

EXPLAINING THE RECENT DECLINE IN DOMESTIC VIOLENCE

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Abstract

According to the Department of Justice, the incidence of domestic violence decreased during the 1990s. Understanding the causes of this decline could offer important insight into designing effective policies to continue this trend. In this paper, we use the Area Identified National Crime Victimization Surveys (NCVS), the same data used to generate the DOJ's national estimates, merged with county-level variables, to examine the determinants of women reporting abuse. Our results indicate that there are three important factors that likely contribute to the decline: (1) the increased provision of legal services for victims of intimate partner abuse, (2) improvements in women's economic status, and (3) demographic trends, most notably the aging of the population.

I. INTRODUCTION

Domestic violence is a serious problem in our society with significant social costs. Despite the tremendous toll on both the victims and society, domestic violence was not recognized as a public health issue in the US until relatively recently. With the women's movement of the 1970s, domestic violence was increasingly recognized as a public, not a private, issue. The result has been growing public and private initiatives to eradicate domestic violence.

After more than 20 years of effort, the rate of domestic violence appears to be declining.

According to a recent report published by the Department of Justice [2000], violence against women by intimate partners fell by 21 percent between 1993 and 1998 from 1.1 million violent incidents to 876,340 incidents¹.

What factors explain this recent decline? Economic models of domestic violence predict that violence against women will decline as women's alternatives outside their relationships improve. (See Tauchen et al. [1991] and Farmer and Tiefenthaler [1997] which is further discussed in Section 2.) One way to improve battered women's alternatives is by providing shelters, hotlines, and other services that help make leaving their relationships realistic for these women. Federal, state, and local governments as well as numerous nonprofit groups have contributed to increasing the availability of services for battered women throughout the country over the past 25 years.

While programs that provide services to battered women such as shelters may provide women with short-term alternatives to staying with their abusers, improving women's economic status (for example, by increasing educational attainment) will result in more battered women being able to achieve self-sufficiency in the long-run. If battered women can support themselves, they are both more likely to leave and have more power within their relationships if they stay. As a result, economic equality for women – both at the individual- and community-level - is also predicted to lower the incidence of domestic violence.

Do better alternatives for women explain the decline in domestic violence in the 1990s? Have both improved economic status and more service provision provided women with better alternatives to abusive relationships and, therefore, lowered the incidence of intimate partner abuse? In this paper, we use the Area-Identified National Crime Victimization Survey (NCVS) (see Section 3 for more discussion of the data set), made available to us through a grant from the National Consortium for Violence Research in cooperation with the US Census Bureau, to examine the determinants of the incidence of intimate partner abuse. The NCVS are the same

data used by the Department of Justice to construct their annual estimates of victimization. Because the Area-Identified NCVS include detailed geographical identifiers, we are able to investigate the effects of county-level variables, including the existence of programs for battered women, welfare payments, and women's overall economic status on the incidence of abuse at the individual-level. By examining the determinants of intimate partner abuse at the individual-level, we can provide some insight into which factors explain the decline in the incidence of domestic violence nationally.

Using a probit analysis, we examine the determinants of an individual woman reporting abuse (see Section 4). The findings generate three important factors that are likely to have contributed to the decline in violence against women in the 90s. First, while shelters, hotlines, and counseling programs targeted at battered women are found to have no significant impact on the likelihood of domestic abuse, the availability of legal services in the county of residence has a significant, negative effect on the likelihood that an individual woman is battered. Given that the provision of legal services for victims of domestic violence has increased dramatically in the 90s, we conclude that legal services provision is one likely significant factor in explaining the decline. Both the improvement in women's economic status and demographic changes in the population may have also contributed to explaining the decreased incidence of intimate partner abuse. Our analysis indicates that increased education, for both battered women themselves and for women in general, significantly lowers the rate of abuse. Given that women's educational attainment continued to increase in the 1990s, this variable appears to contribute to the decline. Some of the decline in the rate of domestic violence also may be the result of demographic trends. Our population is aging and older women are significantly less likely to be victims of this type of abuse.

II. BACKGROUND

In a recent press release (May 17, 2000), the Justice Department's Bureau of Justice Statistics (BJS) reports that violence against women by intimate partners fell by 21 percent from 1993 through 1998. This statistic was calculated from the National Crime Victimization Surveys (NCVS); an annual survey on the incidence of all types of crimes including violence by intimates (current or former spouses, girlfriends, or boyfriends). National estimates on the rate of domestic violence are only available from 1993 because the NCVS (formerly called the National Crime Survey (NCS)) was significantly redesigned in 1992. Previous estimates of intimate partner abuse were found to suffer from a serious problem of underreporting, but the redesigned survey includes several questions concerning specifically intimate partner abuse. However, trend data are available on intimate partner homicide since the 1970s and these data support a long-term decline in domestic violence. The BJS reports that between 1976 and 1998, the number of male victims of intimate partner homicide fell an average 4% per year and the number of female victims fell an average 1% per year.

In addition to documenting the decline in the rate of domestic abuse, the BJS report by Rennison and Welchans [2000] outlines the characteristics of the victims. Data from the NCVS indicate that being young, black, poor, and divorced or separated all increase to the likelihood of a woman being a victim of intimate partner abuse. Specifically, women ages 20-24 are the most likely to be victimized while black women are 35% more likely to be abused than white women and 2.5 times more likely than women of other races. Women in the lowest income households have 7 times the abuse rates of those in the highest income households. Finally, women with children under 12 experience twice the rate of abuse than those without young children.

What factors explain the apparent decline in intimate partner abuse? Economic theory predicts that the incidence of abuse declines as women gain economic independence and therefore gain power in their relationships. Farmer and Tiefenthaler [1997] show that as

women's alternatives to their relationships improve, they should experience less violence because as women gain credible threats to exit their relationships, they can assert more power within the relationships. Men are forced to lessen the violence or risk losing their partners. Consequently, women are more likely to leave, or they suffer less violence if they choose to stay. Given this theory, we expect that as women's outside alternatives improve, intimate partner abuse should decline. This could occur due to improvements in individual women's economic status. Women who have greater earnings or earning potential are more likely to leave abusive relationships because they can support themselves. If men respond to women's increased power by lowering the violence, women may decide to stay but, clearly, the incidence of violence has declined and the women are better off. In addition, overall gender equality in the community might provide battered women with better alternatives and, therefore, more credible threats of leaving. For example, a woman's threat to leave her abuser is much more credible if she lives in an area where a large percentage of women are employed and women's wages are high. Finally, outside options could also be improved via services provided to help battered women such as shelters, welfare benefits, and civil legal services to assist women with protection orders, child support, and custody.

Farmer and Tiefenthaler [1997] find support for the theory as women who with the highest personal incomes (this includes both wages and non-wage income such as child support and public assistance) experience the least amount of abuse. The BJS finding that poor, young, minority women with young children are most likely to be victims of intimate partner abuse is also consistent with the theory given that these women have the fewest alternatives to their relationships. Other studies support the notion that women's alternatives affect the level of violence that they experiences. Gelles [1976] and Pagelow [1981] both find evidence that women with access to fewer resources are less likely to leave their abusers. Kalmuss and Straus [1990] indicate that women who are highly dependent on marriage suffer greater abuse while several studies (see, for example, Coleman and Straus [1986] and Allen and Straus [1980]) find that

women in male-dominated marriages experience more violence. Finally, overall gender inequality has been linked to higher rates of abuse across states and countries.²

Although the empirical literature supports the importance of women's economic alternatives as a determinant of domestic violence, there is little empirical work that examines the effect of service provision on the rate of female abuse. However, one study does examine the effect of service provision on the rate at which women kill their husbands. Dugan et al. [1998] examines the effects of domesticity, women's economic power, and resources for battered women on intimate partner homicides in 29 US cities over four biannual periods. The results indicate that both women's economic power and services provided for battered women lower the rate at which women kill their husbands. The authors contend that women with better alternatives are more likely to use them rather than resort to killing their abusers to protect themselves.

III. DATA

The US Census Bureau on behalf of the Bureau of Justice Statistics undertakes the National Crime Victimization Survey (NCVS) annually. The primary goal of the NCVS is to collect detailed crime data for calculation of national estimates of crime rates by both the type of crime and for various sub-populations. In addition to detailed information on each incident of crime reported, the data include basic demographic information, such as gender, race, education, age, and income. The NCVS sample is made up of about 50,000 housing units selected with a stratified, multi-stage clustering design. The sample design results in individuals living in large, metropolitan areas being over-represented in the sample. The NCVS, previously called the National Crime Survey (NCS), was significantly redesigned in 1992. Consequently, NCS data prior to 1992 are not compatible with the 1992-1998 surveys. One of the main purposes of the 1992 redesign was to generate more accurate data on the incidence of domestic violence by adding several probing questions about acts of violence committed by known and intimate

offenders. The newer design increased the rates at which victims reported domestic violence and, consequently, provides more accurate estimates of the rate of intimate partner violence.

While the public use NCVS (ICPSR 6406) do not include geographical identifiers, through a grant from the National Consortium for Violence Research (NCOVR) in cooperation with the Census Bureau and the Bureau of Justice Statistics, we were granted access to the Area-Identified NCVS data. The Area-Identified NCVS has standard geographical area identifiers for all housing units sampled including, most importantly for our purposes, county identifiers. The county identifiers allowed us to merge community-level variables with each individual's data.

The final sample used for our analysis is 525,615 observations on women ages 18 and over from the 1992-1998 NCVS. It is important to note that the NCVS is a panel, interviewing the same households over several time periods, and, as a result, the data set does not represent 525,615 different women. We identified the women who were victims of intimate partner abuse using the Department of Justice's definition - a victim of violent crime (including rape, sexual assault, robbery, aggravated assault, and simple assault) committed by a current or former spouse, or boyfriend. Women who had experienced such an incident in the past six months (the NCVS takes incident reports on all crimes within the last six months) were categorized as "battered women." Our final sample includes 1863 observations on battered women³. Table 1 compares the characteristics of these women with the characteristics of the other women in the sample.

TABLE 1 (Attached at the end of the report)

The descriptive statistics are consistent with those reported by the DOJ [2000]. Women who are victims of domestic violence are, on average, younger, have more children, and are more likely to be employed than other women. Black women, women with little formal education, and women who live in households with relatively low incomes are over-represented in the sample of battered women. Most strikingly, divorced and separated women are much more likely to report being abused than are married women. Fifty-one percent of the sample of battered women are divorced or separated compared with only 13% of the other women.

However, this difference could simply reflect that divorced or separated women are more likely to be willing to report abuse than are married women.

In order to examine the effects of community variables on the incidence of domestic violence, we used the state and county FIPS codes in the Area-Identified NCVS to merge county-level variables to the individual-level data. We chose the county as our unit of analysis because all of the households in the NCVS have county identifiers (not the case for some of the smaller area identifiers). The county variables that we are interested in are proxies for the economic alternatives and status of women in the community. Services for battered women may present battered women with improved options outside the relationship. Consequently, we used the 1994 *National Directory of Domestic Violence Programs* to create a county spreadsheet of the existence and number of programs providing services to help battered women in each county⁴. We supplemented the information in the *Directory* by calling those programs that were listed in the directory but did not provide information on the types of services provided. We used the Directory and supplemental information to create variables for the types of services offered by the programs including hotlines, shelters (including the number of beds), safe homes, counseling, emergency transport, rape counseling, programs for victims' children, programs for batterers, and legal services. Research indicates that battered women often rely on welfare payments as a means of escaping abusive relationships⁵. Therefore, we also merge the state-level average welfare payment (taken from selected *Statistical Abstracts*) to the individual-level data.

While a woman's own education and employment status are likely to have the strongest impact on her economic status outside the relationship, the economic status of women in the community in which she lives may also improve her options. Women who live in areas where women are well represented in the labor force and relatively educated are likely to have more credible threats of leaving abusive relationships. Therefore, the percent of women in the labor force and the percent of women with college degrees divided by the percent of men with college degrees are also merged with the individual-level data. The population of the county is also

included as women who live in more urban areas are likely to have more options. All of these county variables are taken from selected editions of the *County and City Data Book*. Table 2 presents some selected statistics on the county variables.

TABLE 2 (Attached at the end of the report)

While a minority of counties has services for battered women, the majority of women live in counties where such services are available. For example, only 35% of US counties have a shelter for battered women yet 82% of American women live in counties with at least one shelter. Some services are much more likely to be available than others are. Counseling, hotlines, and shelters are the most widely available services while safe homes and rape counseling are available to fewer than half of all women.

One could argue that the costs of committing abuse are also an important determinant of the incidence of domestic violence and, therefore, any changes in these costs could explain the decline in domestic violence in the 1990s. If this is the case, the costs, or legal punishments, should also be included in the analysis. We do not include these costs here for two reasons. First, most changes in the legal environment occurred in the 1980s, and there has been no significant shift during the time period of our data. In fact, between 1984 and 1989, arrest rates rose 70% for minor assaults, indicating that police were increasing their interventions significantly before the 1990s. 1984 represented a significant year for law enforcement reform after the Minneapolis Domestic Violence Experiment indicated that arrest served as a deterrent for future abuse. Sweeping reform followed this research and the recommendations of the 1984 Attorney General's Task Force on Domestic Violence (see Schmidt and Sherman [1993]). No such major initiatives occurred during the period under investigation in this paper. Secondly, since the 1984 research, a large number of studies have questioned the effectiveness of arrest as a deterrent. (See Buzawa and Buzawa [1996] for a survey.) In particular, Schmidt and Sherman [1993] criticize Sherman's original work on the Minneapolis experiment, representing a major reversal of his findings concerning the efficacy of arrest as a deterrent. Other recent studies

including Gelles [1996] and Hirschel and Hutchison [1996] cast doubt on the role of punishment in deterring domestic abuse.

IV. RESULTS

In order to examine the causes of the decline in domestic violence in the 1990s, we first examine the determinants of a woman reporting to be a victim of abuse. Variables that significantly lower (increase) the incidence of domestic violence that are also trending upward (downward) can be identified as contributing factors to the decline in the rate of domestic violence nationally. In Section IV.A, we identify the variables that significantly impact the likelihood of a woman reporting domestic abuse. In Section IV.B, we examine whether or not the significant variables are trending in the right direction in terms of contributing to the decline in the incidence of domestic violence.

A. The Determinants of Domestic Violence

Table 3 summarizes the results from a probit estimation of the determinants of a woman reporting to be a victim of intimate partner abuse⁶. Whether or not each variable is a significant determinant of the incidence of domestic violence (at 95% confidence) is reported in the Table. For the significant variables, whether or not the variable has a positive or negative effect on abuse is also reported. The full results from the probit estimation are presented in the Appendix⁷.

TABLE 3 (Attached at the end of the Report)

As the results indicate, most of the service variables are not significant factors in explaining the incidence of domestic abuse in the NCVS data. With the exception of legal services, none of the services specifically designed to help victims of domestic violence impact the likelihood of abuse. Women living in counties with shelters, hotlines, safe homes, emergency transportation, programs for batterers, children's programs, and counseling are not significantly less likely to be victims of intimate partner abuse than women who live in counties without these

services⁸. However, women who live in counties with legal assistance programs to help battered women are significantly less likely to report abuse. Because legal services help women with practical matters such as protective orders, custody, and child support they appear to actually present women with real, long-term alternatives to their relationships. Our results reject the Department of Justice [2000] claim that an increase in services provided for battered women is the major explanation for the recent decline in the reported incidence of domestic violence.

Women's economic status is also found to be a significant predictor of the likelihood of abuse. The gender education ratio (% of women with college degrees/% of men with college degrees) has a negative and significant effect on the likelihood that a woman reports that she is a victim of intimate partner abuse. It is interesting to note that when we entered both the percentage of women and men holding college degrees as regressors instead of the education ratio, women's educational attainment had a significant and negative effect on domestic violence while the men's variable significantly increased the incidence of abuse. Economic status at the individual-level also matters. More educated women and women who live in high-income households are less likely to be victims of abuse.

The results on some of the other individual level variables offer additional policy implications and insight into the dynamics of spousal abuse. Several of the results support the descriptive statistics on domestic violence presented by the BJS. Younger women, women with young children, and women who live in low-income household are more likely to be victims of intimate partner abuse. However, while the incidence of domestic violence is higher among black women, once you control for marital status, black women, like other minority women, are less likely to be abused than are non-Hispanic white women. The negative effect of being married on abuse is likely both the result of selection (if a woman is abused, the relationship is less likely to be intact) and reporting (women are more likely to report abuse if they are not living with the abuser).

The most surprising result we find is that the generosity of welfare in the state of residence actually had a significant and positive effect on the likelihood of abuse. There are several possible explanations for this counterintuitive result. One explanation is that women who leave abusive relationships may migrate to states that are more generous with welfare. As summarized in a US General Accounting Office [1998] report, studies indicate that a significant proportion of women on welfare, between 55 and 65 percent, report having been abused by an intimate partner in the past. In addition, Blank [1988], Enchautegui [1997], and Borjas [1999] all find that the poor do tend to migrate to states that offer more generous welfare payments. Another explanation is that states with greater incidences of domestic violence have responded with increasing welfare payments. However, it should be noted that dropping the state welfare payment from the regression does not significantly alter the coefficients on the remaining variables. Therefore, endogeneity does not appear to be a significant problem. Finally, state welfare generosity is the only state-level variable included in the regression. Therefore, the positive relationship between welfare payments and the likelihood of abuse may result because some important state-level determinants of the incidence of domestic violence are omitted from the regression. Whatever the explanation for this result, it is clear that more work needs to be done on the relationship between welfare and domestic abuse. The high rate of victimization among women on welfare indicates that welfare is used as an escape route for many battered women. Clearly, our approach of simply including the variance in generosity across states as an indicator of abuse in a wider analysis of the effects of community-level variables is missing part of the story.

The results also show regional variation in the incidence of domestic violence. Relative to women living in New England (as well as the Middle Atlantic, South Atlantic, and West North Central), those who live in the East North Central, East South Central, West South Central, Mountain, and Pacific regions of the country are more likely to report abuse. These results likely reflect differences in attitudes and values across regions as well as any systematic

regional variation in programs that offer economic alternatives to battered women not included as regressors.

The time trend variable is not a significant predictor of the likelihood of abuse once the control variables discussed above are added as regressors. This result suggests that it is changes in the individual and community-level variables over time that is generating the decline in the incidence of domestic violence in the US and that the important variables for explaining this decline are included in our analysis. The following section examines the national trends in these significant variables.

B. Trends in the Significant Variables

The best way to examine the causes of the reported decline in domestic violence over time in the US would be to use time series data on the incidence of domestic violence in the US. However, as discussed in Section III, the NCVS was redesigned in 1992 in order to improve reporting of domestic violence. Consequently, data prior to this time is not reliable and, therefore, a significant time series of estimates of the rate of domestic violence in the US does not exist. We attempt to estimate the determinants of the reported decline by using a panel data set at the individual-level to first isolate the important determinants of the incidence of domestic violence and then to examine whether or not these significant variables are trending in the right direction to possibly contribute to the decline in the rate over time. While we cannot say that the variables that are both significant determinants of the incidence of domestic violence at the individual-level and trending in the right direction nationally are definitively the causes of the trend downward in the rate of domestic violence, they are likely suspects.

While most services provided to help battered women do not impact the likelihood of abuse, the provision of legal services significantly lowers the incidence of domestic violence. However, for legal services to contribute to the decline in domestic violence in 1990s, the provision of legal services for battered women must have increased over this time period.

According to the 1986 *National Directory of Domestic Violence Programs*, in 1986 there were 336 legal services programs serving victims of domestic violence. By 1994, the number increased to 1190 programs nationwide, an increase of 254%! Between 1994 and 2000, the number of legal programs for battered women increased to 1441 programs. Clearly, the expansion of legal assistance to battered women has accounted for part of the decline in the incidence of domestic violence nationwide. The expansion of legal services has mostly resulted from existing programs for victims of intimate partner abuse adding legal services to their lists of services provided as opposed to new programs opening their doors. Part of the credit for the expansion of legal services goes to the federal government. With the passage of the Violence Against Women Act (VAWA) in 1994, the federal government made a commitment to meet the needs of women who are victims of violence. One grant program set up to respond to the legal needs of women who are victims of intimate partner violence is the Domestic Violence Victims' Civil Legal Assistance Program. Since 1998, this program has provided more than \$60 million to more than 200 non-profit, non-governmental organizations to provide civil legal services to victims of domestic violence.

Another important determinant of the likelihood of a woman reporting abuse is education. Both the woman's own educational status (having a college degree) and the relative education of women in her community (the % of women in the county with college degrees relative to the % of men in the county with college degrees) significantly impact the likelihood of abuse. From 1993 to 1998, the percentage of women nationwide with college degrees increased from 17.9% to 20.7%, an increase of almost 16%. The increase was even more significant for black women increasing from 10.9% to 13.6%, representing more than a 35% increase in the proportion of college-educated black women. The increase in women's educational attainment over the time period is likely to play a substantial role in diminishing the incidence of domestic abuse.

Household income is also found to be a significant predictor of the likelihood that the woman is a victim of domestic violence. Household income is likely to be significant both because women are more likely to have earnings and, therefore, economic power, in households with higher incomes and because as men's incomes (and education status) increase, they are less likely to abuse their partners (see Farmer and Tiefenthaler [2000]). The suggestion that women's economic power is, at least, partially the explanation for the negative relationship between household income and domestic violence is supported by the fact that when household income is dropped from the list of independent variables, women's employment status has a significant and negative effect on the likelihood of abuse.

According to Census statistics, over the period from 1993 to 1998, both median household income and women's median income increased. Median household income in 1993 (1998 adjusted dollars) was \$35,241. By 1998 that figure has risen to \$38,885, an increase of 10.3%. The economic prosperity of the 90s has been cited as a likely cause of the decrease in the overall crime rate in the 90s and it appears to have been a cause of the decrease in domestic violence as well. Women's median income increased almost 18% from \$13,800 to \$16,258 (1998 adjusted dollars). Not only did women's real income rise, indicating an increase in outside options, but women's income as a percentage of men's income rose over this period as well. In 1993 women's median income was 49.7% of men's while in 1998 that figure had increased to 53.0%. An increase in women's earning power relative to men's implies that women have both more opportunities for self-sufficiency and fewer gains from marriage. Both of these factors will increase the likelihood that women leave abusive relationships. Finally, women's labor force participation rate rose 2 percentage points from 58.5% in 1993 to 60.5% in 1998.

One of the most important demographic trends of the 21st century will be the increasing age of the populations in developed countries. This demographic trend, which started in the late 20th century, appears to have an important impact on the incidence of domestic violence. Younger women experience significantly more violence with women between the ages

of 20 and 24 most likely to be victims. During the 1990s, the percentage of women in this age category fell from 35.8% in 1993 to 32.0% in 1998. This decline of 3.8 percentage points represents a 10.6% decline in the percentage of the U.S. population that belongs to the highest risk age group. As the population continues to age, the incidence of domestic violence will continue to decline.

Race is also a significant factor in the reported incidence of abuse and the changing racial composition of our population, another important demographic trend that will continue in the 21st century, appears to be another significant factor in explaining the decline in domestic violence. Although the BJS report suggests that black women are more likely to be abuse victims, once other factors such as income and marital status are controlled for, we find that black women are less likely to be abused than their non-Hispanic white counterparts. Similarly, we find that Hispanic women as well as women of all other races are less likely to be victims than non-Hispanic white women. The percentage of the female population that is white non-Hispanic fell 1.2 percentage points from 38.1% to 36.9% between 1993 and 1998. This decline represents a significant demographic shift over such a short period of time. Holding other factors constant, as our population continues to become more racially diverse, the reported incidence of domestic violence should continue to decline. However, if the increase in racial diversity is the result of increased immigration and, therefore, is accompanied by lower educational status among women (and men) and more poor households, we are not likely to see a decline in intimate partner abuse.

The number of children that a woman has is also a significant determinant of abuse. Women with children, especially young children, are more dependent on their relationships and have fewer alternatives for self-sufficiency outside their relationships and, consequently, are more likely to be abused. Although the fertility rate declined dramatically in previous decades, there was no significant change in this variable in the 90s and, therefore, it is not a significant factor in explaining the decline in domestic violence.

The regression results indicate that married women are less likely to report being abused. During the period from 1993 to 1998, the percentage of married women fell from 56.5% to 54.9%, representing a 1.6 percentage point drop. As a result, we expect that the increase in the percentages of divorced and separated women would increase the rate of reported intimate partner abuse. Clearly, any positive effect of the increase in divorce on domestic violence is outweighed by trends in other more important variables.

In addition to individual characteristics, we find that some community variables matter as well. Geographic location, possibly indicative of cultural norms and attitudes, is a significant predictor of the likelihood of abuse. Specifically, women living in the East North Central, East South Central, West South Central, Mountain, and Pacific regions report more abuse than women living in New England, the Middle and South Atlantic, and the West North Central regions of the country. The states with the greatest population increases over in the 1990s are in the Pacific, Mountain and South Atlantic regions. While women living in the Pacific and Mountain regions experience significantly more violence, those living in the South Atlantic do not. However, given the magnitude of the population increases in the Pacific and Mountain regions relative to the rest of the US (8 of 10 states with the greatest population growth are in these two regions), this variable does not generally support the trend to lower rates of abuse and may, in fact, be working in the opposite direction.

Finally, we find that as welfare payments rise so does abuse. Given that the 1996 welfare reform has decreased the overall generosity of most states' welfare programs, this result is consistent with a lower national rate of abuse. However, the positive relationship between abuse and welfare generosity is a curious result with no theoretical basis. It may be explained by women leaving abusive relationships migrate to states that offer more generous support. In any case, we should be very careful in citing decreased welfare generosity as a source of the national decline in domestic violence.

Our analysis indicates that more widespread provision of legal services for battered women, improved educational and economic status for women, and demographic trends explain the decline in domestic violence in the 1990s. With the exception of migration to the Mountain and Pacific regions of the country, a slight decline in marriage rates, and the fact that the average number of children has remained constant in the 90s, every significant variable in our regression is trending in a direction that predicts a lower rate of abuse.

The psuedo- R^2 from the estimation of the full model indicates that the right-hand-side variables explain only 14% of the variation in the dependent variable, the probability of an individual woman being a victim of domestic violence. Certainly many other important variables, such as the abuser's and the victim's family backgrounds, have been omitted (this information is not included in the NCVS). However, these variables are likely to be more important in explaining why some women are abused and others are not at a point in time than in explaining the decline in domestic violence over time. As previously discussed, the incidence of domestic violence declined by 21% between 1993 and 1998 from 1.1 million violent incidents to 876,340 incidents. Therefore, the probability of an individual woman being abused fell from 0.011% to 0.0084%, a decline in the likelihood of being abused of 0.0026%. Using the partial derivatives from the full model (presented in the Appendix) and the change in the average national statistics for the dependent variables in 1993 and 1998⁹, the key variables – the improvement in women's educational and economic status, the increase in the number of legal programs, and the aging of the population – explain approximately 22% of the decline (almost 50,000 incidents) in domestic violence over this time period. Clearly, future work that includes time series analysis would produce more accurate estimates. However, these results suggest that past trends that are likely to continue into the 21st century will have a significant impact on the incidence of domestic violence in the US in the future.

V. CONCLUSION

The goal of this paper is to ascertain the source of the decline in intimate partner abuse from 1993 to 1998 cited in a recent report by the Bureau of Justice Statistics. We find three significant factors in explaining the decline: (1) the increased provision of legal services for victims of intimate partner abuse, (2) improved educational and economic status for women, and (3) demographic trends including the aging of the population and an increase in racial diversity. Specifically, US women have become older, more educated, richer, and more likely to belong to a minority race. In addition, the provision of legal services has exploded in the past decade. All of these factors are significant determinants of abuse and are trending in the right direction to explain the reduced incidence of domestic violence in the US.

Our results have important policy implications given that factors that explain the decline in domestic violence in the 90s are likely to be key variables in continuing to lower abuse in decades to come. First, the availability of legal services has a significant negative effect on the incidence of abuse. The VAWA has been an important impetus for funding in the area of civil legal assistance. The continued expansion of the availability of civil legal services will likely continue to lower the incidence of intimate partner abuse in the future. While other services – hotlines, shelters, job training, outreach, and counseling – are not significantly related to women’s reports of domestic violence in the NCVS, given their use, these services are clearly valuable to battered women. However, expansion of these services should focus on providing what clients need to become self-sufficient. While short-term housing and counseling provide women with important temporary safety and support (and, therefore, may significantly reduce the incidence of serious injuries resulting from domestic violence), they are more likely to lower the overall incidence of domestic violence if they provide women with long-term, realistic alternatives to their relationships. Increased funding is necessary in order to provide these types of services.

Women's educational attainment, a key indicator of economic status, is an important determinant of the likelihood of abuse. We find that a woman's own formal schooling (a college degree) and the educational attainment of women in her community lower the likelihood that she reports abuse. Therefore, continuing the trend of improving women's education will likely be a key factor in eliminating domestic violence. Many women have gained access to higher education through community colleges and part-time college enrollment. Funding to subsidize community colleges and policies that make it easier for women to enroll in college (for example, subsidized day care for students) would likely generate many positive outcomes for society, including a lower incidence of domestic violence. Women's employment and earnings are also important in providing them with alternatives to their abusive relationships. Therefore, policies to eliminate the wage gap would also likely have the desired impact on the incidence of violence against women.

VII. REFERENCES

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VI. APPENDIX

The results from two separate regressions are included in Table A1. Model #2, which generated the results reported in Table 3, includes all variables that are likely to affect the likelihood of abuse. Model #1 omits those variables – employment status, household income, and marital status - that may be endogenous. We report the results both with and without the potentially endogenous variables instead of attempting IV techniques because the NCVS does not include variables to use as proper instruments. The probit coefficients are followed by the partial derivatives¹⁰ (evaluated at the sample means) in parenthesis.

Table A1 (Attached at the end of the report)

Table 1: Average Characteristics of Battered Women Compared with Other Women

	Women Reporting Abuse by Intimate Partner (N=1863)	Other Women (N=523,752)
Continuous Variables:		
Age	31.20	46.03
# Children under age 12	1.12	0.51
# Children ages 12-17	0.31	0.25
Dummy Variables:		
Employed	61%	55%
Race:		
White Non-Hispanic	74%	77%
Black	16%	11%
Hispanic	8%	8%
Other Minority Race	2%	4%
Marital Status:		
Married	16%	57%
Divorced or separated	51%	13%
Single	33%	30%
Education:		
Less than high school	22%	18%
High school degree (only)	67%	60%
College degree or more	10%	20%
Education not reported	1%	2%
Region:		
New England	4%	5%
Middle Atlantic	11%	15%
South Atlantic	14%	18%
East North Central	19%	17%
West North Central	6%	7%
East South Central	6%	6%
West South Central	13%	11%
Mountain	9%	5%
Pacific	18%	16%
Income:		
HH income less than \$10,000	29%	12%
HH income between \$10,000 and \$20,000	22%	16%
HH income between \$20,000 and \$40,000	23%	26%
HH income over \$40,000	16%	31%
HH income not reported	10%	14%

Table 2: Selected Characteristics of County Variables

Variable	County-level	Individual- level (weighted)
County (of residence) has at least one ...		
Program	42%	85%
Shelter	35%	82%
Hotline	40%	85%
Safe Home	8%	20%
Legal services	30%	74%
Counseling	39%	83%
Rape counseling	21%	41%
Batterer's program	12%	43%
Children's program	27%	74%
Emergency transportation	33%	71%
Average number in county (of residence)		
Programs	0.59	3.52
Shelters	0.43	2.35
Hotlines	0.53	3.02
Safe homes	0.09	0.40
Legal services	0.38	2.19
Counseling programs	0.52	3.02
Rape counseling programs	0.23	0.83
Batterer's programs	0.15	0.96
Children's programs	0.35	2.42
Emergency transportation services	0.39	1.89
Weighted Means (by individuals)		
AFDC Payment		\$358
Population		986,754
Education Ratio (% women with college degrees/% men with college degrees)		0.90
Female Labor Force Participation Rate		57%

Table 3: Probit Results (N=530,487)

	Significant	Sign
Individual-level variables:		
Age	Yes	-
Black	Yes	-
Hispanic	Yes	-
Other minority race	Yes	-
High school only	No	
College degree	Yes	-
Education not reported	No	
Number of children < age 12	Yes	+
Number of children between ages 12 & 18	Yes	+
Employed	No	
Married	Yes	-
Household income, < \$10,000	Yes	+
Household income, \$10,000<x<\$20,000	Yes	+
Household income, \$20,000<x<\$40,000	Yes	+
Household income not reported	Yes	+
Regional variables:		
Middle Atlantic	No	
South Atlantic	No	
East North Central	Yes	+
West North Central	No	
East South Central	Yes	+
West South Central	Yes	+
Mountain	Yes	+
Pacific	Yes	+
County variables:		
% Females in Labor Force	No	
College Education Gender Ratio (Female/Male)	Yes	-
Number of shelters	No	
Number of safe homes	No	
Number of emergency transport services	No	
Number of hotlines	No	
Number of counseling programs	No	
Number of rape counseling programs	No	
Number of batterers' programs	No	
Number of children's programs	No	
Number of legal services programs	Yes	-
AFDC average payment	Yes	+
Population	No	
Time	No	

Table A1: Probit Results (N=530,487)

	Model #1	Model #2
Individual-level variables:		
Age	-0.0212 (-0.000115)**	-0.0167 (-0.000744)**
Black	0.0623 (0.000364)**	-0.1372 (-0.000525)**
Hispanic	-0.2388 (-0.000984)**	-0.2852 (-0.000908)**
Other minority race	-0.3081 (-0.001128)**	-0.3399 (-0.000971)**
High school only	-0.1212 (-0.000686)**	-0.0052 (-0.000023)
College degree	-0.3321 (-0.001397)**	-0.1293 (-0.000515)**
Education not reported	-0.2059 (-0.000844)**	0.0648 (0.000318)
Number of children < age 12	0.0899 (0.000489)**	0.1507 (0.000671)**
Number of children between ages 12 & 18	0.0079 (0.000043)	0.0325 (0.000145)**
Employed		0.0323 (0.119)
Married		-0.6168 (-0.003422)**
Household income, < \$10,000		0.2797 (0.001729)**
Household income, \$10,000<x<\$20,000		0.2090 (0.001161)**
Household income, \$20,000<x<\$40,000		0.0711 (0.000333)**
Household income not reported		0.1056 (0.000531)**
Regional variables:		
Middle Atlantic	-0.0131 (0.801)	0.0201 (0.732)
South Atlantic	0.0402 (0.516)	0.0787 (0.256)
East North Central	0.1062 (0.049)**	0.1540 (0.010)**
West North Central	0.0721 (0.232)	0.0907 (0.188)
East South Central	0.1074 (0.161)	0.1938 (0.026)**
West South Central	0.1865 (0.009)**	0.2170 (0.006)**
Mountain	0.2320 (0.00173)**	0.2492 (<0.001)**
Pacific	0.1253 (0.008)**	0.1796 (0.001)**
County and state variables:		
% Females in Labor Force	-0.0022 (-0.159)	0.0010 (0.602)
College Education Gender Ratio (Female/Male)	-0.2274 (-0.003)**	-0.2135 (0.010)**
Shelter	-0.0039 (-0.833)	-0.0193 (0.353)
Hotline	0.0196 (0.271)	0.0200 (0.292)
Counseling	0.0034 (0.886)	0.0105 (0.703)
Batterers' program	0.0049 (0.713)	0.0163 (0.254)
Children's program	0.0034 (0.817)	0.0059 (0.711)
Rape counseling	-0.0007 (-0.955)	0.0083 (0.558)
Emergency transportation	0.0158 (0.245)	-0.0027 (0.855)
Safe Home	-0.0254 (-0.164)	-0.0324 (0.102)*
Legal Services	-0.0262 (-0.031)**	-0.0279 (0.032)**
AFDC average payment	0.0003 (0.015)**	0.0003 (0.033)**
Population	-0.0195e-06 (-0.293)	-0.0213e-07(0.918)
Time trend	-0.0015 (-1.426)	0.0003 (0.240)
Constant	-1.677 **	-2.1156 (<0.001)
Pseudo R2	0.09	0.14

*Significant at 10%, **Significant at 5%

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¹ It is important to note that there is controversy over the DOJ's statistics on the incidence of domestic violence. For example, in a recent national study, the National Violence Against Women Survey, Tjaden and Thoennes [1998] find the rate of domestic violence to be significantly higher than that resulting from the DOJ's National Crime Victimization Survey. However, there is no other time series on the incidence of domestic violence to question the NCVS finding that the rate of domestic violence is falling over time.

² Straus [1994] and Yllo and Straus [1990] use a gender equity index to show that states exhibiting more inequality have higher rates of abuse (although Yllo and Straus find a curvilinear relationship). Levinson [1989] finds that countries with high gender inequality also have rates of wife abuse.

³ Approximately .3% of our sample of women over 18 reported to be victims of domestic violence. This is about half of the rate of 7.5 per 1000 reported by the Bureau of Justice

Statistics using the same data. The discrepancy resulted because we categorize a woman as battered if she has been a victim in the past six months while the DOJ generates annual estimates.

⁴ The *Directory* is a periodic (not annual) publication and, therefore, we used the 1994 county data for all seven years of individual-level data.

⁵ The US General Accounting Office [1998] surveys the literature on the incidence of domestic violence among welfare recipients, which is shown to be significantly greater (between 16% and 56%) than that of the general population (1%-2%).

⁶ These results were generated from a probit estimation because the dependent variable is categorical (1=abused by an intimate partner, 0=not abused by an intimate). The NCVS is a stratified, multi-stage cluster sample and, as a result, is not entirely random. Consequently, weighting regression with appropriate corrections of the standard errors is required to obtain unbiased estimates. Weighting reduced the sample size to 530,487 because weights are missing for some women. The estimates could also be biased by the panel nature of the sample. Including multiple observations on the same woman is likely to cause correlation of the errors. We also corrected for this potential problem.

⁷ The results from an alternative specification of the model that omits potentially endogenous variables (marital status, woman's employment status, and household income) are also included and discussed in the Appendix. Marital status is the most likely to be endogenous as women who are married may be less likely to admit to being abused. Re-estimating the model without this one variable results in no significant changes in the results (in terms of signs and significance).

⁸ In other specifications of the empirical model, we substituted the existence of any domestic violence program in the county and the number of programs providing services in a county for the types of services these programs offered. While there were no significant changes in the signs and significance of the other variables, neither the existence of a domestic violence

program (equal to 1 if any of the 9 service variables are equal to 1) nor the number of these programs was a significant predictor of the incidence of domestic violence. Replacing the existence of a shelter with the number of shelter beds in the county also did not significantly alter the results.

⁹ Because of data limitations, we use 1994 and 1999 data for the number of legal service programs.

¹⁰ The partial derivatives presented for dummy variables are for the discrete change from 0 to 1. In evaluating the percentage contribution of the significant variables in explaining the decline in domestic violence the regular partials were used.