

The author(s) shown below used Federal funds provided by the U.S. Department of Justice and prepared the following final report:

Document Title: Exposure Reduction or Backlash? The Effect of Domestic Violence Resources on Intimate Partner Homicide, Final Report

Author(s): Laura Dugan Ph.D., Daniel Nagin Ph.D., Richard Rosenfeld Ph.D.

Document No.: 186194

Date Received: January 12, 2001

Award Number: 97-WT-VX-0004

This report has not been published by the U.S. Department of Justice. To provide better customer service, NCJRS has made this Federally-funded grant final report available electronically in addition to traditional paper copies.

Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

186194

Exposure Reduction or Backlash? The Effects of Domestic Violence Resources on

Intimate Partner Homicide

A Final Report to the National Institute of Justice

Laura Dugan, Ph.D.

Daniel Nagin, Ph.D.

Richard Rosenfeld, Ph.D.

National Institute of Justice
Box 600
Research Triangle Park, NC 27709

Prepared under Grant No. 97-WT-VX-0004, Research and Evaluation on Violence Against Women from the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. Points of view or opinions in this document are those of the authors and do not necessarily represent the official position of the U.S. Department of Justice.

Exposure Reduction or Backlash? The Effects of Domestic Violence Resources on Intimate Partner Homicide

A Final Report to the National Institute of Justice for Grant # 97WTVX0004

In the United States, rates of homicide involving “intimate partners” -- spouses, ex-spouses, boyfriends, girlfriends -- have declined substantially over the past 25 years. Public awareness of and policy responses to domestic violence have increased during the same period. The coincidence of the two trends leads naturally to the question of their relationship: To what extent has the social response to domestic violence contributed to the decline in intimate partner homicide? Research evidence addressing that question is highly limited, but the few existing studies suggest that domestic violence resources such as hotlines, shelters, and legal advocacy programs may be associated with lower rates of intimate partner homicide, net of other influences (Browne and Williams, 1989; Dugan, Nagin, and Rosenfeld, 1999).

In this paper, we address the relationship between intimate partner homicide and domestic violence resources for a larger number of places over a longer period of time and with a considerably richer set of outcome and resource measures than used in previous research. Building on the research by Dugan et al. (1999), we interpret that relationship in terms of the *exposure-reducing* potential of domestic violence resources. Simply put, those policies, programs, and services that effectively reduce contact between intimate partners reduce the opportunity for abuse and violence. We go beyond prior studies, however, by assessing the alternative possibility that, under certain conditions, domestic violence resources may actually enhance the likelihood of intimate homicide.

Such a *backlash effect* might occur, for example, if a protection order or other legal intervention directed at an abusive partner increased the level of stress or conflict in the relationship without effectively reducing victim exposure. We evaluate the exposure-reducing and backlash effects of a broad range of domestic violence resources on levels of heterosexual intimate homicide by victim sex, race, and marital relationship to the offender for 48 large US cities between 1976 and 1996, controlling for changes in marriage and divorce rates, women's status, and other time- and place-varying influences.

CONTRASTING TRENDS

The growth in domestic violence resources in the United States occurred during a period of declining intimate partner homicide rates. The coincidence of the contrasting trends in intimate homicide and social response is especially notable because the overall rate of homicide is trendless during the same period.

DECLINING INTIMATE HOMICIDE

Figure 1 displays the trends in intimate partner and total US homicide victimization rates between 1976 and 1996.¹ The intimate homicide rate, scaled on the left y axis, declines steadily throughout the period, whereas the total rate, scaled on the opposite axis, has two well-defined cycles with peaks in the early 1980s and early 1990s. The total rate has dropped sharply since 1993, but it exhibits no significant linear trend

¹ The total rate represents the number of homicides per 100,000 persons of all ages. The intimate rate is denominated by the population between the ages of 20 and 44, the age category in which intimate homicides are heavily concentrated. The intimate homicide rates are from Greenfield, Rand, Craven et al. (1998). The total rates are from the Uniform Crime Reports retrieved at <http://www.ojp.usdoj.gov/bjs/homicide/homtrnd.htm>.

for the period as a whole. By contrast, the linear trend for the intimate rate is highly significant.²

The general decline in the intimate homicide victimization has been sizable but it has not been equal across the different components of the rate defined by victim sex, race, and marital relationship to the offender. Larger decreases have occurred for males, blacks, and victims married to their offenders (including ex-spouses) than for females, whites, and unmarried intimates (Greenfield et al. 1998; Rosenfeld, 1999). The intimate homicide victimization rate for married 20-44 year-old black men dropped by an astounding 87%, from 18.4 to 2.4 per 100,000, between 1976 and 1996.³ The differing time trends by victim type highlight the importance of assessing the separate effects of domestic violence resources by victim sex, race, and marital status.⁴ While age is also an important factor, data sparseness precludes age-specific analysis.

Figure 1 about here

GROWING DOMESTIC VIOLENCE RESOURCES

Domestic violence policies, services, and programs in the United States have expanded dramatically since the early 1970s when the battered women's movement began pressing for a social response to the needs of women abused by their spouses (Schechter, 1982). By the mid-1990s, over 1,700 agencies nationwide were addressing the multiple effects of violence against women and their children (National Coalition

² When the rates are regressed on a linear trend variable with 1976 = 0, 1977 = 1, . . . 1996 = 20, the standardized trend coefficient (beta) for the intimate rate = -.946 and $p < .001$. The trend coefficient for the total rate = -.248, $p = .279$.

³ Computed from Supplementary Homicide Reports (SHR) data retrieved at <http://www.ojp.usdoj.gov/bjs/homicide/intgrel.txt>.

⁴ This study examines victims according to their marital relationship with the offender. While the text often refers to this characteristic as the victim's "marital status," it should be noted that a victim's marital

Against Domestic Violence, 1997).⁵ The movement prompted a redefinition of domestic violence, from a private matter to be settled within the family whenever possible to a category of criminal offense meriting special public attention. Policy-makers responded with enhanced criminal justice sanctions, specialized procedures, and targeted services to accommodate the special needs of victims who are intimately involved with their abusers. Some localities have adopted policies creating specialized units within prosecutors' offices that support battered women and encourage them to testify against their assailants (Gwinn and O'Dell, 1993). State legislatures have passed statutes providing greater discretion to key participants within the criminal justice system.⁶ Most states now allow courts to issue protection orders that forbid abusers to have contact with their victims. Many states began permitting the police to make warrantless arrests assuming probable cause that the perpetrator has committed a misdemeanor offense (Harvard Law Review, 1993).

These changes in the US legal response to domestic violence are part of a more general growth in protective services for women abused by their intimate partners.

Figure 2 displays the growth in domestic violence hotlines and legal advocacy programs in 49 large US cities between 1976 and 1996.⁷ The two trends can be viewed as adoption

status does not always match their marital relationship to the offender. Some married victims are killed by a partner other than their spouses. Such persons are characterized as "unmarried" victims.

⁵ In 1994 the Violence Against Women Act (VAWA) was passed, and consequently enhanced the funding for domestic violence services and supported domestic violence specialization in local police departments and prosecutors offices. However, for technical reasons described below, only resource data prior to 1994 are used in this study.

⁶ One exception is the mandatory arrest law which removes police arrest discretion.

⁷ The hotlines measure is the number of hotlines per million women age 15 and over. The index of legal advocacy services is the sum of the number of domestic violence agencies in the city with a separate budget for legal advocacy and the number of agencies with lawyers on staff, per million women age 15 and over. The data on hotlines and legal advocacy were collected by the lead author and staff members of the

rates for each of the services. Although the growth patterns differ somewhat across the two services, both exhibit pronounced growth over the period. The legal advocacy index increased nine-fold, with especially rapid growth after the mid-1980s. The adoption rate for hotlines increased sharply in the late 1970s and then flattened out between 8 and 9 per million women after the late 1980s.

Figure 2 about here

Although domestic violence resources are intended to curb intimate partner violence and its risk of lethality, the growth in services and programs documented in Figure 2 was not based on research evaluating the effectiveness of hotlines, shelters, or legal policies to protect victims. Decision-makers have had to choose among policy alternatives to enhance victim safety and offender accountability in this area without the benefit of research identifying “what works.” An important exception is the widespread adoption of pro-arrest policies after Sherman and Berk (1984) publicized the findings from their Minneapolis research indicating that arresting the batterer reduces the chances of continued partner violence. However, empirical evidence from a single field experiment warrants skepticism prior to implementing policy. Further research of this type showed that such policies may have no effect or can actually increase the chances of future violence in some situations (Hirshel, Hutchinson, Dean, Kelley, and Pesackis, 1990; Sherman, 1992).

The lack of quality research on which to base policy is not due to a lack of skilled or motivated researchers, but rather to the scarcity of data for assessing resource

Women’s Center and Shelter of Greater Pittsburgh from domestic violence agencies in each of the cities. The data collection instruments are described in Dugan (1999). Additional description of the domestic violence resource data used in this study is provided below.

effectiveness across a broad range of services, multiple sites, and differing victim characteristics. The evaluations conducted by Sherman and other researchers focused on the impact of a single intervention – arrest – in already violent homes.⁸ At best, they offer partial assessments of the deterrent effects of domestic violence policy.

Furthermore, each experiment was limited to one city, weakening the generalizability of the results (Sherman, 1992). The divergent findings of the seven experiments highlight the importance of including multiple cities in a single analysis of policy effectiveness.

Other research has utilized comparative designs incorporating data for several types of domestic violence resources from a large number of jurisdictions. Browne and Williams (1989) examined the effects of domestic violence services and legislation on intimate partner homicide rates using state-level cross-sectional data. Their findings indicate some policy impact: greater service availability is significantly associated with a lower rate of married women killing their husbands. This finding was replicated in a longitudinal analysis of 29 large US cities, which found that legal advocacy services are associated with reduced victimization for married men, but not for women (Dugan et al., 1999).

The current study extends prior research by examining the effects of state statutes and local policies, programs, and services on intimate homicide victimization in 48 large US cities. Dugan et al. (1999) found that program impacts differ by victim sex and marital relationship. The sizable differences in victimization levels and trends for blacks and whites (Greenfield et al., 1998) highlight the importance of estimating race-specific

⁸ See Berk, Campbell, Klap, and Western (1992); Dunford, Huizinga, and Elliott (1990); Hirshel et al., (1990); Pate and Hamilton, 1992; Sherman and Berk (1984); Sherman, Schmidt, Rogan, Smith, Gartin, Collins, and Bacich (1992).

effects of domestic violence policies. Our analysis is based on six waves of intimate homicide data between 1977 and 1996 for eight victim categories defined by sex, race, and marital relationship to the offender. We estimate the effects of eleven different measures of domestic violence resources based on state and city-level data for the years 1976 to 1993. Our analysis controls for non-intimate adult homicide rates, marriage and divorce rates, women's relative educational attainment, and welfare benefit levels in each of the cities. For each type of domestic violence resource, we test the hypothesis that increases in resources are associated with declines in homicide, net of the controls. That expectation is based on the concept of exposure reduction.

EXPOSURE TO VIOLENCE IN INTIMATE RELATIONSHIPS

Exposure reduction refers to shortening the time that participants in a violent relationship are in contact with one another, and thereby helps to identify candidate resources for reducing intimate partner homicide. This perspective on intimate homicide assumes that any mechanism that reduces the barriers to exit from a violent relationship will lower the probability that one partner kills the other. For example, the availability of welfare benefits, by hypothesis, reduces a woman's exposure to violence by providing financial support for her and her children to leave an abusive partner.

Although the idea of exposure reduction is relatively straightforward, its effects on violence need not be. Substantial evidence shows that the highest homicide risk is during the period when a battered victim leaves the relationship, suggesting a potential backlash from exposure reduction associated with domestic violence interventions (Bernard and Bernard, 1983; Campbell, 1992; Crawford and Gartner, 1992; Goetting, 1995). For instance, in Canada between 1974 and 1992, six times as many women were

killed by their husbands while separating than while co-residing (Kong, 1996). Such backlash effects could occur if the intervention (e.g., restraining order, arrest, shelter protection) angers or threatens the abusive partner without effectively reducing contact with the victim. Some interventions may have exposure-reducing consequences for some categories of victims (e.g., married white women) and backlash effects for others (e.g., unmarried black women). Given the paucity of research on the effects of domestic violence resources, we do not have an empirically verified “policy theory” from which specific hypotheses can be derived regarding the exposure-reduction or backlash effects of a given resource type for a given type of victim. This study is a preliminary step toward the development of such a theory.

Research on intimate partner homicide, however, should not take place in a theoretical vacuum. We believe it is important to situate research on domestic violence within broader criminological frameworks. Our thinking about intimate homicide is guided at the most general level by control and strain theoretical orientations. Effective exposure reduction diminishes the *opportunities* for violence in intimate relationships. Opportunity is a key construct in control theories, which posit that persons commit crime and violence when they are freed to do so (Gottfredson and Hirschi, 1990; Hirschi, 1969; Kornhauser, 1978). Backlash effects are triggered by interventions or other conditions that increase the *motivations* for violence without a corresponding decrease in opportunities. Strain theories focus on the motivations for crime and violence, predicting that such motivations are stimulated when aspirations or goals are frustrated or when persons are presented with negative or noxious stimuli (Merton, 1968; Agnew, 1992). The present research does not *test* these alternative theories of the sources of violent

conduct in intimate relationships, because prior research offers little basis for deciding *a priori* whether specific domestic violence resources reduce opportunities or increase motivations for violence. Rather, the theories serve as guides for organizing and interpreting our findings, resulting in more refined hypotheses for future explanatory investigation.

DOMESTIC VIOLENCE RESOURCES

Exposure reduction can come in many forms. We focus on a mechanism for exposure reduction that is legally mandated and available to women who want reprieve from violent relationships: protection orders. Protection orders are legally binding court orders that prohibit assailants from further abusing victims. Some orders direct the assailant to refrain from having *any* contact with the victim. These “no-contact” protection orders, our focus in this study, are an institutionalized form of exposure reduction. Their purpose is not to punish the offender for past conduct, but to prevent future assaults (Harvard Law Review, 1993). However, for court orders to be effective in reducing exposure to violence, a victim must petition for one, it must be issued, and it must be enforced. If violated, the assailant must be punished, and the punishment must have sufficient deterrent or incapacitative effect to prevent further violence. A recent survey found that 36.6% of the women who were assaulted by an intimate had obtained protection orders (Tjaden and Thoennes, 2000).

Because intricacies within the justice system sometimes inhibit victims from seeking legal protection, in the late 1970s domestic violence service providers began to advocate on behalf of abused women. Dugan et al.’s (1999) finding that legal advocacy is associated with reductions in the rate women kill their husbands led us to speculate that

this impact is related to the assistance such services provide women in obtaining protection orders. As women seek legal remedies to domestic violence, they are less inclined to resort to lethal remedies (Peterson, 1999). Our analysis incorporates measures of the scope and intensity of legal advocacy services, as well as several dimensions of state and local policy related to protection orders. Before describing the specific measures, we describe briefly the purpose and development of these key domestic violence prevention resources.⁹

STATE STATUTES

Little is known about the effects on domestic violence of specific changes in state statutes related to protection orders. Most studies of legal reforms designed to reduce domestic violence focus on operational goals rather than their preventive effects (Fagan, 1995). Finn and Colson (1998) conclude that the utility of protection orders depends on their specificity, consistency of enforcement, and the ease with which they are obtained. The specific provision of state statutes with arguably the greatest protective value for victims is, as mentioned, whether they permit the courts to order *no contact* with the victim or, under some circumstances, other family members. A second key legal provision is expanded *eligibility* to cover victims who do not live with the abuser. The importance of eligibility criteria is illustrated by the substantial increase in filings of protection from abuse orders following Pennsylvania's excision of the cohabitation requirement. *Custody* is a third provision that strengthens protection orders by authorizing the court to award temporary custody of children to the victim. A battered

⁹ Except where indicated otherwise, the material in the following sections is drawn from personal communication with Dawn Henry and Barbara Hart of the Pennsylvania Coalition Against Domestic Violence and staff members of the Women's Center and Shelter of Greater Pittsburgh.

woman may be more likely to file for a protection order if she knows that she is likely to obtain temporary custody. Exclusive custody to the non-violent parent lessens the need for contact, further reducing exposure.

Three additional legal provisions concern the consequences of violating a protection order and the nature of enforcement. If the state statutes allow for a *warrantless arrest* when a protection order is violated, the victim's exposure to risk is reduced because she does not have to wait until a warrant is requested and granted. Some states require police officers to arrest the violator. *Mandatory arrest* provisions, in principle, eliminate the police officer's discretion in making an arrest once probable cause is established. Once an arrest is made, violators may be charged with contempt (either civil or criminal), a misdemeanor, or a felony. In general, arrest and confinement are more likely to occur if the violation is classified as contempt or a felony than as a misdemeanor. Therefore, statutes that allow *charge discretion* probably do not reduce exposure as effectively as those that limit the nature of the charge for violating a protection order.

As this discussion implies, strong statutory provisions are a necessary but not sufficient condition for the effectiveness of protection orders. Local policies that reinforce statutory directives also are necessary to insure compliance and effective enforcement.¹⁰

LOCAL POLICY

¹⁰ Another factor that influences compliance with protection orders, beyond local policies, is the court's ability to craft effective orders and to provide strong oversight and enforcement. Furthermore, some courts have enhanced probation services and oversight of batterers, and others have imposed regular, mandatory review by judges handling these cases. Such activities are not measured in the present study.

Local policy reinforces state law by affirming its importance to local police and prosecutors, providing specific implementation procedures, or by augmenting statutory requirements where such discretion is permitted. The most important form of reinforcement is arrest policy. Historically, police officers treated cases of spousal abuse as a private rather than criminal matter. Consequently, police were more likely to intervene in these situations, which they tended to view as dangerous, by attempting to mediate or “cool down” the violence than by invoking their formal powers of arrest (Garner and Clemmer, 1986; Harvard Law Review, 1993). In response to pressures from victim advocates and the early research findings showing the efficacy of arresting batterers (Gelles and Cornell, 1990), local jurisdictions began to adopt *pro-arrest policies* which encourage or require officers to arrest for violation of a protection order. *Mandatory arrest policies* further strengthen statutory directives by prohibiting officers from using threshold criteria such as serious injury of the victim as a condition for arresting the violator (Harvard Law Review, 1993). Mandatory arrest policies signal police officers and the community that local law enforcement officials consider domestic violence a serious crime (for a brief history on changes in police response to domestic assault cases, see Ferraro, 1995).

Statutory powers are likely to be most effective when accompanied by clear policies and procedures that provide guidance for police response. Other policies that are indicative of local commitment and capacity to enforce protection orders include specialized *domestic violence units* and *training* in local law enforcement agencies. A domestic violence unit may include social workers or counselors who are trained for crisis intervention in such cases. Many include police officers who handle all domestic

violence calls, either at the time of the call or as follow-up to the immediate police response. In-service training equips officers with knowledge and skills needed for effective response and reinforces departmental norms that domestic assault is to be treated seriously.

Another important component of the effectiveness of the criminal justice response to domestic violence is the local prosecutor's office. Four aspects of prosecution may reduce the victim's exposure to the abuser: the *willingness to prosecute* domestic violence cases, *written policies* for these cases, *specialized domestic violence units*, *legal advocates* on staff, and a "*no drop*" policy. Prosecutors traditionally had little incentive to take domestic violence cases due to evidentiary problems and victim ambivalence (Fagan, 1995). Therefore, the willingness to present such cases is an elementary but important indicator of local support for state statutes. Furthermore, even if prosecutors take domestic violence cases, they may or may not have written policies to delineate responsibilities, and procedures, thereby expediting case processing.

As noted in our discussion of the police, domestic violence units promote specialization. Specialized prosecution may enhance the expertise of those handling domestic violence cases by facilitating continuous contact with other professionals and community members who work with victims and batterers, including legal advocates (Hart, 1992). Having legal advocates on staff provides victims with important information about the adjudication process and support during testimony.¹¹ A frequent complaint of prosecutors when taking domestic violence cases is that the victim will drop

¹¹ An early study found that victim witness specialists substantially increased victim cooperation during prosecution (Lerman, 1983). See Cahn (1992) for a discussion of the benefits for prosecutors and victims of specialized staff and related services.

the case after time and resources have been invested. A no-drop policy prohibits the victim from exercising this option.

It is unclear that prohibiting victims from dropping charges increases their safety. Some victims drop cases to avoid economic hardship if their abuser provides their family's financial security. Other victims withdraw their complaint because proceeding with prosecution would put them and their children in further danger (Ferraro, 1995). Their concerns appear to be well-founded. Ford (1992) reports that over a quarter of the defendants in the Indianapolis Prosecution Experiment re-offended before their cases went to trial. In general, local policy intended to assist victims by "putting teeth" into statutory provisions may have the unintended consequence of promoting backlash.

STRENGTH OF LEGAL ADVOCACY

A key objective of this study is to identify aspects of community-based legal advocacy for victims of domestic violence that are associated with reductions in intimate partner homicide. Although many factors influence a program's effectiveness, personnel and financial resources are essential to the success of legal advocacy. *Dedicated funding* for staff and expenses indicates a program's commitment and capacity to provide effective advocacy. Having *lawyers* on staff increases the expertise available to clients and expedites the legal process.

We include one additional type of domestic violence resource in our analysis, the prevalence of *hotlines* for abuse victims. Hotlines are among the earliest domestic violence services and for many victims constitute the first and sometimes only contact with a city's network of protective services, including legal advocacy and police and

prosecutorial services (Dugan et al., 1999:194). Where hotlines are prevalent, access to more targeted domestic violence resources should be greater.

To summarize, we expect that state laws with provisions for no contact between victims and abusers and for warrantless and mandatory arrest will be associated with lower rates of intimate partner homicide. The exposure reduction effects of state statutes should be strengthened, in turn, by aggressive and specialized local enforcement and strong legal advocacy services. However, we do not expect that each of these factors will have similar effects for all victim types, for at least five reasons. First, discrepancies in implementation of policy or services can limit exposure reduction. Second, not all victims of domestic violence have equal access to the types of protection mandated by law and policy. For example, protection orders were originally restricted to women who are married to their abuser. Third, victims may perceive barriers preventing access to legal protection. This may be more common for women of color and low economic status (Peterson, 1999). Fourth, violent relationships between unmarried partners may be more sensitive to outside intervention because the partners typically have fewer legal and financial dependencies than spouses, and therefore are more free to leave. Finally, some interventions may increase the risk of lethal violence for intimate partners if they increase strain without reducing contact, and the increased risk may vary by marital status, race, and gender.

OTHER PROTECTIVE FACTORS

A number of other factors, by hypothesis, reduce intimate partner homicide by reducing the exposure of persons to violent or abusive relationships. Perhaps the factor with the most direct effect on exposure reduction is *marital domesticity*. US marriage

rates among young adults have dropped sharply over the past 25 years, while rates of separation and divorce have increased (US Bureau of the Census, 1998). Barring full substitution of non-marital for marital incidents, fewer marriages mean fewer persons at risk for intimate partner homicide. In fact, marital homicides continue to comprise the large majority of intimate partner killings, and the decreasing rate of marital homicide dominates the overall decline in intimate partner homicide (Greenfield et al., 1998). The falling rate of marriage accounts for roughly half of the decline in spousal killings for persons in their 20s (Rosenfeld, 2000). Besides the direct reduction of exposure that occurs when marriages end or do not develop, declining marital domesticity could also signal a change in the composition of intact marriages. Adults who do marry may be more selective in choosing partners and less likely to marry abusers (see Edin, 2000). Finally, violent relationships may be more likely to end in divorce (see Dugan et al., 1999; Rosenfeld, 1997, 2000, for evidence supporting the relationship between domesticity and intimate partner homicide).

As marriage rates have declined, the *economic status of women* has risen over the past 25 years. Women's college completion rates, labor force participation, and income all have increased in absolute terms and relative to men's (see Dugan et al, 1999). In each instance, the gender gap for blacks is narrower than for whites; black women's rate of educational attainment has for some years exceeded black men's. For every 100 black men age 25 and over who have completed college, roughly 120 black women have a college degree (US Bureau of the Census, 1997).

The improved status of women is important from an exposure reduction perspective because economic resources and educational opportunity lessen the

dependence of women on abusive partners. Without resources, women who are dependent on their abusers will be unable to support themselves or their children if they leave. Even the perception of low potential earnings may be enough to prevent some women from leaving life threatening relationships. At the same time, improvements in women's status may generate backlash from men who fear loss of status or control in intimate relationships, contributing to increases in levels of partner violence. Given the greater relative equality between black men and women, we might expect such backlash effects to be especially significant among blacks (see Patterson, 1998, for a discussion of status differences and conflict between African-American men and women).

Although women's status generally improved during the last quarter of the 20th century, a sizable gender gap remains in access to economic resources. Families headed by women in the United States were almost six times more likely than married-couple families to be living in poverty in 1996 (32.6% v. 5.6%).¹² For poor women with children, the level of support provided through public assistance may cushion the financial impact of leaving an abusive partner (Allard, Albelda, Colten, and Cosenza, 1997). We, therefore, incorporate in our analysis benefit levels for Aid to Families with Dependent Children (AFDC). AFDC was a federal cash grant program established in 1935 to aid widows and needy children without fathers. The program grew to provide payments to children deprived of parental support due to one parent's absence, incapacitation, or unemployment. In 1996, President Clinton signed the "Personal Responsibility and Work Opportunities Reconciliation Act" requiring states to replace

¹² Figures are from census poverty tables retrieved at <http://www.census.gov/hhes/poverty/histpov/hstpov4.html>.

AFDC with time-limited assistance (Duncan and Brooks-Gunn, 1998). However, AFDC benefit levels began falling well before the program was eliminated. Average benefits dropped in real terms by 37% over the years we are investigating (House Ways and Means Committee, 1996). Other things equal, we would expect more battered women to remain “stuck” in violent relationships and higher rates of intimate partner homicide as public assistance benefits decline.

DATA AND METHODS

Our analysis begins in 1976 and ends in 1996. Fortuitously, 1976 marks the inception of the first state law (Pennsylvania’s) authorizing the use of protection orders to protect battered women. The analysis is based on a panel data set of 48 of the 50 largest US cities for the years 1976 to 1996.¹³ The dependent variable is the number of intimate partner homicides partitioned by victim sex, race, and marital relationship to the offender. We estimate separate panel models for the eight possible combinations of victim sex, race, and marital relationship.

Although in principle the analysis could be conducted at the level of the individual, doing so would be impractical and arguably undesirable. Intimate partner homicides are infrequent events, especially when partitioned by victim sex, race, and marital status. It would not be feasible to assemble a sufficiently large sample of individuals to reliably measure impacts on such a rare outcome. Further, the analysis

¹³ The cities are Albuquerque, Atlanta, Austin, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Columbus, Dallas, Denver, Detroit, El Paso, Fresno, Ft. Worth, Honolulu, Houston, Indianapolis, Jacksonville, Kansas City, Long Beach, Los Angeles, Memphis, Miami, Milwaukee, Minneapolis, Nashville, New Orleans, Oakland, Oklahoma City, Omaha, Philadelphia, Phoenix, Pittsburgh, Portland, Sacramento, San Antonio, San Diego, San Francisco, San Jose, Seattle, St. Louis, Toledo, Tucson, Tulsa,

would require data on individuals who did and did not have contact with the criminal justice system. Without random assignment, which itself is impossible for ethical and practical reasons, issues of selection would inevitably cloud the interpretation of the findings. Moreover, our objective is to evaluate the impact of attributes of *social systems*—state legal statutes, the policies of criminal justice agencies, the availability and efficacy of domestic violence programs—on the *population prevalence* of lethal intimate violence. For our research purposes, then, aggregate-level analysis is required. We believe that valid results can be derived from such an investigation of intimate homicide, as long as it is recognized that the findings pertain to the sources of variation over time and across place in the attributes of population groups and not to within-group individual differences.

HOMICIDE DATA

The homicide data were extracted from the Supplementary Homicide Reports (SHR) of the FBI's Uniform Crime Reporting program (UCR) (Federal Bureau of Investigation, 1998). The SHR augments the standard UCR "Return A" report on the number of homicides with information on the incident, victim, and where known, offender. We aggregated to the city level for each year the number of homicides by the victim's sex, race, and marital relationship to the offender. Married persons include ex-spouses and common-law; unmarried persons include the SHR categories of "boyfriend"

Virginia Beach, and Washington. New York and Charlotte were dropped from the analysis due to missing data.

and “girlfriend.” The small number of intimate partner homicides involving a victim and offender of the same sex were excluded from the analysis.¹⁴

The analysis is performed on three-year homicide counts for each city.

Homicides were summed over the current and subsequent two years; when more than one of these years were missing, the case was deleted. When only one of the three years was missing, the summation was adjusted by a factor of 3/2 and then rounded to a whole number. Three-year sums are used because the rarity of intimate partner homicides, especially when partitioned by victim sex, race, and relationship type, makes annual counts highly unstable. Summing over a three-year period is a smoothing procedure that reduces the amount of random variation and preserves the discrete nature of the data. To insure independence across observations, every third year is used in the analysis. This creates six waves of data and three different “shifts” depending on the starting point of the summation: 1977, 1978, or 1979 (see Table 1).¹⁵ Estimates from all three shifts were used to test the robustness of the results.

Table 1 about here

¹⁴ Because participation in the SHR program is voluntary, some law enforcement agencies fail to report their homicide incidents each month. We corrected for underreporting with an adjustment factor based on the total number of homicides reported to the UCR. Homicide counts for each “city-year” were included in the data only if the agency reported to the SHR program at least six out of the twelve months, or if the total number of victims reported to the SHR was greater than 90% of the total homicides reported to the UCR. The second criterion was used to account for the agencies that report all annual homicides in one or two months. In cases where the agency reported fewer than 12 months of data, one of three conditions exists. First, and most commonly, the agency reported 12 months of data to the UCR and the UCR total homicide count was greater than the SHR victim count. In these cases, the SHR count was adjusted upward to match the UCR data. The second condition was that the agency reported 12 months of data to the UCR, but the SHR victim count was greater than the UCR homicide count. In these cases, the SHR data were assumed correct and not adjusted. Finally, in the few cases when an agency reported fewer than 12 months of data to the UCR, the SHR homicides were adjusted upward to 12 reporting months. All adjustments assume that the under-reporting was independent of the sex, race, and marital status of victims; therefore all homicides within a city-year were adjusted by the same factor.

¹⁵ The year 1976 was not used as the starting point for the homicide data because we lag some of the explanatory variables.

DOMESTIC VIOLENCE RESOURCES

Our analysis incorporates the eleven indicators of the state and local domestic violence resources discussed previously. Four are measures of state statutes, including provisions for warrantless arrest, mandatory arrest, an index of the legal consequences for violating a protection order (contempt, misdemeanor, or felony), and an “exposure reduction” index that increases in value with provisions for no-contact orders and custody relief. Five of the indicators measure components of local policy, including police arrest policies, the presence of domestic violence units and training in police agencies, the willingness of prosecutor’s offices to take domestic violence cases and the use of written policies for prosecuting them, the presence of domestic violence units and legal advocates in prosecutor’s offices, and whether the prosecutor’s office has a “no-drop” policy. Two final indicators measure the strength of legal advocacy programs and the prevalence of hotlines in the city. Each of these measures is summarized in Appendix A.

The crux of the data collection strategy was to seek out informants within the local agencies of the 50 largest cities and ask them to complete a survey inventorying policies or activities by type and year of implementation.¹⁶ Even though repeated callbacks were required in some cases, response rates were impressively high, especially given the long time span for which we requested detailed information. We received completed surveys with no missing data on prosecutor policies for all 50 cities, police policies for all but New York and Charlotte, NC, and domestic violence services for all but New York, yielding a final sample of 48 cities. Although the accuracy of the

¹⁶ The data on state statutes was compiled by the Pennsylvania Coalition Against Domestic Violence and Julie Kunce Field. The Women’s Center & Shelter of Greater Pittsburgh (WC&S) and the Pittsburgh

information we received, particularly for the earlier years, depends on the quality and extensiveness of agency record-keeping, we sought to minimize measurement error by identifying the person(s) best positioned in the agency to answer our questions, and by phrasing the questions in a standardized format, typically calling for a simple “yes/no” response. (The survey instruments for the local agencies and the coding protocol for the state statutes are available from the authors by request.)

DOMESTICITY AND ECONOMIC MEASURES

The impact of domesticity on homicide is estimated with marriage and divorce rates for each city and year. We use a single measure of relative economic status, the ratio of the proportion of women to the proportion of men age 25 or older with at least four years of post-secondary education. Prior research shows somewhat stronger effects of this measure than income or labor-force participation ratios on intimate partner homicide rates (Dugan et al., 1999). The marital and education measures are race-specific and were computed from city-level census data for the 1970, 1980, and 1990 census years (US Bureau of the Census, 1973, 1981, 1993). Values for the years between the decennial censuses were interpolated and then averaged over the appropriate three-year periods. We followed conventional practice in welfare analysis of measuring AFDC benefit levels based on the benefit received by a family of four persons. All figures are adjusted to 1983 dollars using the consumer price index. Data on state AFDC benefits

Police collected information on changes over time in domestic violence services and local police and prosecution policies.

were obtained from annual versions of the “green book” compiled by the House Ways and Means Committee (1996).¹⁷

METHODS

Because the dependent variable is a count of homicide victims within a discrete (three year) period, and rare events such as these likely conform to a Poisson process, we use the Poisson likelihood function to estimate our models, with each observation weighted by the three-year average of the city’s population:

$$\ln(\lambda_{it}) = \ln(n_{it}) + \sum_{k=0}^K \beta_k x_{itk}, \quad (1)$$

where λ_{it} is the expected number of homicides and n is the number of persons at risk of homicide.¹⁸ We estimate the statistical model shown in equation 2 for each category of intimate partner homicide as defined by the victim’s sex, race, and marital relationship. The subscript t refers to the wave. Recall that each wave includes the current and two subsequent years. The subscript $t-1$ refers to the single year preceding the current wave.

$$\begin{aligned} \ln(\text{Homicide}_t) = & \beta_0 + \ln(\text{RiskPop}) + \beta_1 \text{Place} + \beta_2 \text{Year}_t + \beta_3 \text{Legal}_{t-1} + \beta_4 \text{LocPol}_{t-1} + \\ & \beta_5 \text{LegAdv}_{t-1} + \beta_6 \text{Hotline}_{t-1} + \beta_7 \text{AFDC}_t + \beta_8 \text{Status}_t + \beta_9 \text{Domestic}_t + \\ & \beta_{10} \text{AdultHom}_t + \beta_{11} \text{Adjust}, \end{aligned} \quad (2)$$

where *Homicide* is the count of intimate partner homicide victims, *Legal* refers to the state statute provisions, *LocPol* refers to the local policies, *LegAdv* is the legal advocacy

¹⁷ Data on 1995 AFDC benefit levels was missing. In all but eight cases, the 1994 benefit level was equal to the 1996 level, and we used that value for 1995. For the eight states where the 1994 and 1996 benefit levels differed, we used the average of the two for the 1995 level.

¹⁸ The Poisson likelihood function assumes that the expected number of homicides is equal to its variance. If the variance is greater than the mean, then the resulting covariance matrix will be biased downward, and significance levels can be inflated (Liao, 1994). The Negative Binomial model, which allows the variance to be overdispersed, is generally preferred to the Poisson in such cases. Although overdispersion is present

index, *Hotline* is the number of domestic violence hotlines per million women, *AFDC* refers to the state benefit levels, *Status* is the measure of women's relative education, and *Domestic* refers to the marriage and divorce rates (all as defined in Appendix A). We lag the resource variables to reduce the chances that the results will be affected by a reciprocal relationship between intimate homicide rates and domestic violence policies and programs. (We discuss this issue more thoroughly below).

When appropriate, we also include dummy variables for each place and wave in the panel. Their presence in the specification controls for fixed effects attributable to time and place. The place effects control for unmeasured but enduring characteristics of that place that are jointly associated with the levels of homicide and explanatory factors. Similarly, the time fixed effects control for trends in unmeasured factors that are commonly associated with changes over time in homicide and the explanatory factors.

In addition to controls for time and place fixed effects, the model includes controls for two specific time-varying variables.¹⁹ The first accounts for factors associated with the overall change in adult homicide. We calculate the adult homicide rate (minus the intimate partner homicides) for all victims ages 25 and over (*AdultHom*). We expect its coefficient to have a positive sign, indicating higher levels of intimate partner homicide in areas where the non-intimate adult homicide rate is greater. A second control was added to capture any bias that may be due to the adjustment procedure used to account for underreporting of SHR data (*Adjust*). Because all adjustments were rounded to whole numbers, low counts such as 0 or 1 are unlikely to be

in several of our equations, our findings are unaffected by model choice. The results reported here are from the Poisson regressions.

rounded upward after adjustment. This may result in a systematic under-counting of homicides. *Adjust* is, therefore, the number of years within the three year summation of homicide that were adjusted according to the procedure described in footnote 10. It is intended to correct for any bias due to this type of error. Because systematic undercounting is likely, its coefficient estimate is expected to be negative, however, any over-adjustment in the homicide data could lead to a positive estimate.

Finally, to measure potential risk for homicide, we include the natural logarithm of the number of persons in the relevant demographic subgroup. This figure differs across victims depending on their marital relationship to the offender because only married persons can be killed by a spouse. In the married equations, the logarithm of the average number of married persons of matching gender and race for each city during the three-year period is included. Because all adults can be killed by an unmarried partner regardless of their current marital status, the unmarried equations include the logarithm of the average number of males or females, as appropriate, over the age of 15.

Additional methodology was designed to address four problems common to longitudinal analysis: 1) by using both time and place fixed effects, little variation is left in the model to efficiently identify the effects of the explanatory variables on homicide; 2) some results could be dependent on the inclusion of one or more cities; 3) the association of some factors may be stronger during a truncated portion of the overall range of time; and 4) the homicide counts may be endogenous to (i.e. precede in time) the explanatory variables, (see Dugan, 1999, for detailed discussion of each problem.)

¹⁹ In the models where the victims are not race specific, we also include the percentage of the city population that is black.

To address the first problem we consider three levels of place fixed effects (none, state, and city). Because the results from the analyses including city effects are the least likely to suffer from omission bias, their coefficient estimates and their standard errors are used to create lower and upper confidence bounds to test for possible omission bias in the state-level models and those without any placed fixed effects. All coefficient estimates that fall beyond two standard deviations (in either direction) from the estimates of the city-effects models will be suspected of omission bias, and therefore considered with caution. When the model without place fixed effects meet the above criteria, its estimate is chosen over that generated from the state fixed effect model. In the latter model cities have an unequal contribution to the final estimate (see, Dugan, 1999, for a lengthy discussion of this).

To address the second problem we test for city-dependent results by imposing a cross-validation sensitivity analysis that re-runs all three shifts of each model after removing each city, one at a time. After sorting the resulting t-statistics, we are able to see if the significance of any single variable is dependent on any one city. We concluded that a result is city-dependent if, by removing that city, all three shifts show the same result. For example, with all 48 cities, the results could show that increases in legal advocacy are related to decreases in married female victimization in all three shifts. If this result were dependent on the inclusion of Houston, then with Houston removed from the data, legal advocacy will have a null effect on married female victimization in all three shifts. If by dropping a city, a null result becomes significant in all three shifts, then the city-dependency test was conducted again without that city, to assure robustness.

To address the third problem, we test for time-dependency as illustrated in figure 3. Each column represents a wave of data, and each row represents a range of waves that was included in each “run” of the sensitivity test. The run is labeled by its first and last wave. For instance, the first run (11) only includes wave one (48 cities and one time period).²⁰ The second run (12) includes waves one and two, and the sixth run (16) includes all six waves of data. These early runs allow us to compare the estimated impact of each factor in the beginning waves of our data to the overall average. Similarly, by reversing this process, the later runs include only the latter portion of the data, truncated at different waves. This allows us to compare the estimated impact of each factor later in the time period with the overall average. Because each run includes three shifts of data, we are able to examine the stability of the results over time.

--INSERT FIGURE 3 ABOUT HERE--

Finally, an important consideration with this type of data is endogeneity (a mutual relationship between the explanatory and dependent variables). Changes in one or more of the explanatory variables—especially related to policy—may have been provoked by changes in the dependent variable—perhaps a highly publicized homicide. If so, then the results could lead to false conclusions regarding the direction of the association between the explanatory variables and the homicide frequency. For example, if police departments on average adopted more aggressive arrest policies after one or more highly publicized homicide cases where women were killed by their ex-husbands, then the results will suggest that aggressive arrest policies lead to more homicides. Conversely, policy that was provoked by an unusual increase in homicides could receive undue credit

²⁰ This run was only included in the model where we excluded place fixed effects, because with place fixed

for its natural decline. Because laws, policies, and services are often adopted in response to a need, such measures are especially sensitive to this type of problem. To preclude this dynamic, we lag the resource variables by one year. The resource variables, therefore, describe the entry condition at the beginning of the wave.²¹ By forcing this temporal condition, it is impossible for changes in homicide to influence the adoption of policy in earlier years. Because the economic and domesticity variables are unlikely to be endogenous, these measures are averaged over the same three-year period used for the homicide sums. By lagging, the risk of endogeneity in the model without place effects is minimized.

Presentation of the results is complicated because of the multiple dimensions of sensitivity analysis. The estimates may be generated from models using state fixed effects or those that exclude any place fixed effects. They could represent the overall effect from the entire sample of 48 cities or a smaller sample that omits one or two influential cities. And, the estimates may be generated from all six waves of data or from a sub-span of time. One final complication is that because we summed the homicide data over three consecutive years, three different estimates are generated from the resulting shifts. In total, approximately 360 estimates are generated for each variable (2 types of fixed effects \times (49 sample combinations + 11 wave ranges) \times 3 shifts).

After conducting the city-dependency tests, we use a graphical method to examine the estimates for robustness. To illustrate, box plots of t-statistics relating legal advocacy to female victimization are presented in Figures 4a, b, and c. Each point in the box

effects at least two waves are needed.

represents a t-statistic from one of the three shifts. The horizontal lines in each graph are placed at the one-tailed 0.05 significance level (± 1.645). Each box represents the wave range that was used to generate the t-statistics. The center box, labeled 16, uses all six waves. Similarly, the box to its left, labeled 15, uses the first five waves. Note that the married female graph is marked with a gray box. This indicates that neither the estimate from the state fixed effect model nor that from the model without a place fixed effect fell within the bounds generated from the city fixed effect model. Its results should be viewed with caution. The unmarried graph was generated from the model without place effects (these estimates did fall within the range of the city fixed effect model). Finally, each graph was generated from a sample that omits Los Angeles. With Los Angeles in the sample, most of the estimates using all six waves are significant. Without Los Angeles, all lose their significance.

---INSERT FIGURE 4a ABOUT HERE---

Graphs like these are used to identify robust associations between each factor and intimate partner homicide. For the reasons explained above, the no-place fixed effect model is chosen over the state fixed effect model if it falls within the two standard deviation range of the city fixed effect model. If by removing one city the t-statistics of all three shifts in the full wave model fall completely in or out of the significance range,

²¹ Because we lag the domestic violence resource data, the last year that they are used in this model is 1993 in shift 3. This means that the effects of the 1994 Violence Against Women Act or the publicity surrounding Nicole Brown Simpson's homicide do not influence the analysis.

then that model is chosen over the 48 city model.²² And finally, if more than one range of waves is robust, then that with the widest range is reported.

According to the graphs in Figure 4a, the only robust association is that of legal advocacy on unmarried female victimization during the first two waves. Note that all three t-statistics fall below the -1.645 bound. This indicates that higher levels of legal advocacy are associated with fewer women being killed by their boyfriends during the late 1970s and early 1980s. Note that these findings represent victims of all races. The graphs generated from the racially partitioned models are shown in Figures 4b and 4c. These figures reveal strong differences in the impact of legal advocacy depending on the race and marital status of the victim. High levels of legal advocacy are associated with fewer killings of white married women, while there is no evidence of a relationship between legal advocacy and black married women. The findings change when we examine the relationship between legal advocacy and unmarried female victimization. Although there is no evidence of a robust relationship between legal advocacy and white victimization, its pattern of association is similar to that of the racially combined results (a negative association in earlier years offset by a positive association in later years). However, the results for black victims show a *positive* association. Higher levels of legal advocacy are associated with more (not less) killings of black women by their boyfriends.²³

--INSERT FIGURES 4b AND 4c ABOUT HERE--

²² As explained above, if a result becomes robust after removing one city, then the dependency test is repeated before concluding that the result is indeed robust. Furthermore, if two cities have an opposite effect on the results after omission, then we report the results after omitting both.

²³ Contact the authors for graphs of the remaining results.

Results

The graphical summaries identify only the significance level of each association. Missing is the magnitude of the association between each factor and each type of intimate homicide. By comparing the magnitude of each robust estimate across victims, can we differentiate strong and weak effects. However, estimates across variables are only comparable if they use the same unit of analysis—such as the adoption of a mandatory or warrantless arrest law. To summarize the magnitudes, the exponents of each coefficient estimate for all robust findings are listed in Tables 2 a through c (for each racial category).²⁴ These results can be dependent on omitting a city or a specific range of waves. Listed under “Waves” is the broadest range in which all three shifts are significant. Also listed is whether or not the finding supports the exposure reduction theory.

--INSERT TABLES 2 a - c ABOUT HERE--

In total, there are 62 robust findings. Because we are reporting the exponents of the estimates, all values greater than one show a positive association with homicide. Similarly, all ratios below one, indicate a negative relationship. Of the robust findings, 34, or 55%, conform with the predictions of the exposure reduction theory. These results suggest that increases in alternatives to living with, or depending upon, an abusive partner contribute to the decreasing homicide rates of intimate partners. The remaining 45% support the predictions of backlash: the increase in killings associated with availability of resources that reduce exposure to violence may be due to backlash from

²⁴ By computing the exponential of the coefficient estimate, we may interpret the multiplicative effect of the variable on the expected number of homicides.

batterers once their partners try to leave. Furthermore, most of the findings are significant when using all six waves (66%). The remaining are only significant during a portion of the entire period. For example, the index for state violation type is only related to few killings of married black females during waves three through six (about 1983 to 1996). Of the 21 results that are only significant for a portion of the period, two-thirds predict backlash.

Two findings that show the strongest support for exposure reduction are those for AFDC benefit levels and warrantless arrest law—both sets of results are significant across all six waves. Most affected by changing AFDC benefit levels is the homicide victimization of unmarried men, particularly black men (as shown by the lowest odds ratio). As AFDC benefits decline, more men are killed by their girlfriends. This suggests that reductions in AFDC limit financial opportunities for unmarried women with children to live independently of their abusers. Without perceived alternatives, these women may be more likely to kill their abusers. Not surprisingly, this type of increased exposure also appears to endanger the lives of black unmarried women. However, white women are unaffected, suggesting that African Americans are more sensitive to variations in AFDC (see also the results for married men). That interpretation is consistent with the higher rates of AFDC participation of blacks compared with whites (House Ways and Means, 1996).

The findings for warrantless arrest law are consistent with exposure reduction—adoption is related to fewer deaths of white women in both marital and non-marital intimate relationships. A warrantless arrest law gives officers more discretion to arrest immediately after a protection order is violated. This reduces the period that the victim is

exposed to the offender by the amount of time that it would take the officer to obtain a warrant. This period is also the most dangerous, because the batterer is likely to be antagonistic after police intervention. The warrantless arrest effect is especially pronounced for white unmarried females. Warrantless arrest laws decrease the expected number of victims by 41% ($1 - \exp(\beta) \times 100$). It also reduces the expected number of black unmarried male homicides by 32%.

Two findings consistently support the predictions of backlash, those for relative education and prosecutor willingness. As the relative education of black women grows, more black husbands are killed (waves 3-6) and more black unmarried partnerships end in homicide (waves 3-6 for females).²⁵ The results for white victims are null. The increasing relative education of black women to black men reflects a growing disparity between the genders. Black men and women were almost equally educated in the mid-1970s. By the mid-1990s, the proportion of black women with at least four years of post high school education exceeded that for black men by nearly 40%. The large difference in education could add more stress to already contentious relationships, creating backlash (see Baron and Straus, 1984, 1987; Russell, 1975). An alternative interpretation of the findings for relative education is that they reflect the difference in educational attainment between black and white men rather than that between black men and women. More research is needed to better identify the nature of association between relative education and intimate partner homicide.

²⁵ The results of relative education for the racially grouped victims match the predictions of exposure reduction, increases in women's education relative to men are associated with fewer deaths of men and unmarried women. However, the racial partitioned results suggest that this finding may be an artifact of Simpson's Paradox (see Samuals, 1993).

The results for prosecutor willingness suggest that simply being willing to prosecute cases of protection order violation may aggravate already tumultuous relationships. As prosecution willingness increases, we observe increases in homicide for white spouses (waves 1-3 for males) and black unmarried partners (waves 3-6 for females). Also, more white females are killed by their boyfriends. The largest effect is for white married females across all six waves. As the willingness index increases by one, the expected number of white wives killed nearly doubles.

The remaining robust findings are not consistent across victim type. As noted above, increased strength of legal advocacy is associated with *fewer* killings of white wives and *more* deaths of black unmarried females. There are at least two possible explanations for the variation of effect across victim type. First, the results could be completely idiosyncratic. Each robust finding could be equally likely to support the exposure reduction theory as it is to contradict it (i.e. support the backlash hypothesis). The second explanation is that some types of exposure reduction may prevent the deaths of some victims while being more harmful to others. For instance, if the implementation of a policy is exclusively directed towards a specific type of battered woman, then others may rely on nonexistent intervention during dangerous periods. Disparities like this would create differences in the proportion of robust findings that support the exposure reduction theory across victim types.

To test for differences across victims, we examined the tabulations of the remaining robust findings across dimensions. The only significant difference is across marital status—the proportion of married victims who benefit from exposure reduction (0.74) is greater than that for victims who are not married to their offender (0.42, $z =$

2.37). This is not surprising because domestic violence resources were initially established to protect women from abusive husbands, not boyfriends. Furthermore, because of marital obligation, legal players may be more sympathetic to those who cannot easily leave a violent partner, perhaps leaving unmarried battered women less protected.

Discussion

The goal of this paper was to identify factors that have contributed to the 25-year decline in intimate partner homicide in the US. It was our hope that the conclusions drawn from this work would offer insight to policy makers and service providers, allowing them to design more effective prevention strategies. Our research was premised on a simple theory of exposure reduction, predicting that any factor that shortens the time that violent intimates are exposed to one another will reduce the probability that the relationship ends in homicide, thus ultimately contributing to the overall decline in intimate partner homicide. Our investigation produced mixed support for the theory. Some findings support it, but others imply that exposure reducing resources may have lethal consequences. Support for the latter interpretation is most evident among the findings for unmarried partners.

Some resources are consistently positive or negative regardless of victim type. The adoption of a warrantless arrest law is associated with fewer killings of white women and black unmarried men. Increases in the willingness of prosecutors' offices to take cases of protection order violation are associated with increases in the homicide of white married intimates, black unmarried intimates, and white unmarried females. An untoward consequence of cutting AFDC payment levels appears to be increased homicide

victimization of black married men, black unmarried partners, and white unmarried females.

Other resources have conflicting results depending on which victim we investigate. Increases in the strength of legal advocacy are associated with fewer white women killed by their husbands. Yet, these same increases are associated with more black women killed by their boyfriends. The adoption of some protection order statutes is associated with both *decreases* in black married female victimization and *increases* in the number of black women killed by their unmarried partners. In general, the findings imply that laws designed to protect African American women only work if the woman is married to her offender. Without marriage, a black woman's risk of homicide may be exacerbated.

Although exposure reduction is an intuitively appealing prevention strategy, the results strongly suggest that reality is more complicated than the theory suggests. By only measuring the policy, we are missing information on who accesses the system and how well it is implemented. Results from a recent national survey on violence against women show that more than 73% of the women who were physically assaulted by an intimate did not report the incident to the police. The leading reason was that they believed that the police could not help (Tjaden and Thoennes, 2000). Furthermore, evidence of increased lethality, and even the null findings, could reflect failures within the criminal justice and social service systems to adequately protect victims once they access their services. Or, the most violent relationships may require that exposure be reduced to zero contact, else the batterer will become enraged and more lethal. However, intimate partnerships are inherently difficult to end without some contact, especially if

the couple share children or property. A recent longitudinal study of battered women by Campbell, Rose, Kub, and Nedd (1998) found that after deciding to leave their abusers, their relationships became more ambivalent and fluid as they were actively engaged in a process of leaving but had yet to make the break. It is during this process that women in dangerous relationships are at risk of homicidal backlash.

These findings do not mean that designing prevention strategies based on exposure reduction is a bad idea. It does, however, suggest that a little exposure reduction (or unmet promises of exposure reduction) in severely violent relationships can be worse than the status quo. Absolute reduction of exposure in such relationships is an important policy objective. Without any contact, neither partner has the opportunity to kill the other. But achieving this type of protection from abuse is not simple. More research is needed to better understand the dynamics of successful exposure reduction compared to unsuccessful cases, so policy makers and practitioners can reduce prevention failures. Much research has already been conducted on failed efforts to leave abusers. Homicide case reports and interviews often provide rich details of the events leading to the homicide. Yet, this is only half the story. For comparison we need to understand how severely violent relationships avoid lethal consequences. Too commonly we assume that we already know the counterfactual to intimate partner homicide without scientific investigation. Progress is being made with longitudinal research of battered women by Campbell and colleagues (1998, 1999) that examines how women who differ in individual and relationship attributes respond to partner abuse. Furthermore, several federal agencies recently funded Campbell and others to examine women's risk of femicide in intimate relationships by comparing homicide victims, to survivors of near-

homicide, to battered women, and to other women who are not battered in 11 major US cities (see, also Block, 2000).²⁶ It is only with more research documenting successful and unsuccessful cases of relief from partner violence for a heterogeneous group of women that we will be able to design policy customized to meet their safety needs.

²⁶ Details of this study are found at <http://www.son.jhmi.edu/research/CNR/Homicide/main.htm>.

References

- Agnew, Robert. 1992. "Foundation for a General Strain Theory of Crime and Delinquency." *Criminology* 30:47-87.
- Allard, Mary Ann, Randy Albelda, Mary Ellen Colten, and Carol Cosenza. 1997. *In Harms Way? Domestic Violence, AFDC Receipt, and Welfare Reform in Massachusetts*. A report from the University of Massachusetts Boston, February 1997.
- Baron, Larry and Murray A. Straus. 1987. "Legitimate Violence, Violent Attitudes, and Rape: A Test of the Cultural Spillover Theory." *Annals of the New York Academy of Sciences* 528:79-110.
- Baron, Larry and Murray A. Straus. 1984. "Sexual Stratification, Pornography, and Rape in the United States." In N. M. Malamuth and E. Donnerstein (Eds.), *Pornography and sexual aggression* (pp. 186-209). San Francisco: Academic Press.
- Berk, Richard A., Alec Campbell, Ruth Klap, and Bruce Western. 1992. "The Deterrent Effect of Arrest in Incidents of Domestic Violence: A Bayesian Analysis of Four Field Experiments" *American Sociological Review* 57:698-708.
- Bernard, M. L. and J. L. Bernard. 1983. "Violent Intimacy: The family as a model for love relationships." *Family Relations* 32:283-286.

- Block, Carolyn Rebecca. 2000. *The Chicago Women's Health Risk Study, Risk of Serious Injury or Death in Intimate Violence: A Collaborative Research Project*. Final Report to the National Institute of Justice.
- Browne, Angela and Kirk R. Williams. 1989. "Exploring the Effect of Resource Availability and the Likelihood of Female-Perpetrated Homicides." *Law and Society Review* 23:75-94.
- Cahn, Naomi R. 1992. "Innovative Approaches to the Prosecution of Domestic Violence Crimes: An Overview." In E. S. Buzawa and C. G. Buzawa (Eds.), *Domestic Violence The Changing Criminal Justice Response* (pp. 161-180). Westport, CT: Greenwood Publishing Group, Inc.
- Campbell, Jacquelyn C. 1992. "'If I Can't Have You, No One Can:' Power and Control in Homicide of Female Partners." In J. Radford and D. E. H. Russel (Eds.), *Femicide: The politics of women killing* (pp. 99-113). New York: Twayne Publishers.
- Campbell, Jacquelyn, Linda Rose, Joan Kub, and Daphne Nedd. 1998. "Voices of Strength and Resistance A Contextual and Longitudinal Analysis of Women's Responses to Battering." *Journal of Interpersonal Violence* 13:743-762.
- Campbell, Jacquelyn C. and Karen L. Soeken. 1999. "Women's Responses to Battering Over Time An Analysis of Change." *Journal of Interpersonal Violence* 14:21-40.

- Crawford, M. and R. Gartner. 1992. *Woman Killing: Intimate Femicide in Ontario 1974-1990*. Toronto, Ontario, Canada: Government of Ontario, Ministry of Social Services, Woman's Directorate.
- Dugan, Laura J. 1999. *The Impact of Policies, Programs, and Other Exposure Reducing Factors on Intimate Partner Homicide*. Doctoral Dissertation. Carnegie Mellon University.
- Dugan, Laura, Daniel Nagin, and Richard Rosenfeld. 1999. "Explaining the Decline in Intimate Partner Homicide: The Effects of Changing Domesticity, Women's Status, and Domestic Violence Resources." *Homicide Studies* 3:187-214.
- Duncan, Greg J. and Jeanne Brooks-Gunn. 1998. "Urban Poverty, Welfare Reform, and Child Development." Pp. 21-32 in *Locked in the Poorhouse: Cities, Race, and Poverty in the United States*, edited by Fred R. Harris and Lynn A. Curtis. Lanham, MD: Rowman & Littlefield.
- Dunford, Franklyn, David Huizinga, and Delbert S. Elliott. 1990. "The Role of Arrest in Domestic Assault: The Omaha Police Experiment." *Criminology* 28:183-206.
- Edin, Kathryn. 2000. "Few Good Men: Why Poor Mothers Don't Marry or Remarry." *American Prospect* (January 3):26-31.
- Fagan, Jeffrey. 1995. "The Criminalization of Domestic Violence: Promises and Limits." *National Institute of Justice Research Report*. Washington DC: U.S. Department of Justice.
- Federal Bureau of Investigation. 1998. *Supplementary Homicide Reports 1976-1996*. Machine readable files and documentation obtained directly from the Uniform Crime Reporting program.

- Ferraro, Kathleen J. 1995. "Cops, Courts, and Woman Battering." In B.R. Price and N.J. Sokoloff, eds., *The Criminal Justice System and Women Offenders, Victims, and Workers*. New York: McGraw-Hill, Inc.
- Finn, Peter and Sarah Colson. 1998. "Civil Protection Orders: Legislation, Current Court Practice, and Enforcement." *Legal Interventions in Family Violence: Research Findings and Policy Implications*. Washington, DC: Department of Justice.
- Ford, David A. 1992. "The Preventive Impacts of Policies for Prosecuting Wife Batters." In E. S. Buzawa and C. G. Buzawa (Eds.), *Domestic Violence The Changing Criminal Justice Response* (pp. 181-208). Westport, CT: Greenwood Publishing Group, Inc.
- Garner, Joel and Elizabeth Clemmer. 1986. "Danger to Police in Domestic Disturbances: A New Look." *National Institute of Justice Research in Brief*. Washington, DC: U.S. Department of Justice.
- Gelles, Richard J. and Clair Pedrick Cornell. 1990. *Intimate Violence in Families*. Second ed. Newbury Park, CA: Sage.
- Goetting, Ann. 1995. *Homicide in Families and Other Special Populations*. New York: Springer.
- Gottfredson, Michael R. and Travis Hirschi. 1990. *A General Theory of Crime*. Stanford, CA: Stanford University Press.

- Greenfield, Lawrence A., Michael R. Rand, Diane Craven., et al. 1998. *Violence by intimates: Analysis of data on crimes by current or former spouses, boyfriends, and girlfriends*. Washington, DC: US Department of Justice.
- Gwinn, Casey G., J. D. and Sgt. Anne O'Dell. 1993. "Stopping the Violence: The Role of Police Officer and the Prosecutor." *Western State University Law Review* 20:297-317.
- Hart, Barbara. 1992. "State Codes on Domestic Violence Analysis, Commentary and Recommendations." *Juvenile & Family Court Journal* 43:1-81.
- Harvard Law Review. 1993. "Developments in the Law: Legal Responses to Domestic Violence." *Harvard Law Review* 106:1498-1620.
- Hirshel, J. David, Ira W. Hutchinson III, Charles Dean, Joseph J. Kelley, and Carolyn E. Pesackis. 1990. *Charlotte Spouse Assault Replication Project: Final Report*. Washington, DC: National Institute of Justice.
- Hirschi, Travis. 1969. *Causes of Delinquency*. Berkeley, CA: University of California Press.
- House Ways and Means Committee. 1996. *1996 Green Book* Washington, DC: US Government Printing Office.
- Kong, Rebecca. 1996. "Criminal Harassment." *Juristat* 16(12).
- Kornhauser, Ruth. 1978. *The Social Sources of Delinquency: An Appraisal of Analytic Models*. Chicago: University of Chicago Press.
- Lerman, L. 1983. *The Prosecution of Spouse Abuse*. Washington, DC: Department of Justice.
- Merton, Robert K. 1968. *Social Theory and Social Structure*. New York: Free Press.

- Moore, David S. and George P. McCabe. 1999. *Introduction to the Practice of Statistics*. New York: W. H. Freeman.
- National Coalition Against Domestic Violence. 1997. *1997 National Directory of Domestic Violence Programs: A guide to community shelter, safe home, and service program*. Denver, CO: Author.
- Pate, Anthony M. and Edwin E. Hamilton. 1992. "Formal and Informal Deterrents to Domestic Violence: The Dade County Spouse Assault Experiment" *American Sociological Review* 57:691-697.
- Patterson, Orlando. 1998. *Rituals of Blood: Consequences of Slavery in Two American Centuries*. Washington, DC: Civitas.
- Peterson, Erika S. 1999. "Murder as Self-Help: Women and Intimate Partner Homicide." *Homicide Studies*, 3, 30-46.
- Rosenfeld, Richard. 1997. "Changing Relationships Between Men and Women: A Note on the Decline in Intimate Partner Homicide." *Homicide Studies* 1:72-83.
- _____. 2000. "Patterns in Adult Homicide: 1980-1995." Pp. 130-163 in *The Crime Drop in America*, edited by A. Blumstein and J. Wallman. New York: Cambridge University Press.
- Russell, Diane E. (1975). *The politics of rape*. New York: Stein and Day.
- Samuals, Myra L. (1993). "Simpson's Paradox and Related Phenomena." *Journal of the American Statistical Association* 88:81-88.
- Schechter, Susan K. 1982. *Women and Male Violence: The visions and struggles of the battered women's movement*. Boston: South End Press.

- Sherman, Lawrence W. 1992. *Policing Domestic Violence Experiments and Dilemmas*.
New York, NY: The Free Press.
- Sherman, Lawrence W. and Richard Berk. 1984. "The Specific Deterrent Effects of
Arrest for Domestic Assault." *American Sociological Review* 49:261-272.
- Sherman, Lawrence W., Janell D. Schmidt, Dennis P. Rogan, Douglas A. Smith, Patrick
R. Gartin, Dean J. Collins, Anthony R. Bacich. 1992. "The Variable Effect of Arrest
on Criminal Careers: The Milwaukee Domestic Violence Experiment." *Journal of
Criminal Law and Criminology* 83:137-169.
- Tjaden, Patricia and Nancy Thoennes. 2000. *Extent, Nature, and Consequences of
Intimate Partner Violence Findings from the National Violence Against Women
Survey*. A final report to the National Institute of Justice and the Centers for Disease
Control.
- US Bureau of the Census. 1998. "Marital Status and Living Arrangements: March
1996." *Current Population Reports (P20-496)*. Washington, DC: USGPO.
- _____. 1997. "Educational Attainment in the United States: March 1996 (Update)." *Current Population Reports (P20-493)*. Washington, DC: USGPO.
- _____. 1993. *1990 Census of the Population. Social and Economic Characteristics*.
Washington, DC: USGPO. (state volumes)
- _____. 1981. *1980 Census of the Population. Volume 1, Characteristics of the
Population*. Washington, DC: USGPO. (state volumes)
- _____. 1973. *Census of the Population, 1970. Volume 1, Characteristics of the
Population*. Washington, DC: USGPO. (state volumes)

Appendix

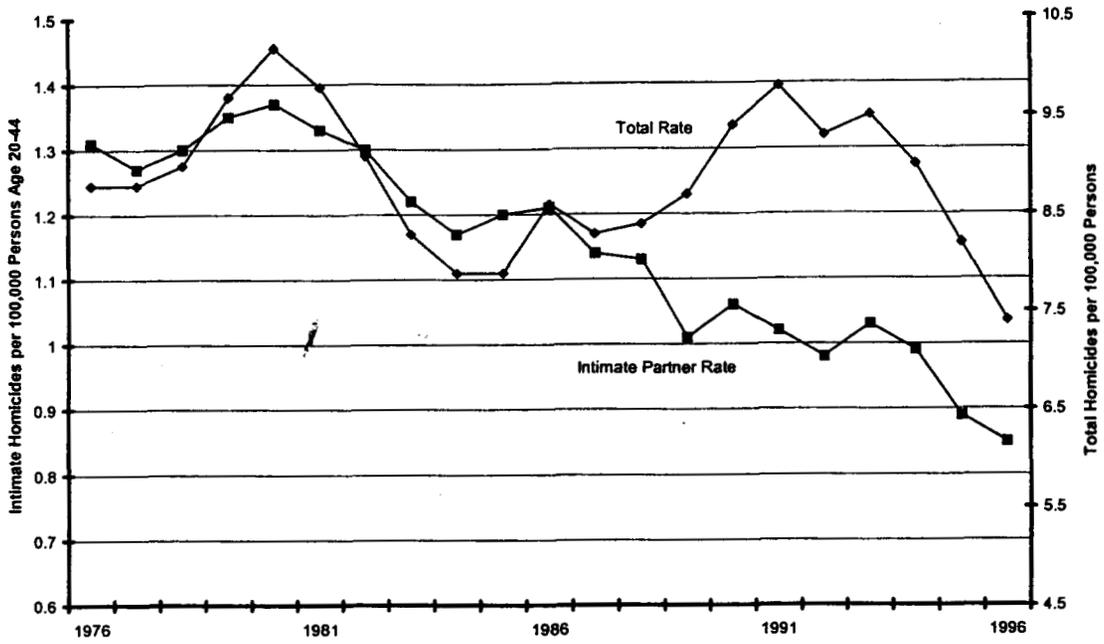
Model Variables

Variable	Measure	Possible Values
Intimate Partner Homicide	Three year count of men and women killed by their partners by race and relationship type	0, 1, 2, ... ∞
<i>Controls</i>		
Homicide Adjustment	The number of years within the three year homicide range that the were adjusted up due to low reporting months	0, 1, 2, 3
Adult Homicide	The three-year average rate of non-intimate adult homicides	[0, ∞)
Percent Black ^a	The three-year average percent of the population that is Black	[0, 1]
<i>Domestic Violence Resources</i>		
Warrantless Arrest	An indicator variable that "turns on" when the state has a warrantless arrest policy when protection orders are violated	0, 1
Mandatory Arrest	An indicator variable that "turns on" when the state has a mandatory arrest policy when protection orders are violated	0, 1
Violation Index	An index that sums the total number of the following consequences for violating a protection order: contempt (either civil or criminal), misdemeanor, or felony	0, 1, 2, 3
Exposure Reduction Index	An index that increases by one increment for each of the following statute provisions: no-contact order and custody relief	0, 1, 2
Legal Advocacy	Index that sums the number of agencies with a separate budget for legal advocacy with the number of agencies that have lawyers on staff, adjusted for the number of women over the age of 15 (14 for 1970) in the city.	[0, ∞)
Hotlines	The total number of hotlines adjusted for the number of women over the age of 15 (14 for 1970) in the city.	[0, ∞)

Police Arrest Index	An index totaling the number of the following arrest policies: pro-arrest for violation of a protection order, mandatory arrest for violation of a protection order, and mandatory arrest for domestic assault	0, 1, 2, 3
Police Commitment Index	An index that increases by one increment if the department has a domestic violence unit, and by one increment if it offers domestic violence in-service training to offices	0, 1, 2
DA Willingness Index	An index that increases by one increment if the prosecutor's office takes case of protection order violation, and by another increment if the office has a written policy standardizing the prosecution of such cases	0, 1, 2
DA Specialization Index	An index that increases by one increment if the prosecutor's office has a domestic violence unit, and by one increment if the office has trained legal advocates on staff	0, 1, 2
No Drop Policy	An indicator variable that "turns on" when the prosecutor's office has a no drop policy	0, 1
<i><u>Domesticity</u></i>		
Marriage Rate	The three-year average percent of men or women over the age of 15 (14 for 1970) who are married	[0, 1]
Divorce Rate	The three-year average percent of men or women over the age of 15 (14 for 1970) who are divorced or separated	[0, 1]
<i><u>Economic Measures</u></i>		
Relative Education	The three-year average ratio of the percent of females to males, age 25 and older, who have at least four years of post-high school education	[0, ∞)
AFDC Benefits	The three-year average of the yearly dollar amount given to a family of four, adjusted to 1983 dollars	[0, ∞)

^aThis variable is only in the racially aggregate models.

Figure 1. Intimate Partner and Total US Homicide Rates, 1976-1996



Source: Supplementary Homicide and Uniform Crime Reports, 1976-1996
 Note: Intimate partner homicide includes only heterosexual couples.

Figure 2. Hotlines and Legal Advocacy Services in 49 Cities, 1976-1996

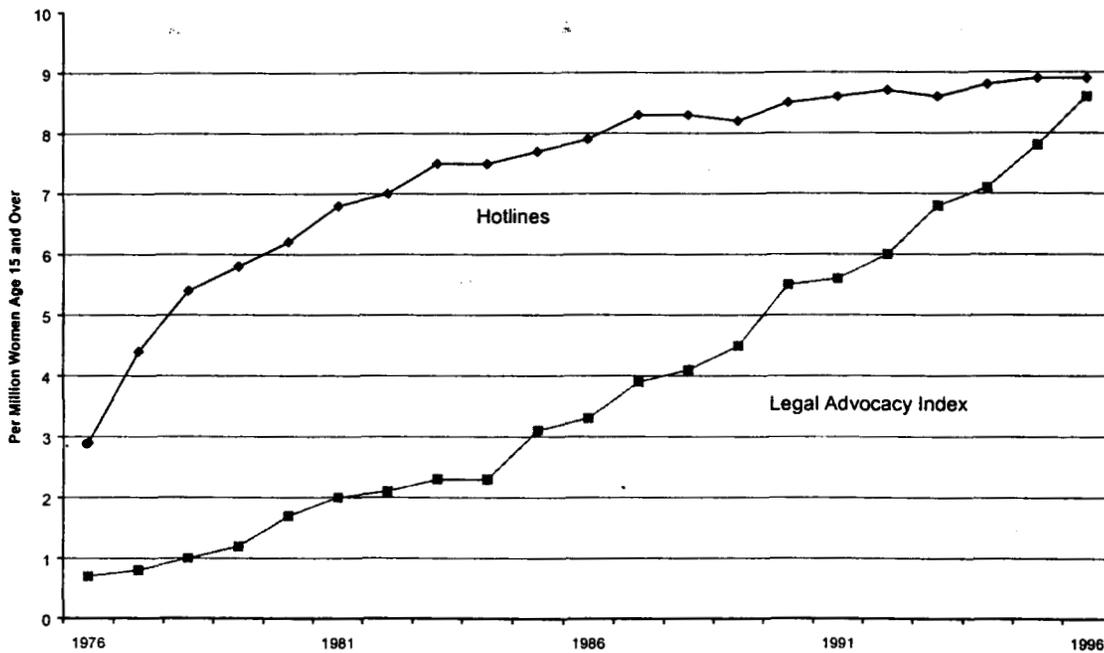


Table 1. Years of Each Shift During Each Wave

Wave	Shift One	Shift Two	Shift Three
One	1977 1978 1979	1978 1979 1980	1979 1980 1981
Two	1980 1981 1982	1981 1982 1983	1982 1983 1984
Three	1983 1984 1985	1984 1985 1986	1985 1986 1987
Four	1986 1987 1988	1987 1988 1989	1988 1989 1990
Five	1989 1990 1991	1990 1991 1992	1991 1992 1993
Six	1992 1993 1994	1993 1994 1995	1994 1995 1996

Figure 3. Test for Time-Dependency

Run	Wave					
	1	2	3	4	5	6
11	□					
12	□	□				
13	□	□	□			
14	□	□	□	□		
15	□	□	□	□	□	
16	□	□	□	□	□	□
26		□	□	□	□	□
36			□	□	□	□
46				□	□	□
56					□	□
66						□

Figure 4a. The Effect of Legal Advocacy on Female Victimization

Married Victims

Unmarried Victims

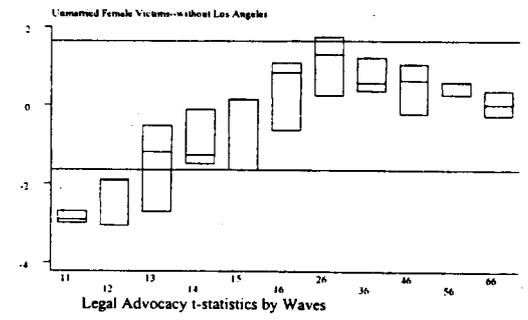
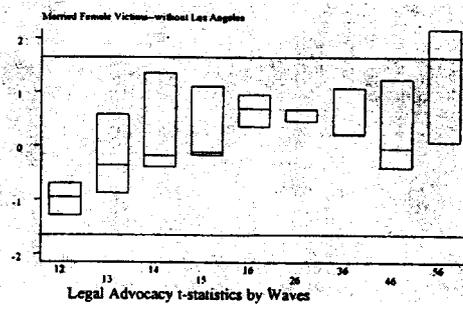


Figure 4b. Legal Advocacy Effects on Married Female Victims by Race

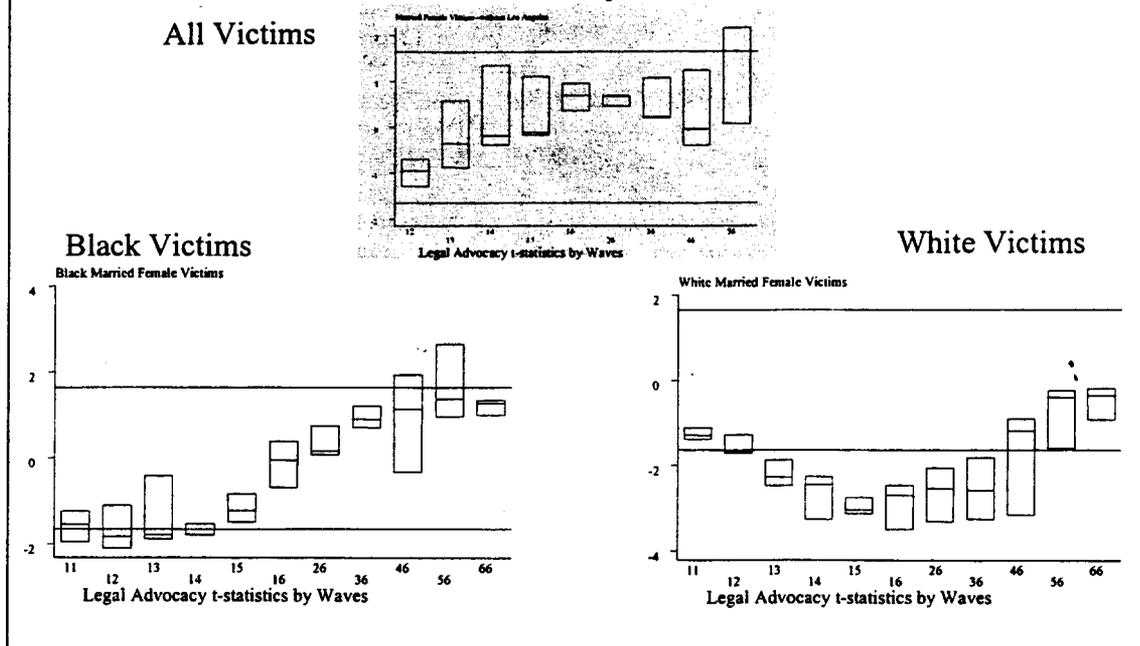


Figure 4c. Legal Advocacy Effects on Unmarried Female Victims by Race

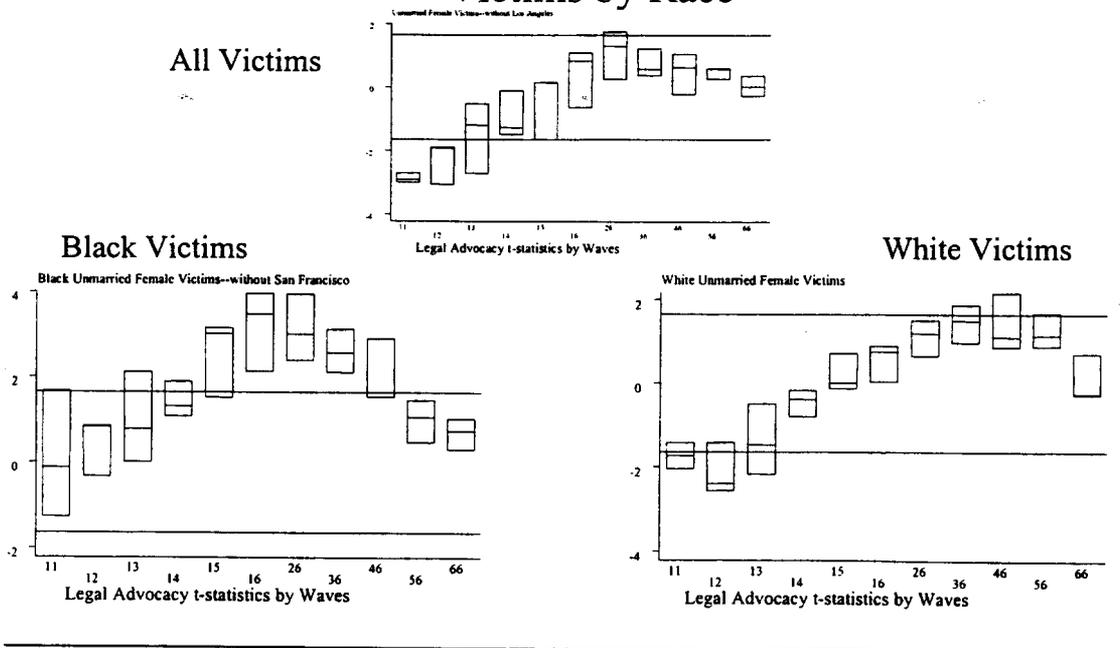


Table 2a. Summary of Robust Findings, All Races

Variable	Support for Exposure Reduction	Exp(β)	Victim Type	Waves
<u>Domesticity</u>				
Marriage Rate	yes	1.023	Married Male	1-6
	yes	1.015	Married Female	1-4
Divorce Rate	no	1.060	Married Female	1-6
	yes	1.242	Unmarried Male	1-6
	yes	1.284	Unmarried Female	1-6
<u>Economic Measures</u>				
Relative Education	yes	0.644	Married Male*	1-6
	yes	0.432	Unmarried Male	1-6
	yes	0.486	Unmarried Female	1-6
AFDC (\$10)	yes	0.988	Married Male	1-6
<u>Services</u>				
Legal Advocacy	yes	0.667	Married Male	1-2
	yes	0.697	Unmarried Female*	1-2
Hotline				
<u>Police Policy</u>				
Arrest Index	yes	0.787	Unmarried Male*	1-6
	yes	0.861	Unmarried Female	1-6
Commitment Index	yes	0.729	Married Male*	4-6
	no	1.564	Unmarried Male*	1-3
<u>Prosecution Policy</u>				
Willingness Index				
Specialization Index	yes	0.881	Married Female*	2-6
<u>State Statutes</u>				
Warrantless Arrest	yes	0.740	Unmarried Male	1-6
Mandatory Arrest	yes	0.779	Married Female	1-6
	no	1.552	Unmarried Male*	2-6
State Violation Index	no	1.438	Unmarried Female*	1-6
	no	1.315	Unmarried Female*	4-6
Exposure Reducing Index	no	1.508	Unmarried Male*	4-6
	no	1.133	Unmarried Female*	2-6

*At least one city is omitted.

Table 2b: Summary of Robust Findings, Black Victims

Variable	Support for Exposure Reduction	Exp(β)	Victim Type	Waves
<u>Domesticity</u>				
Marriage Rate	yes	1.065	Married Male	1-6
	yes	0.943	Unmarried Male	1-6
	yes	0.955	Unmarried Female	1-6
Divorce Rate	no	1.125	Married Male	1-6
<u>Economic Measures</u>				
Relative Education	no	1.655	Married Male	3-6
	no	2.187	Unmarried Male*	1-6
	no	2.122	Unmarried Female	3-6
AFDC (\$10)	yes	0.991	Married Male	1-6
	yes	0.983	Unmarried Male	1-6
	yes	0.991	Unmarried Female	1-6
<u>Services</u>				
Legal Advocacy	no	1.413	Unmarried Female*	1-6
Hotline	no	1.294	Unmarried Female	5-6
<u>Police Policy</u>				
Arrest Index	yes	0.883	Unmarried Male*	1-6
	yes	0.834	Unmarried Female	1-6
Commitment Index	no	1.359	Unmarried Female*	1-6
<u>Prosecution Policy</u>				
Willingness Index	no	1.448	Unmarried Male*	1-6
	no	1.163	Unmarried Female*	3-6
Specialization Index				
<u>State Statutes</u>				
Warrantless Arrest	yes	0.682	Unmarried Male*	1-6
Mandatory Arrest				
State Violation Index	yes	0.785	Married Female	3-6
	no	1.660	Unmarried Female	5-6
Exposure Reducing Index	yes	0.887	Married Female*	1-6
	no	1.388	Unmarried Male	5-6
	no	1.297	Unmarried Female*	5-6

*At least one city is omitted.

Table 2c: Summary of Robust Findings, White Victims

Variable	Support for Exposure Reduction	Exp(β)	Victim Type	Waves
<u>Domesticity</u>				
Marriage Rate	no	0.964	Married Female	1-6
Divorce Rate	no	1.217	Married Male	1-6
	yes	1.224	Unmarried Male*	1-6
	yes	1.100	Unmarried Female	1-6
<u>Economic Measures</u>				
Relative Education				
AFDC (\$10)	yes	0.984	Unmarried Male	1-6
<u>Services</u>				
Legal Advocacy	yes	0.821	Married Females	1-6
<u>Police Policy</u>				
Arrest Index	no	1.195	Married Male	1-6
Commitment Index				
<u>Prosecution Policy</u>				
Willingness Index	no	1.314	Married Male	1-3
	no	1.945	Married Female*	1-6
	no	1.387	Unmarried Female	1-6
Specialization Index	no	1.404	Unmarried Male	1-6
<u>State Statutes</u>				
Warrantless Arrest	yes	0.830	Married Female	1-6
	yes	0.594	Unmarried Female*	1-6
Mandatory Arrest	yes	0.353	Married Male	5-6
	no	5.530	Married Female	1-4
	no	1.518	Unmarried Female*	1-6
State Violation Index				
Exposure Reducing Index				

*At least one city is omitted.

U.S. DEPARTMENT OF JUSTICE
 FEDERAL BUREAU OF INVESTIGATION
 COMMUNITY RELATIONS SERVICE (NCRS)