 7.8% of couples (Raghavan, 2008). With regard to domestic violence and women's health, Stark and Flitcraft (1996, p. 204) contend:

What distinguishes battering and frames its health consequences is the experience of

coercive control. The greatest proportion of medical visits by battered women involves general medical, behavioral, and psychiatric problems that follow from the isolation, fear, and stress of a violent relationship, evidence that coercion and control are the most salient features.

As discussed in Chapter Three, the issue of power and control stems directly from the presence of male dominance and sexual propriety. According to Kimmel, for men, it is not so much a matter of *experiencing* power, but “it [masculinity] is the experience of *entitlement* to power” (p. 101, 2007). Further, he posits “violence may be more about getting the power to which you feel you’re entitled than an expression of the power you already think you have” (Kimmel, 2007, p. 102). Stark asserts “The tactical regime men employ to oppress women in personal life is chosen with the expectation that women will resist it” (2007, p. 196).

Violence as a tool for attaining and maintaining power and control may explain the high rates of and attention to physical abuse over other types, including coercive control. According to Stark (2007), “Not only is coercive control the most common context in which women are abused, it is also the most dangerous” (p. 276). The findings of the current study and others indicate that more attention to power and control in and of itself is needed for greater understanding of pregnancy-associated and IPV in general, and to determine proper intervention strategies. These strategies must include homicide prevention, as the theoretical framework outlined in this study and supported by a number of empirical studies (e.g., Campbell, 1992; Glass, Manganello, & Campbell, 2003-2004; Raghavan, 2008) suggests that the element of power and control may result in a deadly conclusion. The connection between power and control and intimate partner femicide is pronounced when women decide to leave the relationship (e.g. Block & Christakos, 1995; Campbell, 1992; Daly & Wilson, 1988). Intimate partner homicide



interventions should focus on the helping women who are seeking to leave or are in the process of or have left a relationship, particularly when the IP was controlling and/or physically abusive.

Next, the NVAW findings presented here contribute evidence to the existing findings concerning potentially catastrophic outcomes for pregnancies occurring in an abusive context. For similar findings using the CWHRS, see Morland et al. (2008). The findings from the NVAW suggest significant risk of miscarriage, stillbirth, and abortion associated with IPV of every type studied. Further, miscarriage was a significant predictor of every type of abuse studied. While other possible physical and mental health-related outcomes were not studied beyond the dimension of IPV included in the study, the NVAW data do allow for such analysis and undertaking these analyses with this and other sources of data is pertinent given these and other studies concerning effects of pregnancy-associated IPV.

## CHAPTER NINE: IMPLICATIONS FOR POLICY AND PRACTICE

### Consequences of Pregnancy-Associated IPV

The consequences of pregnancy-associated IPV to women and their unborn and born babies have been identified in a wide range of empirical studies. These consequences include a range of physical and emotional injuries, but the feminist theoretical framework suggests that the issue of pregnancy-associated IPV is grounded in a much larger, structural framework.

As discussed in Chapter 4, the reproductive health of women has historically been controlled by men. According to Sheffield, “The right of men to control the female body is a cornerstone of patriarchy. It is expressed by their efforts to control pregnancy and childbirth and to define female health care in general” (2007, p. 111). This culturally embedded and sanctioned control over reproduction intersects with IPV to affect women in a number of ways. First, interfering with a woman’s access and use of contraceptives may lead to risk of unintended pregnancies, which in turn introduces a significant risk of IPV (Campbell, Pugh, Campbell, & Visscher, 1995; Gazmararian et al., 2000; Goodwin et al., 2000; Pallitto, Campbell, & O’Campo, 2005; Williams, Larsen, McCloskey, 2009). Second, abusive men may impregnate their partners against their will through rape or coerced sex, they may prohibit access to contraceptives, expose them to sexually transmitted diseases, force abortion, or demand the continuance of an unwanted pregnancy (Family Violence Prevention Fund, 2009). Although the present study does not include controls for pregnancy intendedness or for factors associated with control over reproduction, these are important factors that should be included in analyses when the data permit, or included in the collection process.

In addition to this larger structural intersection of IPV and control over women, several studies have produced findings concerning a number of troubling consequences stemming from pregnancy-associated IPV. The present study and others have identified miscarriage and other negative outcomes as risks in pregnancy-associated abuse (Pallitto, Campbell, & O'Campo, 2005; Jasinski, 2004; Morland et al., 2008; Stark & Flitcraft, 1996), but there are many others. Some of these effects on women and babies are a direct result of trauma from abuse, such as blunt force abdominal trauma, while some may be products of the physiological and psychological stress and fear that the pregnant women endure because of the abuse (Centers For Disease Control, 1998; Pallitto, Campbell, & O'Campo, 2005). In addition, pregnancy may exacerbate injuries. Some of these consequences include:

- Poor prenatal healthcare, including delayed entry (Bacchus, Mezey, & Bewley, 2006; Dietz et al., 1997; Jasinski, 2004).
- Abortion complications (Pallitto, Campbell, & O'Campo, 2005).
- Maternal and fetal trauma (Centers For Disease Control, 1998; Campbell, 2001).
- High blood pressure, vaginal bleeding, nausea, kidney or urinary tract infections, (Silverman et al., 2006).
- Increased sexually transmitted diseases (Silverman et al., 2006).
- Low maternal weight gain and poor diet (Jasinski, 2004; Pallitto, Campbell, & O'Campo, 2005).
- Low birth weight (Macy et al., 2007; Bacchus, Mezey, & Bewley, 2006; Jasinski, 2004; Pallitto, Campbell, & O'Campo, 2005; Silverman et al., 2006).
- Premature labor and/or delivery (Bacchus, Mezey, & Bewley, 2006; Jasinski, 2004; Pallitto, Campbell, & O'Campo, 2005; Silverman et al., 2006).

- Closely spaced subsequent pregnancies (Pallitto, Campbell, & O'Campo, 2005; Jasinski, 2004).
- Breastfeeding refusal or difficulties (Pallitto, Campbell, & O'Campo, 2005; Jasinski, 2004).
- Unhealthy maternal behaviors such as smoking, alcohol, and drug use (Centers For Disease Control, 2006; Jasinski, 2004).
- Depression (Jasinski, 2004; Martin et al., 2006).
- Child abuse (Stark & Flitcraft, 1996).
- Postpartum abuse (Martin et al., 2001; Shadigian & Bauer, 2003).
- Suicidal ideation and actual suicide (Shadigian & Bauer, 2005; Stark & Flitcraft, 1996).
- Fetal death (Centers for Disease Control, 2006).
- Femicide or attempted femicide (Campbell, Garcia-Moreno, & Sharps, 2004; Horon & Cheng, 2001; Martin, Macy, Sullivan, & Magee, 2007; McFarlane, Campbell, Sharps, & Watson, 2002).

The findings from the current study concerning the risk for various forms of IPV that pregnancy may present to a woman, coupled with the findings concerning the consequences of pregnancy-associated IPV in this and other studies, present several implications for healthcare professionals and other practitioners who may encounter pregnant women through the course of their work.

## Implications for Practice

### *Medical*

Aside from providing treatment for injuries or prenatal care, the role of the healthcare community with regard to domestic violence primarily involves screening and referring patients to the appropriate services when necessary. The inadequacies of the medical community in detection of and response to domestic violence in general have been documented (see Stark & Flitcraft, 1996), but it appears as though these inadequacies continue in the context of pregnancy and prenatal care. Although the prenatal period offers an important opportunity for screening for IPV in pregnant patients (Chang, Berg, Saltzman, & Herndon, 2005; Goodwin et al., 2000, Macy et al. 2007; Mezey, Bacchus, Bewley, & Haworth, 2001), according to the Centers for Disease Control (CDC), most women are *not* screened for IPV during pregnancy (CDC, 2006)<sup>8</sup>. Based on results of empirical studies of medical practices, they determined that reasons for not screening include time constraints, feeling uncomfortable about asking patients about IPV, fears of offending the patient or her IP, and feeling that they cannot change the problem even if it is detected (CDC, 2006). However, studies have shown that women respond favorably, even expressing relief, to being asked about IPV victimization, and have said that they would not have disclosed the information if not asked by the physician or other staff member (e.g., Mezey, Bacchus, Bewley, & Haworth, 2001).

The CDC suggests pregnant women be screened at the first prenatal visit, once per trimester, at the postpartum checkup, and all subsequent routine visits, including preconception

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<sup>8</sup> This source retrieved from

[http://www.cdc.gov/ReproductiveHealth/violence/IntimatePartnerViolence/ipvdp\\_slide.htm](http://www.cdc.gov/ReproductiveHealth/violence/IntimatePartnerViolence/ipvdp_slide.htm)

(CDC 2006). In short, they recommend women be screened at every OB-GYN visit for any reason. This is echoed by researchers and includes recommendations that women be repeatedly screened in a variety of healthcare settings not limited to OB-GYN practices, to include pediatrician visits for children (Campbell, 1988; Macy et al., 2007; Martin et al., 2001). For guidelines and screening suggestions, clinicians can refer to the CDC (2006), or a number of policy-based academic journal articles, such as Shadigian and Bauer (2003).

In addition to physical violence, women should be screened for all types of victimization, including those in the current study (Macy et al., 2007; Martin et al., 2004; Shadigian & Bauer, 2003). Given that suicidal ideation, attempts, and actual suicide are noted consequences of pregnancy-associated IPV, (Shadigian & Bauer, 2005; Stark & Flitcraft, 1996), Shadigian and Bauer (2005) also suggest that women be screened for suicidal ideation during and after pregnancy. After a patient is screened positively for IPV, the staff must be equipped to provide the woman with the appropriate medical, legal, and social services (Goodwin et al., 2000; Macy et al., 2007; Shadigian & Bauer 2003).

#### *Lack of Access to Intervention*

One serious problem associated with screening and intervention is that some women may be denied access to healthcare by an abuser, which occurs in general (Stark & Flitcraft, 1996), and during pregnancy (Bacchus, Mezew, & Bewley, 2006). Bacchus and colleagues (2006) warn that pregnant women may miss their OBGYN appointments because a controlling/abusive partner may not allow it for a number of reasons and that missed appointments should be a red flag for the doctor and documented in the patient's file. According to Chang, Berg, Saltzman, and Herndon (2005), women who go without pre-natal care have highest rate of pregnancy-

associated homicide. Tracking the regularity with which patients attend and miss appointments is key in IPV screening and could indicate a life-threatening danger for the mother and child.

Since a woman may not always be able to seek medical care, victim advocates, law enforcement personnel, and other social services providers must be aware of the signs of IPV and able to provide necessary referrals (see Campbell 1988 for a discussion of the fields that should include pregnancy-associated abuse in their research, clinical, and policy initiatives).

Furthermore, Campbell (1988) suggests that the curriculum in medical and nursing programs should include training and education on IPV and its consequences.

Medical personnel and others who may encounter women who are abused while pregnant must be aware that it may even be more dangerous for pregnant women to leave their abusive partners than usual, particularly if the violence has begun or increased during the pregnancy (Bacchus, Mezew, & Bewley, 2004; Libbus et al., 2006). Some women may become determined to leave to prevent her children from being exposed to the violence or being abused themselves, but it is common for women to feel trapped because of the fears associated with being a single parent and the inability to support the baby alone (Bacchus, Mezey, & Bewley, 2006; Libbus et al., 2006). Therefore, an ample and thorough set of referrals for social services and safety planning is important to help women.

### *Determining Pregnancy Status*

One issue of concern raised by researchers and discussed in earlier chapters concerns the reliability of the official and medical data available with regard to pregnancy status. The ICD-10 codes outlined in Chapter Seven are used to classify pregnancy-related deaths on death certificates, thus determining maternal mortality. These medical determinations rely on the

integrity of the data collected and reported by medical examiners, coroners, and physicians, (CDC 2007). However, studies comparing medical certificates to other records show that many pregnancy-related deaths are often not reported as such because the appropriate box on the death certificate is not checked to reflect the decedent's status as pregnant (e.g., Horon, 2005).

Campbell (2007) has noted that autopsies are not always performed and that the uterus is not always examined in an autopsy. Personal telephone communication with medical examiner Dr. Jan Garavaglia of Orange County, Florida (February 3, 2009), provided evidence that perhaps such cases may be handled by medical professionals other than board certified medical examiners. When asked about standard protocols for medical examiners with regard to autopsies of female homicide victims, she explained that such standard protocols do not exist, as the individual medical examiner has the discretion to determine how to conduct the autopsy. She further explained that there is a "patchwork" of people who conduct autopsies across the country and that while some may elect not to examine the uterus, a person who is a board certified medical examiner "absolutely will." In fact, she asserted "I cannot imagine a board certified medical examiner that would not examine the uterus...it would be malpractice for a medical examiner not to."

Given that determinations of death may be made by medical professionals such as physicians and coroners (who may be elected officials and not required to have medical expertise), the otherwise accurate determinations of pregnancy on medical examiner reports and death certificates are compromised. One important implication for practice to this effect is to encourage the standardization of medical examiner-administered autopsies over a physician or coroner. Another implication is to ensure standardize death certificates across the states and to include a pregnancy check-box as a routine item.



According to the CDC (2007), death certificates have historically been different across states and are currently undergoing a period of standardization, beginning with the 2003 revision of the U.S. Standard Certificate of Death. Although the process will take years, the goal is to have an item regarding pregnancy status at time of death added, or to have existing items revised to meet the new standard. According to one group of researchers who studied the effectiveness of death certificate data in detecting accurate maternal mortality rates, “Routine use of the pregnancy check box for all states would lead to substantially increased classification of maternal deaths and more accurate classification of the causes of and risk factors for maternal deaths” (MacKay, Roachat, Smith, & Berg, 2000, p. 35).

#### Research Implications

This study offers a response to the call from experts to expand pregnancy-associated IPV research to consider emotional abuse, power and control, and sexual violence in addition to physical IPV (Campbell, Garcia-Moreno, & Sharps, 2004). The findings presented here have contributed to the existing literature in several ways beyond the expansion of focus to other dimensions of abuse.

The use of three separate and unique sources of data provided the ability to compare certain results across studies, but to also compare the data sources themselves. This is useful in identifying characteristics of data that may affect findings. For example, the homogeneous nature of the CWHRS sample likely affected the significance of pregnancy as a predictor of multiple forms of IPV and of femicide. This theory is further supported by the findings in the nationally representative NVAW, where pregnancy was significantly related to all forms of abuse. Additionally, the nature of the NVDRS with regard to the inability to link the data from

one file to another precluded the ability to examine other variables of interest and to link victim and offender data to examine characteristics of both. Future research should include multiple sources of data, utilizing sources other than those in the current study in order to expand the multiple source approach and to identify issues concerning data that may affect findings and the ability to compare across studies. Qualitative data should also be collected to achieve a deeper understanding of the dynamic and context of pregnancy-associated IPV and femicide (Bacchus 2006; Pallitto, Campbell, & O'Campo, 2005).

Qualitative approaches to the study of pregnancy-associated IPV and femicide could address several of the limitations of the current and other studies. Issues such as discerning pregnancy intendedness, whether or not the IP knew about the pregnancy, and order of the pregnancy (i.e. first pregnancy or subsequent) are important. The order of events is also important and could be easily addressed through qualitative approaches. For example, women could be asked if the abuse occurred before, during, and/or after the pregnancy, whether or not the abuse was instigated or ended by the pregnancy, and how the levels of severity coincided with the pregnancy. Homicide intentionality could also be better inferred through qualitative means. For example, pregnancy may lead to exacerbated injuries for the mother and fetus, including the deaths of either or both, but researchers cannot be sure that deaths are intentional. These issues could be worked out through qualitative interviews with women, with abusers, and in femicide cases, proxy interviewees.

The study addresses the persistent question concerning the correlations of pregnancy and IPV, contributing evidence that pregnancy is indeed associated with multiple dimensions of non-lethal IPV and femicide. However, researchers must continue to expand the focus of pregnancy-associated IPV to include measures of abuse beyond physical violence and continue to include

sexual, stalking and harassment, threats of harm and/or death, and power and control. The findings pertaining to the prevalence of a power and control dynamic during pregnancy are particularly alarming, even suggesting power and control may be more prevalent and more dangerous than other types of abuse alone. Power and control should become a mainstay in analyses on pregnancy-associated IPV and IPV in general.

The data and methodological challenges faced by IPV researchers have been discussed thoroughly. One important element of this study involved evaluating the effectiveness of pregnancy proxy variables. The similarities between the analyses conducted using the pregnancy proxy variables and those using an actual pregnancy variable, which were identical in certain cases, provide evidence that the use of proxy variables is a viable option and may greatly expand the pool of data available for studying pregnancy-associated IPV. While an obvious implication for research is to begin asking all women if they are pregnant or have been pregnant in the past year when conducting violence and other health related surveys, the use of pregnancy proxy variables may allow for secondary analysis of existing data otherwise considered irrelevant to the study of pregnancy-associated IPV and femicide.

The standardization of an operationalization for pregnancy would also be very useful in comparing findings across studies. Since pregnancy is measured differently in the three sources of data used in this study, direct comparisons cannot be made. Further, the NVDRS measures for pregnancy are particularly complicating with the inclusion of categories such as “not pregnant, not otherwise specified,” and “not applicable.” With the progression of a standardized U.S. Certificate of Death and the inclusion of a check box for pregnancy on the death certificates or every state, perhaps this problem will begin to be resolved. In the meantime, researchers,

medical, and legal personnel must collaborate to ensure the integrity of data collected regarding pregnancy status on police reports, medical files, autopsy reports, and death certificates.

Another important implication pertains to linking data. As discussed previously, studies have shown the effectiveness of linking data in obtaining more accurate (and coincidentally higher) prevalence rates (e.g., Horon, 2005). Empirical investigations have determined that when one only source of data is used, such as death certificates, the rates of victimization are have proven to be substantial underestimates (Horon, 2005). Researchers should therefore consider the limitations of any single data source and seek to link to maximize the amount of information available, and thus, estimate more accurate prevalence rates.

The findings of this and other studies support the urgent need for collaboration between researchers and medical practitioners in addressing the pervasive and devastating problem of pregnancy-associated IPV and femicide and determining the most effective prevention and intervention strategies (Gazmararian et al., 2000). In addition, the implications of these findings should be of interest to victim advocates, policy makers, law enforcement and other sectors of the justice system, a wide range of social service providers, clergy, and our communities as a whole.

While violence against women may have historically been viewed as a family issue and responses to it a feminist issue, Campbell explains that the association of pregnancy with domestic violence adds to the humans rights element a maternal-child health concern, which lends to a wider range in collaborations to intervene and to prevent. “Abuse during pregnancy provokes interest and concern in persons ordinarily disposed to think of domestic violence as a purely feminist concern...” (Campbell, 1988, p. 185). This heightened human interest, coupled with refinements in measures and data collection, in continued research to explore the

correlations between pregnancy and IPV, and in improvements in responses to pregnancy-associated IPV, should result in lower rates of non-lethal IPV and femicide perpetrated against pregnant women.

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