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Author(s): **Eric P. Baumer**

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Temporal Variation in the Likelihood of Police Notification by Victims of Rape, 1973-2000

National Institute of Justice
Data Resources Program Project #2002-WG-BX-0001

ABSTRACT

Submitted by:
Eric P. Baumer
Department of Criminology and Criminal Justice
University of Missouri-St. Louis

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The project explored three questions: 1) Whether the overall likelihood of police notification by rape victims has increased between 1973-2000?; 2) Whether any observed increase in the likelihood of police notification during this period has been more prominent among incidents involving non-strangers?; and 3) Whether differences in the likelihood of police notification between incidents involving strangers and non-strangers have diminished significantly over time? These questions were addressed with data on rapes reported by women in the National Crime Survey (1973-1991) and the National Crime Victimization Survey (1992-2000).

Police notification was operationalized both as a dichotomous outcome measure (i.e., whether or not the police were notified) and as a polytomous outcome measure that contrasted

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victim reporting and third party reporting, respectively, with non-reporting. The analyses incorporated adjustments for the complex survey designs of the NCS and NCVS.

Binary and multinomial logit models revealed that during the 1970s and 1980s there was a significant increase in police notification by third parties and by victims raped by non-strangers. During the 1990s the increase in rates of police notification in rape incidents accelerated and broadened in scope. In addition, differences in police notification between stranger and non-stranger incidents diminished during the 1970s and 1980s and, by the early 1990s there was no significant difference. In contrast to the results observed for rape, parallel analyses of non-sexual assaults revealed no significant increase in the likelihood of police notification between 1973 and 1991, and no distinctive increases in rates of police notification among women assaulted by acquaintances during this period. The results obtained for non-sexual assaults for the 1990s are more consistent with those observed in the analysis of rape incidents. By and large, the analysis of changes in the likelihood of police notification by rape victims between 1973-2000 are consistent with the intended objectives and expected outcomes of legal reforms and cultural changes about rape.

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EXECUTIVE SUMMARY

Temporal Variation in the Likelihood of Police Notification by Victims of Rape, 1973-2000

Submitted by:

Eric P. Baumer
Department of Criminology and Criminal Justice
University of Missouri-St. Louis

April 12, 2004

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RESEARCH QUESTIONS AND HYPOTHESES

Data from the National Crime Survey (NCS) and the National Crime Victimization Survey (NCVS) were used to explore whether the likelihood of police notification for rape has increased since the early 1970s. Specifically, three questions were examined: 1) Whether the overall likelihood of reporting by rape victims has increased between 1973-2000?; 2) Whether any observed increase in the likelihood of police notification during this period has been more prominent among (or perhaps restricted to) incidents involving non-strangers?; and 3) Whether differences in the likelihood of police notification between incidents involving strangers and non-strangers have diminished significantly over time? Given that some of the institutional and cultural barriers that presumably served as disincentives to police notification by rape victims have been diminished or removed during the past three decades, it was hypothesized that the likelihood of police notification in rape cases should have increased since the early 1970s. It was also hypothesized that increases in the likelihood of police notification since the early 1970s should be most pronounced among women raped by acquaintances. Increases in police notification may be particularly large among women raped by well-known acquaintances or intimate partners given the focus of legal and social reforms on broadening the definition of rape and reducing barriers to prosecution in such cases. Finally, and relatedly, it was expected that there should be a decrease in the magnitude of the effect of victim-offender relationship on police notification by rape victims. In particular, the gap in the likelihood of police notification in stranger and non-stranger rapes should have diminished since the early 1970s.

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METHODS

The research questions were addressed with data from two periods of data collection from the U.S. crime victimization survey: NCS data from 1973-1991 and NCVS data from 1992-2000. To avoid the ambiguities that can arise in analyses across the two survey periods, the NCS (1973-1991) and NCVS data (1992-2000) were analyzed separately. Following past research, the main analysis was restricted to incidents that involved a female victim and one or more male offenders. The sample for 1973-1991 included 1,609 rapes; the corresponding sample for 1992-2000 contained 636 rapes. Supplementary analyses also were performed on non-sexual assaults experienced by women to provide a comparative context within which to assess the results obtained for rape.

Police notification served as the dependent variable in the study and was measured in two ways. First, to account for the possibility that the legal and social reforms that have taken place since the early 1970s may have altered the likelihood that victims *or* third parties report rape victimizations to the police, the analysis includes a polytomous dependent variable that contrasts *victim reported* incidents and *third-party reported* (e.g., another member of the household, some non-law enforcement official, anybody else) incidents, respectively, with non-reported incidents. Second, to facilitate more direct comparisons with past research, a binary dependent variable, *police notified,* also is included; this variable is coded 1 if the victim or somebody else reported the incident to the police and 0 for incidents in which the police were not notified.

The primary independent variables in the analysis are the year of occurrence of the incident reported by the victim and the relationship between the victim and offender. Past research on police notification by victims of rape has focused primarily on contrasting reporting rates between incidents involving strangers and non-strangers. Consistent with this past practice,

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analyses are presented in which victim-offender relationship is measured as a dichotomous variable that contrasts incidents in which the victim identified the offender as a non-stranger with those in which involved an offender who was a stranger. In addition, the effects of more detailed relationship variables also were considered in this study. Specifically, a series of dichotomous variables were constructed that distinguish incidents in which the offender was identified as somebody with whom the victim was acquainted by sight only, was a causal acquaintance, a well-known acquaintance, a spouse or ex-spouse, or other family member.

The regression models estimated included several control variables, including measures of respondents' socioeconomic status, as well as other victim, offender, and incident characteristics that may be related both to the nature of rape and to the likelihood that victims notify the police. The analysis also controls for changes in forms of interviewing used in the NCS and NCVS, contrasting personal interviews with computer assisted phone interviews and traditional phone interviews.

Logistic regression was used to estimate effects on the dichotomous measure of police notification and multinomial logistic regression was used to estimate effects on the polytomous measure of police notification. The analyses incorporate the currently best available methods of accounting for design effects in the NCS and NCVS. For the 1992-2000 redesigned data, survey regression models were estimated that directly incorporate NCVS strata and PSU variables and adjust for design effects. For the 1973-1991 period, all standard errors obtained in regressions using a standard model-based approach were multiplied by the covariate-specific design effects observed in survey regression models based on 1987-1991 NCS data.

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RESULTS

Slightly more than one-half of the rapes disclosed to NCS interviewers between 1973 and 1991 were reported to the police. Of those, more than two-thirds were reported directly by victims. Approximately 51 percent of these rapes involved offenders who were known to the victim; one-quarter were either well-known acquaintances or family members. The descriptive results for the 1992-2000 NCVS sample show that rates of police notification are much lower in the redesigned NCVS. Less than one-third (29.6 percent) of the 636 rapes recorded in the NCVS during the period were reported to the police, with 19 percent of the recorded incidents reported to the police directly by victims. There also is a substantial difference between the two samples in terms of victim-offender relationship—more than 80 percent (84.3 percent) of the rapes reported during the 1990s were committed by somebody with whom the victim was acquainted, and slightly more than half were perpetrated by somebody well-known or related to the victim. It is clear from these results that the probing questions and other changes (e.g., greater use of CATI) in the redesigned survey produce a sample of incidents that are quite different from the NCS in terms of relationship (i.e., more acquaintance rapes), potential for injury and death (i.e., a lower prevalence of gun use, other injury, and force), and police notification, and that the two time periods should be analyzed separately.

The regression results indicate that the overall likelihood of police notification increased significantly between 1973 and 1991, net of changes in the types of victims, offenders, and characteristics of these incidents. Multinomial logit results for this period indicate that this increase was primarily due to changes in the likelihood of police notification by third-parties; there was no comparable increase in reporting directly by victims during this period. The likelihood of police notification in rape incidents increased significantly during the 1990s. The

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magnitude of this increase is larger than observed for the earlier period, however, unlike the earlier period, the multinomial logit analysis reveals that in the 1990s the likelihood of police notification increased both among victims and third parties, though the increase observed for third parties was not quite statistically significant.

With respect to whether there are significant effects of victim-offender relationship on police notification during the two periods examined in the study, the results indicate that during the 1970s and 1980s rapes by non-strangers were significantly less likely to be reported than those committed by strangers; the effect on third-party reporting is somewhat stronger than the effect on victim reporting. The more detailed analyses of relationship categories for the 1973-1991 period reveals a general reluctance to notify the police when the victim and offender know each other; however, not all effects are statistically significant. In addition, the effects of at least two victim-offender relationships are much stronger for third party than victim reporting: third parties are particularly unlikely to report incidents involving intimates and sight-only acquaintances. The findings for the 1990s are consistent with conclusions from prior research, showing that victim-offender relationship does not affect the likelihood of police notification during this period, net of other factors.

A more formal analysis of changes in police notification across relationship categories reveals that from 1973-1991 changes in victim reporting of rapes by non-strangers were greater than changes in victim reporting in rapes by strangers. Thus, although there is a significant difference overall in the likelihood of police notification in stranger and non-stranger rape cases during the 1970s and 1980s, this difference diminished significantly during the period. Increases in the likelihood of victim reporting for rapes committed by husbands and ex-husbands during this period were larger than those observed for other types of incidents, including stranger

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incidents, for which police notification did not increase significantly. The larger relative increase in reporting in spousal rape cases is partly responsible for the overall relative increase in reporting for non-stranger rapes during the 1970s and 1980s. For the 1990s, changes over time in the likelihood of police notification did not differ by victim-offender relationship and, consequently, differences in the likelihood of reporting between strangers and non-strangers did not change significantly during this period.

In summary, the probability of police notification in non-stranger rapes increased at a greater pace than stranger rapes during the 1970s and 1980s and, consequently, the difference in the likelihood of reporting between stranger and non-stranger incidents by the early 1990s was quite small. Consistent with this pattern, the NCVS data from the 1990s reveal trends in police notification that are quite similar for stranger and non-stranger rapes; the likelihood of police notification among women raped by both strangers and non-strangers has increased considerably during the 1990s, and the gap in reporting between stranger and non-stranger incidents is relatively small throughout the period

Although not listed as an objective in the original proposal, to better understand the context of the findings presented for rape, a supplementary analysis was conducted for other (non-sexual) assaults experienced by women and reported in the NCS and NCVS between 1973-2000. Assessments about the forces that may have driven changes in police notification by rape victims may be confounded by other factors (e.g., declines in social capital, which could have stimulated broader increases in police notification) that may have influenced reporting during this period; comparing the results obtained for rape with other offenses may help to shed further light on the matter.

The samples for the supplementary analyses included 14,724 non-sexual assaults reported

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by females in the NCS (1973-1991) and 6,519 non-sexual assaults reported by females in the NCVS (1992-2000). The measures and methods used for this analysis parallel exactly those described above for rape incidents.

In contrast with the results observed for rape, the supplementary analysis of other assaults revealed that the likelihood of police notification (by victims, third parties, or overall) did not increase significantly between 1973 and 1991, net of changes in the types of victims, offenders, and characteristics of these incidents. The results for the 1990s were more consistent with those observed in the analysis of rape incidents. As shown in Model 3, between 1992 and 2000 the likelihood of police notification among female victims of non-sexual assault increased significantly ($b=.061$, $p \leq .05$). The magnitude of this increase was smaller than that observed for rape, however, like the pattern shown for rape, the magnitude of observed changes in the likelihood of police notification by female victims of other assaults was similar among both victims and third parties to these incidents. Also similar to the results presented for rape, changes over time in the likelihood of police notification for non-sexual assaults during the 1990s did not differ by victim-offender relationship, nor did differences in the likelihood of reporting between strangers and non-strangers change significantly during this period.

In summary, the temporal patterns in police notification by non-sexual assault victims during the 1970s and 1980s diverge from the patterns found for rape incidents. Whereas a significant increase in the likelihood of police notification overall was observed for rape incidents during this period, this was not the case for other assaults. Further, unlike the findings for rape, the likelihood of police notification by females assaulted by non-strangers did not increase significantly during the 1970s and 1980s. A different story emerges in the 1990s. The NCVS data reveal patterns of police notification that are more similar across crime types – the

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likelihood of police notification increased significantly during the 1990s both among female victims of rape and female victims of other types of assaults.

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CONCLUSIONS

The findings are consistent with the univariate and bivariate analyses of studies based on aggregate data that show an upward trend from 1973 to the mid-1980s in police notification in non-stranger rapes (Orcutt and Faison, 1988; Jenson and Karpos, 1993). The present study shows that this trend continued through the early 1990s. However, contrary to some prior research (Jenson and Karpos, 1993), the present research also reveals a significant increase in the likelihood of police notification overall after controlling for other factors. The results also bear on a debate that emerged in the literature during the mid-1990s about whether victim-offender relationship remains an important predictor of the likelihood of police notification by rape victims (see Bachman, 1993, 1995; Pollard, 1995; Ruback, 1993). Consistent with Bachman's (1993, 1998) research on rape cases and with recent research on non-sexual assaults (Felson et al., 1999), the study suggests that in the 199s women are just as likely to report to the police rapes by people they know as they are to report rapes by strangers. Comparisons of coefficients from the 1990s with the earlier period suggests that the divergence in findings regarding the effects of non-stranger relationship on police notification across the two periods might have arisen because women raped by acquaintances (i.e., those known well, casually, or by sight only) are no longer *significantly* less likely to notify the police than are women raped by strangers.

One interpretation of the results presented for rape is that they reflect broader trends in police notification of violent crime between 1973-2000. For instance, levels of social capital have declined significantly during the past three decades in the U.S. (e.g., Putnam 2000), and it is plausible that, confronted with fewer informal mechanisms in the aftermath of a crime, crime victims overall became more likely to enlist the help of the police during this period. However, the supplementary analyses of non-sexual assaults suggest that the changes in police notification

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observed among rape victims were unique, at least during the 1970s and 1980s. The results for rape for this period are consistent with the intended objectives and expected outcomes of legal reforms and cultural changes about rape. Much of the early rape reform movement focused on broadening the legal definition and public perception of rape to include incidents committed by acquaintances, which are most likely to elicit controversy over definitions. Consistent with those efforts, the analysis showed a significantly larger increase in police notification for non-stranger rapes only during the 1970s and 1980s. In addition, police notification of rapes but not other types of assaults committed by spouses were particularly likely to increase during this period. This pattern may be due to publicity and changing attitudes toward marital rape and violence. The passage of laws in various states regarding spousal rape occurred in the 1980s (Allison and Wrighsman, 1993), and mandatory arrest laws for domestic violence were instituted in the 1980s and early 1990s (Bachman, 1995).

Legal, social, and political efforts to alter the way Americans define and respond to rape intensified in the latter part of the 1980s and during the 1990s (Campbell, 1998; Campbell and Ahrens, 1998; Epstein and Langenbahn, 1994; Iovanni and Miller, 2001; Ledray, 2001; Little, 2001; Valente et al., 2001). Consistent with this expanded scope, the analysis indicates that increases in police notification have broadened over time. During the 1970s and 1980s the increases were primarily due to changes in reporting by third parties and in victim reporting of rapes committed by non-strangers, but during the 1990s increases occurred both among third parties and victims and in rapes by non-strangers and strangers. Although the increases among third parties were not statistically significant, they were relatively large and comparable to the significant increases observed among victims. This pattern is consistent with the increase in the scope of the rape reform movement and other social changes that have occurred during the past

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30 years. Moreover, the expansion of legal reforms in the 1990s that have focused more generally on violence against women may help to explain why similar temporal patterns were observed for rapes and non-sexual assaults during this period.

Finally, in the 1990s the findings for rape and non-sexual assaults reveal little consistent evidence that the police are less likely to be notified by rape victims when the offender is known to the victim. This pattern seems surprising given discussions of privacy, fear of reprisal, and other factors that scholars have suggested inhibit reporting when the offender is a family member or friend. However, recent research suggests that researchers have ignored the possibility that there are also greater incentives for reporting assaults when victims know the offender (Felson et al., 1999; Felson et al., 2002). For example, victims often call the police in order to gain protection from future attack, and this incentive is much greater when they know the offender; strangers are unlikely to be seen again. These factors apparently counteract the inhibitory factors, producing no victim-offender effect on reporting.

In sum, with respect to the key issues addressed in the project, the results indicate a significant increase during the 1970s and 1980s in the likelihood of police notification by female rape victims; the increase was greater among third-party reporting, and among women raped by non-strangers, which resulted in a declining significance of differences in reporting between strangers and non-strangers over time. These changes coincided with the large-scale media and social campaigns that occurred during this period and that focused the public's attention stigma on the issue of these "hidden" rapes. During the 1990s, the scope and momentum of these campaigns appear to have accelerated, translating into increases in police notification among both victims and third parties, and in both stranger and non-stranger rapes.

Although the project did not formally evaluate criminal justice operations or policies, the

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results provide the first definitive evidence on temporal patterns in the likelihood of police notification among rape victims, and this evidence can be used to indirectly assess the efficacy of practices designed to affect women's reporting behaviors and to highlight potentially fruitful avenues of future research that could do so more directly. The temporal patterns of police notification presented for rape are suggestive that the substantial legal reforms and the growth in legal and non-legal services available to rape victims have been influential in elevating the likelihood that women notify the police when they are raped. The results also support the claim that the expansion of prevention and response efforts to encompass in a more coordinated fashion criminal justice, medical, and community resources during the past decade has been particularly influential, with the likelihood of police notification in rape incidents increasing nearly two-fold during this period. Thus, the results of this study point in favor of recent policy practices geared toward increasing police notification. Nonetheless, the most recent data presented above indicate that a majority of rape victims still do not report their attacks to the police, so the research also points to a need for further efforts aimed at encouraging and assisting rape victims in contacting the police to help initiate legal proceedings.

Further research is needed to more precisely identify the types of practices that might best facilitate additional increases in police notification among rape victims. Although the present study was well-suited for identifying *whether* the likelihood of police notification has changed, the type of analyses presented herein are not capable of isolating which specific policies or practices affected the observed changes, nor does a set of policies that might help continue those changes emerge from the study. Future large-scale studies of police notification could provide more detailed information for policy by capturing jurisdictional differences in legal statutes and procedures, social norms, and victim perceptions. Such a multilevel, longitudinal analysis is

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feasible with the area-identified NCS and NCVS data, and if pursued should capitalize not only on the collection of policy relevant external data that can be merged to the NCVS, but also on the inherent panel structure of the NCVS. The present study relied on repeated cross-sectional data, an approach that does not allow for a direct examination of changes in police notification *within persons* over time or for an examination of the effects of changes in survey administration such as time in sample and the prevalence of unbounded interviews. Capitalizing on the panel structure of the NCVS in future investigations of police notification could provide valuable policy insights, especially if combined with data on temporal or jurisdictional difference in existing policy approaches and social conditions. Doing so, however, would be a substantial and expensive undertaking and would require support from the U.S. Census Bureau and the Bureau of Justice Statistics in addition to one or more funding agencies. Retrospective ethnographic studies of rape victims from different jurisdictions also would provide beneficial data for criminal justice policymakers if the design could incorporate sufficient differences in the legal, social, service, and family environments to which rape victims are exposed. Finally, it would be useful to implement new policies aimed at increasing police notification among rape victims and field more concentrated victimization surveys in these (and matched, control) jurisdictions before and after implementation to determine whether police notification is greater or increasing at a faster pace in areas with particular types of programs and policies. These types of studies would help illuminate ways in which to increase police notification, which in turn may increase the likelihood of arrest and prosecution and, ultimately, the deterrent efficacy of the criminal justice system.

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TECHNICAL REPORT

Temporal Variation in the Likelihood of Police Notification by Victims of Rape, 1973-2000

Submitted by:

Eric P. Baumer
Department of Criminology and Criminal Justice
University of Missouri-St. Louis

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I. PROJECT GOALS AND OBJECTIVES

Introduction

The main objective of this project was to examine whether female rape victims have become more likely to report their victimizations to the police during the past three decades. It is well-known that many victims do not report violent victimizations to the police (e.g., Hindelang, 1976; Kilpatrick et al., 1992; Laub, 1997; Skogan, 1984). While these victims sometimes seek assistance from victim service organizations that are not affiliated with law enforcement (e.g., Campbell and Martin, 2001; Coulter et al., 1999; Jensen and Karpos, 1993; Sullivan and Gillum, 2001), opting not to contact the police could limit the extent to which they have access to important ameliorative resources, especially victim support services that rely on police referrals for securing access to clients (Gottfredson and Gottfredson, 1988; Skogan, 1977). In addition, the decision not to notify the police effectively eliminates the possibility that the perpetrator can be arrested for the attack and may undermine the general deterrent function of the criminal justice system (Bachman, 1998; Skogan, 1984). It is therefore important to identify the factors and situations that inhibit or facilitate police notification.

Concern about low rates of reporting violence to the police is perhaps most pervasive for sex offenses, which historically have been characterized by exceptionally low rates of police notification. These crimes, which often occur "behind closed doors," are believed to be hidden from authorities for a variety of reasons. Those most often cited are ambiguity about what constitutes illicit sexual conduct (Burt and Estep, 1981; DeKeseredy and Schwartz, 2001; Gavey, 1999; Russell, 1982; Wilson et al., 1983), the victim's fear of reprisal from the offender (Amir, 1971; MacDonald, 1971; Singer, 1988), the victim's feelings of embarrassment and stigma (Bachman and Taylor, 1994), and perceptions by victims that they will not be believed or that the

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criminal justice system is largely ineffective at responding to or preventing such incidents (Feldman-Summers and Ashworth, 1981; LaFree, 1980).

Theoretical discussions emphasize that most of these factors are especially likely to discourage crime reporting when the offender is somebody they know (e.g., Black, 1976; Dobash and Dobash, 1992; Hanmer et al., 1989; Horowitz, 1990; MacKinnon, 1983; Wiehe and Richards, 1995). As Williams (1984:460) notes, "the fact that a woman knows her rapist may encourage her to blame herself. She may feel that she 'led him on' and was not really raped, and that consequently there is no crime to report. Even when a woman identifies herself as a rape victim, she may fear that others will not believe she was raped if she knew the man" (see also Wiehe and Richards, 1995:30). Given these disincentives to reporting, it is perhaps not surprising that initial studies of police notification—conducted with data collected during the early 1970s—revealed that not only were rates of police notification by rape victims quite low compared to other crimes (e.g., Dukes and Mattley, 1977; Hawkins, 1973; Hindelang and Davis, 1977; Hindelang and Gottfredson, 1976), but also that incidents involving acquaintances were especially unlikely to be reported (Hindelang and Gottfredson, 1976; Lizotte, 1985; Williams, 1984).

Much has changed since the early 1970s. As elaborated below, a variety of legal, political, and cultural reforms were initiated in the 1970s directed, in part, at reducing the barriers to police notification perceived by women who had been sexually assaulted (Berger et al., 1988; Epstein and Langenbahn, 1994; Rose, 1977; Spohn and Horney, 1992). There is some speculation in the literature that these reforms have increased the likelihood of police notification by victims sexual assault, especially among those attacked by somebody they know (e.g., Bachman, 1993; Orcutt and Faison, 1988), and that they have served to reduce disparities in

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reporting between stranger and non-stranger incidents (Bachman, 1993, 1998). However, although past research has extensively examined the influence of these reforms on changes in the criminal justice processing (e.g., Bachman and Smith, 1994; Berger et al., 1994; Bienen, 1980; Caringella-MacDonald, 1984; Galvin, 1985; Horney and Spohn, 1991; Largen, 1988; Loh, 1980; Marsh et al., 1982), there is not much research on whether the likelihood of police notification increased in a manner consistent with the goals of the rape reform movement. This is somewhat surprising given that much of the reform movement focused on encouraging victims of rape to initiate formal legal proceedings, and that police notification arguably is an important step in doing so.

In this project, data from the National Crime Survey (NCS) and the National Crime Victimization Survey (NCVS) were used to explore whether the likelihood of police notification by rape victims has increased since the early 1970s. The study examined whether the overall probability of reporting by rape victims increased during this period, whether any observed increase in the likelihood of police notification has been more prominent among (or perhaps restricted to) incidents involving acquaintances, and whether differences in the likelihood of reporting between incidents involving strangers and acquaintances have diminished significantly over time. In addition, although not a part of the project originally, a parallel analysis was conducted on police notification among female victims of other types of assaults. The potential utility of this expanded scope for further illuminating the meaning of patterns of police notification observed for rape became evident as the project unfolded.

In the pages that follow, the specific hypotheses examined with respect to changes in the likelihood of police notification by victims of rape during the past three decades are outlined and the existing literature on police notification trends is reviewed. I then discuss the data and

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methods used to address the study hypotheses, including modifications to the proposed plan of research, present the key project findings, and highlight the main conclusions of the study.

Hypotheses

There were a variety of disincentives to police notification by victims of rape during the early 1970s. The legal statutes in most states included a relatively narrow definition of rape, required that the incident be reported promptly and be corroborated by a third party, and required that the victim demonstrate that she physically resisted the attack (Bachman, 1998). Moreover, the rules of evidence in many jurisdictions permitted the introduction at trial of information about the victim's character, reputation, and prior behavior, which often were used by defense attorneys in efforts to discredit the victim's testimony (Berger et al., 1988; Estrich, 1987; Holmstrom and Burgess, 1983; Horney and Spohn, 1991). Challenges to the victim's credibility and disputes over what behavior constitutes rape were particularly common for offenses involving people who knew each other (Bryden and Lengnick, 1997). Thus, the social and legal climate of the early 1970s, coupled with public perceptions of a low probability of arrest, prosecution, and conviction in rape cases, were believed to discourage police notification by victims, especially those raped by acquaintances or intimates (e.g., Bachar and Koss, 2001; Weis and Borges, 1973; Williams, 1984).

Sparked by these concerns and the issue of civil rights more generally, an anti-rape reform movement emerged in the 1970s (Campbell and Martin, 2001). While the objectives of the groups involved in this movement were diverse (Spohn and Horney, 1992), two key aims were to increase social awareness of rape and other forms of sexual assault as serious social problems that often was perpetrated by acquaintances and intimates, and to lobby for reform of

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laws that were viewed as antiquated and unjust. Accomplishing these goals was believed to be critical for improving the treatment of victims in the criminal justice system, increasing victim confidence in the criminal justice processing of rape cases, and increasing rates of police notification (Berger et al., 1988). Many of the legal reforms were designed to improve the prosecution's chances in acquaintance rape cases and to lessen the ordeal for the victim (Bryden and Lengnick, 1997).

The rape reform movement was highly successful in motivating change in the legal system. As Horney and Spohn (1991) note, the efforts of numerous grassroots women's groups have resulted in substantial reform in rape laws in all fifty U.S. states. The nature of the reforms implemented vary across jurisdictions, but they typically encompass a major expansion in the types of behaviors considered "rape," which now include sexual acts other than intercourse and various types of sexual assault by spouses, the elimination of "proof of resistance" and "corroboration" requirements, restrictions on the admissibility of evidence pertaining to the victim's past sexual history, and increases in the severity of punishment meted out to persons convicted of sex offenses (Bachman, 1998; Berger et al., 1988; Horney and Spohn, 1991; Spohn and Horney, 1992).

The anti-rape movement also was instrumental in the substantial growth of community resources available to victims of rape (Campbell and Martin, 2001). The number of rape crisis centers in the U.S. increased from less than 100 during the early 1970s to more than 1,200 in the late 1990s (Campbell and Martin, 2001; Jensen and Karpos, 1993). These centers assist victims in coping both with the immediate distress and the aftermath of their victimization. An important function of these centers is making available legal advocates, who assist victims in reporting rapes to the police and in navigating through the remainder of the legal process.

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Campbell and Martin (2001:231) suggest that rape crisis center legal advocates help to make the "long and complicated process of reporting and prosecuting a rape" more bearable.

Many of these social and legal changes were initiated and implemented during the 1970s and 1980s; however, a variety of subsequent initiatives surfaced during the 1990s as well. These include additional legal reforms that have focused more generally on violence against women, public relations campaigns that have concentrated on the means by which to prevent and respond to rapes and sexual assaults by "dates" and other acquaintances, the development of sexual assault nurse examiner (SANE) programs, and the expansion of prevention and response efforts to encompass in a more coordinated fashion criminal justice, medical, and community resources (Campbell, 1998; Campbell and Ahrens, 1998; Epstein and Langenbahn, 1994; Iovanni and Miller, 2001; Ledray, 2001; Little, 2001; Renzetti et al., 2001; Valente et al., 2001; Wiehe and Richards, 1995).

In short, some of the institutional and cultural barriers that presumably served as disincentives to police notification by rape victims have been diminished or removed during the past three decades. These changes have stimulated much speculation in the literature about temporal change in the likelihood of police notification among rape victims. Three hypotheses have emerged as particularly prominent (e.g., Bachman, 1993, 1998; Berger et al., 1988; Jensen and Karpos, 1993; Orcutt and Faison, 1988; Pollard, 1995; Ruback, 1993). First, the legal reforms and social change in attitudes described above should have increased the likelihood of police notification in rape cases since the early 1970s. Although not discussed explicitly in the literature, these increases may have occurred because victims, or third parties (e.g., friends or family, legal advocates), or both, are more likely to notify the police. Third parties may have become more willing to report rape victimizations they know about to the police or perhaps they

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have become more likely to learn about these incidents if victims confide in them more often (e.g., Campbell and Martin, 2001; Ruback et al., 1984; Ruback, 1994). Second, increases in the likelihood of police notification since the early 1970s should be most pronounced among women raped by acquaintances. Increases in police notification may be particularly large among women raped by well-known acquaintances or intimate partners given the focus of legal and social reforms on broadening the definition of rape and reducing barriers to prosecution in such cases. Third, and relatedly, there should be a decrease in the magnitude of the effect of victim-offender relationship on police notification by rape victims. In particular, the gap in the likelihood of police notification in stranger and non-stranger rapes should have diminished since the early 1970s. Each of these hypotheses was examined in the present project.

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II. LITERATURE REVIEW

The hypotheses outlined above have not been addressed fully in prior research. With respect to whether the likelihood of police notification by rape victims has increased since the early 1970s, most prior research has consisted of univariate or bivariate analyses. An exception is Spohn and Horney (1992), who analyze changes in UCR rape rates from 1970-1984 across six cities that varied in terms of whether they had instituted relatively strong or weak legal reforms (see also Horney and Spohn, 1991). They find an increase in rape rates in only two of the cities, one that had introduced especially strong reforms and the other that had introduced much weaker reforms. The authors suggest that these increases in rape offense rates were probably due to increased publicity associated with the legal changes rather than their substantive content (see also Bryden and Lengnick, 1997; Marsh et al., 1982). However, it is not clear from their research whether observed changes in UCR rape rates were due to changes in the likelihood of police notification by victims, changes in police recording practices, changes in the actual incidence of rape, or some combination of these forces.

Most research directed at temporal patterns in rates of police notification has relied on univariate or bivariate analyses of aggregate national-level time-series data from the NCS (e.g., Bachman, 1995; Jensen and Karpos, 1993; Orcutt and Faison, 1988; Ruback, 1993). Figure 1, which shows rates of police notification among rape victims from the NCS from 1973-1991, illustrates the type of data on which these studies are based.[1] As Bachman (1995) observes, visual inspection of these data suggests that rates of police notification among rape victims fluctuated during the 1970s and 1980s but generally increased, especially among women raped by non-strangers (see also Orcutt and Faison, 1988; Jensen and Karpos, 1993).

Figure 1 about here

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Orcutt and Faison (1988) and Jensen and Karpos (1993) apply more formal statistical tests to these aggregate time-series data. The conclusions drawn from these studies are somewhat dependent on the time period examined, but generally point to two conclusions: 1) rates of police notification in non-stranger rapes have increased significantly, albeit slightly, between the early 1970s and 1990; and 2) there has been no significant increase in rates of police notification overall, or among women raped by strangers.

Although suggestive, the findings based on aggregate time-series data on police notification are open to alternative interpretations. Changes in aggregate rates of police notification may merely reflect differences in the types of rapes experienced by women in different years, rather than changes in the willingness of victims of similar incidents to report to the police.

Figure 2 about here

To illustrate this point further, Figure 2 presents data from the NCS on changes in two factors—completion and offender weapon use—that may complicate the interpretation of aggregate data on police notification. As the figure reveals, according to the NCS data the percentage of non-stranger rapes in the U.S. that are completed increased significantly during the 1970s and 1980s (b=.650, t=9.34). Since completed rapes are more likely to be reported than attempted rapes (e.g., Bachman, 1993), the increase in police notification of non-stranger rapes reported for this period in studies of aggregate trends may simply reflect the increase in completion rates. Figure 2 also reveals that between 1973 and 1991 there was a significant decline in the prevalence of offender weapon use in rapes reported in the NCS (b=-1.01, t=-5.02).[2] Offender weapon use is a strong predictor of police notification (Lizotte, 1985); therefore, failure to adjust for this factor could suppress an increase in the likelihood of police

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notification. This may be why the aggregate data indicate no significant increase in rates of police notification overall or for stranger-rapes during this period.[3]

In short, analyses of trends in police notification that do not take into account changes in the characteristics of incidents and victims are ambiguous because changes in the willingness to notify the police may be confounded with changes in the nature of the crimes committed (Gartner and Macmillan, 1995). A comprehensive analysis of changes in police notification requires a multivariate research design in which "time" effects are modeled while simultaneously controlling for other factors (see also Pollard, 1995; Ruback, 1993). This is the strategy used in the present research.

With respect to the question of whether the gap in the likelihood of police notification between stranger and non-stranger rapes has diminished, the existing empirical evidence also is ambiguous. There is some speculation that this gap has diminished over time. Cross-sectional research using data from the 1970s and early 1980s indicates that rapes committed by non-strangers were significantly less likely than those committed by strangers to be reported to the police (Dukes and Mattley, 1977; Feldman-Summers and Ashworth, 1981; Greenberg and Ruback, 1992; Lizotte, 1985; Williams, 1984). In contrast, subsequent cross-sectional research by Bachman (1993) using data from the late 1980s and early 1990s finds no significant difference, a pattern consistent with the apparent convergence in rates of police notification in stranger and non-stranger rapes revealed in aggregate time-series data (Figure 1; see also Bachman, 1995).

Bachman (1993:265-66) speculates that the divergence of her findings from past work may reflect an increasing willingness on the part of women raped by acquaintances to notify the police, which she attributes primarily to rape reform legislation and media attention that "helped

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sensitize the public to these issues and to educate society to the fact that rape is rape regardless of the victim/offender relationship." While plausible, critics have raised questions about whether the sample upon which Bachman's (1993) findings are based provides adequate statistical power to detect significant differences in police notification between strangers and non-strangers, and whether the adjustment she makes for NCVS design effects produces statistical tests that are too conservative (Pollard, 1995; Ruback, 1993). Perhaps more importantly, these critics point out that the cross-sectional analyses presented by Bachman (1993) are not directly relevant to the issue of whether the effect of victim-offender relationship on police notification has *changed* over time.

Although not formally addressed in the literature, similar critiques could be leveled at Bachman's more recent research on rape and sexual assault reporting. Using data from the 1992-1994 redesigned NCVS, Bachman (1998) reports that women raped or sexually assaulted by acquaintances are just as likely to notify the police as women victimized by strangers. When compared to results from the mid-1970s and early 1980s, Bachman's (1998) findings suggest that differences in reporting in stranger and non-stranger rapes and sexual assaults have decreased since the implementation of rape reforms. However, Bachman (1998) does not present a formal test of whether the effect of victim-offender relationship varies across time; thus, a definitive conclusion on the matter cannot be drawn from her study.

The present research goes beyond prior studies in four ways. First, the study evaluates formally whether the likelihood of police notification among rape victims has increased over time, net of changes in other factors. In addition to reconsidering the conclusions drawn in prior studies of changes in reporting during the 1970s and 1980s, the analysis examines whether the likelihood of police notification by rape victims has changed during the 1990s. Second, the

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project examines whether any observed change in the likelihood of police notification in rape cases during the past three decades is due to changes in victims reporting directly to the police or reporting by third parties. Third, the research examines whether the effect of victim-offender relationship on the likelihood of police notification has changed over time. Bachman's (1993, 1998) research is suggestive of a "declining gap" in the likelihood of police notification in stranger and non-stranger rape cases, but past studies have not addressed this issue directly. Finally, the present study employs a much more detailed conceptualization of "non-stranger" rapes and sexual assaults than has been used in past research. The available research on whether victim-offender relationship affects reporting has focused on relatively crude comparisons between stranger and non-stranger victimizations. As elaborated below, the present research examines not only the degree to which the relative likelihood of reporting has changed over time in stranger and non-stranger incidents, but also whether the likelihood of police notification has changed among those sexually victimized by a spouse or ex-spouse, other family member, well-known acquaintance, casual acquaintance, or somebody known only by sight. Although the rape reform movement was broad in scope, a particularly important emphasis has been placed on increasing awareness of sexual offenses committed by intimates and other close acquaintances. Thus, it may be that the legal and social changes outlined above have altered the likelihood of police notification more among women raped by intimate partners or well-known acquaintances than among those raped by other types of non-strangers.

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III. METHODOLOGY

Data

The empirical questions outlined above are addressed with repeated cross-sectional data from two periods of data collection from the U.S. crime victimization survey: NCS data from 1973-1991 and NCVS data from 1992-2000. These surveys collect data on whether persons and households have experienced a criminal victimization during the previous six months. For each victimization reported, respondents are asked detailed questions about the crime, including whether the incident was reported to the police.

There was a major revision to the national crime survey beginning in 1992 in the questions used to elicit reports about rapes and other sexual assault (Bachman and Taylor, 1994). As Bachman and Taylor (1994:506) explain, prior to the 1992 redesign, respondents were not specifically asked if they had experienced a rape. Instead, incidents of rape were recorded in the NCS only if a respondent answered positively to general questions regarding an attack, attempted attack, or threat of attack *and* subsequently self-reported the incident as a rape or attempted rape or, in situations where the victim was reluctant to describe the nature of her victimization, interviewers read responses that included "rape," "tried to rape," and "verbal threat of rape."

The measurement of rape in the NCVS after the redesign is much more direct. Specifically, in the redesigned survey the respondent is first told that "incidents involving forced or unwanted sexual acts are often difficult to talk about" and then asked whether she or he has "been forced or coerced to engage in unwanted sexual activity by (a) Someone you didn't know before, (b) A casual acquaintance, or (c) Someone you know well?" If the respondent replies "yes" to any of these questions, the interviewer asks questions designed to clarify the nature of

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the unwanted sexual conduct, such as whether the activity involved sexual intercourse, and in situations where there is some confusion over the meaning of rape a formal definition is read to the respondent (Bachman and Taylor, 1994). Based on these questions, the incident is categorized into one of several detailed types of sexual victimization, ranging from a verbal threat of sexual assault to a completed rape.

The redesign has led to a substantial increase in the number of sexual victimizations detected in the NCVS that apparently were not reported as crimes by persons interviewed in the earlier period (i.e., in the NCS), and there is some speculation that these incidents are less likely than others to be reported to the police (Bachman and Taylor, 1994). Thus, any change in the likelihood of police notification by victims of rape before and after the implementation of the redesigned survey may reflect change in the types of incidents covered by the survey. Although techniques have been proposed for adjusting NCS data to match NCVS design features and to facilitate long-term analysis of victimization trends, these procedures produce estimates of questionable validity and reliability for relatively rare forms of violence (at least in terms of NCS sample sizes) such as rape (see Rand et al., 1997:5). To avoid the ambiguities that can arise in analyses across the two survey periods, the NCS (1973-1991) and NCVS data (1992-2000) are analyzed separately.[4] Following past research, the main analysis is restricted to incidents that involved a female victim and one or more male offenders (see also Bachman, 1993). The sample for 1973-1991 includes 1,609 rapes; the corresponding sample for 1992-2000 contains 636 rapes.[5] As alluded to above, supplementary analyses also are performed on non-sexual assaults experienced by women to provide a comparative context; details of the samples and corresponding analyses used to generate these supplementary results are discussed in greater detail below.

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Measures

Dependent Variables

Police notification is measured in two ways. First, as noted above, the legal and social reforms that have taken place since the early 1970s may have altered the likelihood that victims *or* third parties report rape victimizations to the police. Accordingly, the analysis includes a polytomous dependent variable that contrasts victim reported incidents and third party (e.g., another member of the household, some non-law enforcement official, anybody else) reported incidents, respectively, with non-reported incidents (labeled *victim reported* and *third party reported*, respectively in the text and tables). Second, to facilitate more direct comparisons with past research (e.g., Bachman, 1998), a binary dependent variable, *police notified,* also is included; this variable is coded 1 if the victim or somebody else reported the incident to the police and 0 for incidents in which the police were not notified.

Independent Variables

The primary independent variables in the analysis are the year of occurrence of the incident reported by the victim and the relationship between the victim and offender. Year of incident (*year*) is a continuous variable coded chronologically within the two periods (e.g., 1973-1991, 1992-2000).[6]

As noted above, past research on police notification by victims of rape has focused primarily on comparing incidents involving strangers and non-strangers. Consistent with this past practice, analyses are presented in which victim-offender relationship is measured as a dichotomous variable, coded 1 for incidents in which the victim identified the offender as a non-stranger (i.e., intimate partner, other family member, well-known acquaintance, casual

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acquaintance, sight only acquaintance) and 0 for incidents that involved an offender who was a stranger (*non-strangers*).[7] Importantly, the effects of more detailed relationship variables also were considered in this study. Specifically, a series of dichotomous variables were constructed that distinguish incidents in which the offender was identified as somebody with whom the victim was acquainted by sight only (*sight only acquaintances*), was a causal acquaintance (*casual acquaintances*), a well-known acquaintance (*well-known acquaintances*), a family member (*other family members*), or a spouse or ex-spouse (*spouses*). Appendix A presents definitions and metrics for each of the relationship variables as well as the other variables included in the analysis.

These classifications are based on responses to three sequential questions. First, all victims are asked whether the offender was "someone you knew or a stranger you had never seen before?" Second, victims who indicated that the offender was somebody they knew or had seen before are asked: "how well did you know the offender—by sight only, casual acquaintance, or well known?" Responses to these two questions are used in the present research to initially classify the relationship between victims and offenders as "strangers," "sight only acquaintances," "casual acquaintances," or "well-known acquaintances." A third question inquires further about the precise nature of the relationship between the victim and offender, but there have been some important changes over time in who is asked this question and in the allowed responses. Prior to 1979, only victims who identified the offender as a well-known acquaintance were asked to report more specifically on the nature of the relationship, and the only options made available to respondents were intimate partner (spouse and ex-spouse), other family members (parent, brother, sister, own child, other relative), and non-relative. Between 1979 and 1985 the responses available to victims who identified the offender as a well-known

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acquaintance were broadened to include current and former boyfriends and girlfriends. From 1986 through the present all victims who identified the offender as a well-known or a casual acquaintance were asked to classify their relationship with the offender in more detail, and the range of options has been broadened to encompass different kinds of non-relatives (e.g., friend, co-worker, neighbor, roommate, etc.). In the present research, the more detailed relationship question is used only to classify offenders identified as well-known acquaintances into the more specific categories of "spouses" or "other family members." Although more detailed classifications are available for the more recent period of data collection in the NCVS, only these response options have been used consistently over the full course of the survey.

One noteworthy implication of this strategy is that the well-known acquaintance categorization is somewhat more heterogeneous than preferred, including persons who are involved in intimate relationships (i.e., boyfriends and girlfriends) and persons who are involved in other types of close relationships. Nonetheless, the analyses presented in this project provide a much more detailed assessment of the effects of victim-offender relationship than have prior studies.

Control Variables

The regression models presented below include several measures of respondents' socioeconomic status, as well as other victim, offender, and incident characteristics that may be related both to the nature of rape and to the likelihood that victims notify the police (see Bachman, 1993; 1998; Lizotte, 1985; see Skogan, 1984 for a general overview of predictors of police notification).

The socioeconomic status of the victim is tapped by three measures. Victim education

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refers to the number of completed years of schooling reported by the victim (*education*). A dichotomous variable measures whether the household in which the victim resides is owned (scored 1) or not (scored 0) (*homeowner)*. Finally, household income is measured with a dichotomous variable scored 1 for victims whose household income falls below the federal poverty threshold in the year of the interview and scored 0 otherwise (*household poverty*).

Victim age is a continuous variable that reflects the age of the victim at the time of the interview. The age of the offender is dummy coded as *under age 18* and *age 18 and older*, with the latter group serving as the reference category. The race of the offender is measured by a series of dummy variables that distinguish offenders identified by victims as *black*, *white*, or of some *other race*, with white offenders serving as the reference group. The NCVS provides a more detailed breakdown of the race and ethnicity of victims, which enables a comparison between victims who identify themselves as *Hispanic*, *non-Hispanic black*, *American Indian or Asian* and *non-Hispanic white*, the group which serves as the reference category in the multivariate analyses. The marital status of the victim is measured with a dummy variable scored 1 for respondents who were married at the time of the survey and 0 otherwise (*married*).

Several characteristics of the nature of sexual victimizations are also included as control variables. A dummy variable distinguishes between rapes that were completed (coded 1) and those that were attempted only (coded 0) (*completed crime*). The number of offenders involved in the incident is measured by a dummy variable coded 0 for incidents involving one offender and 1 for those involving multiple offenders (*multiple offenders*).[8] Four binary variables are used to distinguish between incidents in which the victim reported that the offender had a gun (*offender had gun*), the offender had a knife, club, or other weapon (*offender had other weapon*), the victim was not certain about whether the offender was armed (w*eapon use unknown*), and the

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offender was unarmed (*offender had no weapon*), which serves as the reference category in the multivariate regression models. The presence of a third party was measured by a dummy variable scored 1 if somebody besides the victim and offender was present and 0 otherwise (*third party present*). A dummy variable distinguishes between incidents in which the offender used physical force against the victim or, in other words, hit or shot the victim with a gun, stabbed or attacked the victim with a knife, hit the victim with another object, or slapped or knocked down the victim, and those in which no force was used (*offender used physical force*). The analysis also includes indicators of whether the victim incurred physical injuries in addition to those associated directly with the rape and whether or not the incident occurred in a private place. The injury variable is coded 1 for victims who indicated that they received gunshot or knife wounds, broken bones or teeth, internal injuries, or bruises, cuts, or scratches, and coded 0 otherwise (*other physical injuries to the victim*). A dichotomous variable distinguishes incidents that occurred in private places from all others (*private location*).

Finally, the analysis also controls for changes over time in the method used to elicit information from crime victims. During the 1970s the modal method used to elicit responses in the NCVS was an in-person interview, but by 1980 more than one-half of the sample was interviewed by telephone. By 1986 telephone interviewing comprised 65% of all interviews conducted in the NCVS in some interview periods (in most cases, the first and fifth interviews are conducted in person, and the other interviews are conducted by phone). About 5 percent of NCS interviews during the late 1980s were conducted through computer assisted telephone interviewing (CATI) procedures, and this share has grown to about 30 percent in the NCVS during the 1990s. There is some evidence in the literature that women are more likely to report rapes in phone interviews than in person, and it may also be the case that the likelihood of police

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notification among victims who do report a serious crime vary by the method used to elicit this information. For instance, given that most NCVS interviewers are women, it may be that some women report that they notify the police when interviewed in person due to social pressure, when in fact they did not contact the police. Although the overall low rates of police notification would suggest that this occurs infrequently, its occurrence might be correlated with various features of victims or incidents (e.g., the relationship between victims and offenders). If so, failure to consider "method of administration" could bias regression coefficients. Accordingly, the analysis presented includes a series of dichotomous variables that distinguish victims *interviewed by CATI*, *interviewed by phone (non-CATI)*, and *interviewed in person*.

Analytical Strategy

Logistic regression was used to estimate effects on the dichotomous measure of police notification and multinomial logistic regression was used to estimate effects on the polytomous measure of police notification (Hosmer and Lemeshow, 2000; Long, 1997).

Estimates of standard errors and parameters based on the NCS and NCVS may be biased due to differential probabilities of selection and nonresponse, and incident weights have been developed to adjust for these factors (see Lohr and Liu, 1994). The regression analyses presented below are based on data to which incident-level weights have been applied.

An equally important methodological issue when using the NCS and NCVS is whether and how to adjust for the complex sample design employed in the surveys. This issue is particularly important in the context of the present research since the strategies adopted in past studies may have affected the statistical significance of effects representing change over time in the influence of victim-offender relationship on police notification (see Ruback, 1995). The

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NCS and NCVS are based on a stratified, multi-stage cluster sample design, and observations within primary sampling units (PSUs) cannot be assumed to be independent (e.g., Alexander, 1987; Bachman, 1993; U.S. Department of Justice, 2001). Standard regression approaches, which assume simple random sampling, do not take into account this type of non-independence and tend to produce standard errors that are biased when used to analyze complex survey data. Under some conditions, failure to account for survey design effects results in standard errors that are biased downward, which can increase (sometimes substantially) the likelihood of "Type I" errors (e.g., Armitage and Colton, 1998). Unfortunately, relatively little is known about the precise properties of design effects in the NCS and NCVS, especially for standard errors of *covariates* included in regression models. The vast majority of studies based on the NCS and NCVS have not incorporated adjustments for sample design effects, and some of the studies that have done so are ambiguous about the extent to which conclusions drawn from analyses of these data are sensitive to design effect adjustments.

Two general approaches have been used to adjust for design effects in the NCS and NCVS. The first and most common strategy has been to multiply estimated standard errors for covariates included in regression models by some constant that reflects an overall design effect for the survey. Most studies based on NCS data have assumed a design effect of 1.92 (e.g., Bachman, 1993), while studies using the redesigned NCVS data have assumed a somewhat larger design effect—2.5 (e.g., Thompson et al., 1999). In practice, these design effects reflect the degree to which variances may be overestimated in the NCS and NCVS, and therefore the actual adjustments made to standard errors represent the square root of these values: the standard errors are multiplied by 1.39 if the design effect is assumed to be 1.92, and they are multiplied by 1.58 if it is assumed to be 2.5. These figures are derived from results of

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generalized variance function analyses of design effects for linear estimates (e.g., means, totals, proportions, and rates) in NCS person- and household-level data (see Alexander, 1987; Alexander and Hubble, 1990).

This "generalized" approach is arguably better than simply ignoring the complex sampling design used in the NCS and NCVS. Nevertheless, it is important to note that the approach makes the questionable assumption that each variable in a specified regression model is characterized by the *same* design effect (Alexander, 1987). As Levy and Lemeshow (1999) point out, design effects can differ markedly within elements of a survey and, perhaps more importantly, across individual variables included in regression models based on survey data (see also, Skinner, Holt, and Smith, 1989). In fact, design effects for regression coefficients tend to be much smaller than those obtained for linear estimates, and in some cases are smaller than 1 (i.e., in some cases ignoring design effects in regression models will produce *inflated* standard errors) (Hosmer and Lemeshow, 2000; Neuhaus and Segal, 1993). Therefore, although the use of a constant sample design adjustment may improve upon studies that do not attend to the complex sampling procedures used in the NCS and NCVS directly (and, hence, the tendency for standard errors to be underestimated), the actual design effect, or the degree to which standard errors are underestimated (or overestimated), can differ markedly across individual covariates. In the case of research on police notification, the design effect for a particular predictor may depart substantially from the standard adjustment that has been used in prior studies (e.g., 1.92 in the NCS) and, therefore, the conclusions drawn in past studies that have applied that adjustment (e.g., Bachman, 1993) may be as misleading as those that do not apply these adjustments (e.g., Lizotte, 1985).

A second, and more precise, method of adjusting for design effects is to directly estimate

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survey regression models, which formally take into account non-independence amongst observations. This approach requires data on the strata and primary sampling units (PSUs) from which survey respondents were selected. Recent versions of public-use NCVS data (i.e., from 1993 to the present) include variables that identify the strata and primary sampling units from which observations are drawn, which enable users to estimate survey regression models that adjust for the design features of the NCVS and produce standard errors that are approximately unbiased. Several recent studies have incorporated these techniques (e.g., Baumer, 2002; Lauritsen, 2001; Lauritsen and White, 2001). These person- and incident-level survey-based analyses reveal some relatively large design effects for linear estimates. But for regression coefficients the observed design effects in these studies are generally much smaller than those assumed in prior research, and the substantive conclusions drawn from the survey regression models are very similar to those obtained by "model-based" statistical analyses.

Although it was not possible to estimate survey regression models fully for both the NCS and NCVS data incorporated in the present study, the currently best available methods of accounting for design effects in each period was used for the analyses reported below. For the 1992-2000 redesigned data, survey regression models were estimated that directly incorporate NCVS strata and PSU variables and adjust for design effects.[9] Consistent with prior research, the design-based standard errors presented are very similar to those obtained from analyses that assume a simple random sample (see also Baumer, 2002). The average design effect across all covariates included in the regression models was approximately 1.13 (the maximum observed design effect was 1.59), which is much lower than the design effect of 2.5 assumed in a recent study using the NCVS (Thompson et al., 1999). For the 1973-1991 period, all standard errors obtained in regressions using a standard model-based approach were multiplied by the covariate-

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specific design effects observed in survey regression models based on 1987-1991 NCS data.[10] Again, the average design effect across all covariates included in the regression models (about 1.11) was substantially smaller than the constant of 1.92 for a design effect assumed in past research using pre-redesign data (e.g., Bachman, 1993), and the maximum design effect for any of the covariates was 1.42.[11] While the methods used to estimate design effects that are less precise than the procedure used for the most recent period, the overall approach still represents a significant improvement over past research. Perhaps most important to note is that the design effect adjustments made in each period have no bearing on the substantive conclusions drawn.

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IV. RESULTS

Table 1 describes the two samples used in the analysis. The table reveals that slightly more than one-half of the rapes disclosed to NCS interviewers between 1973 and 1991 were reported to the police. Of those, more than two-thirds were reported directly by victims. Approximately 51 percent of these rapes involved offenders who were known to the victim; one-quarter were either well-known acquaintances or family members.

Table 1 about here

The descriptive results for the 1992-2000 NCVS sample show that rates of police notification are much lower in the redesigned NCVS. Less than one-third (29.6 percent) of the 636 rapes recorded in the NCVS during the period were reported to the police, with 19 percent of the recorded incidents reported to the police directly by victims. There also is a substantial difference between the two samples in terms of victim-offender relationship—more than 80 percent (84.3 percent) of the rapes reported during the 1990s were committed by somebody with whom the victim was acquainted, and slightly more than half were perpetrated by somebody well-known or related to the victim. It is clear from these results that the probing questions and other changes (e.g., greater use of CATI) in the redesigned survey produce a sample of incidents that are quite different from the NCS in terms of relationship (i.e., more acquaintance rapes), potential for injury and death (i.e., a lower prevalence of gun use, other injury, and force), and police notification, and that the two time periods should be analyzed separately.

Turning to the substantive questions addressed in the research, Table 2 presents regression models that evaluate whether the likelihood of police notification among rape victims has increased since the early 1970s and whether the likelihood of police notification differs significantly between victims assaulted by strangers and non-strangers during this period.

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Results are shown separately for 1973-1991 (Models 1 and 2) and 1992-2000 (Models 3 and 4), and within each period results are presented from logistic regression models that contrast police notification with non-reporting, and from multinomial logit models that disaggregate police notification into victim reporting and third-party reporting (e.g., another member of the household, some non-law enforcement official, anybody else), respectively. Parameters are displayed for all variables considered in the analysis, but to maintain focus on the key research issues addressed in the project, attention here is restricted to the effects of year and victim-offender relationship.

Table 2 about here

In contrast with conclusions of past research (e.g., Jensen and Karpos, 1993), the results shown in Model 1 indicate that the overall likelihood of police notification increased significantly ($b=.023$, $p \leq .05$) between 1973 and 1991, net of changes in the types of victims, offenders, and characteristics of these incidents.[12] Interestingly, the multinomial logit results (Model 2) for this period indicate that this increase is primarily due to changes in the likelihood of police notification by third-parties ($b=.071$, $p \leq .05$); there was no comparable increase in reporting directly by victims during this period ($b=.004$, $p > .50$). Model 3 of Table 2 also reveals that the likelihood of police notification in rape incidents increased significantly during the 1990s ($b=.098$, $p \leq .05$). The magnitude of this increase is larger than observed for the earlier period.[13] However, unlike the earlier period, the multinomial logit analysis indicates that in the 1990s the likelihood of police notification increased considerably both for victims and third parties, though the increase observed among third parties is not quite statistically significant at conventional levels (see Model 4).

Turning to the question of whether there are significant effects of victim-offender

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relationship on police notification during the two periods examined in the study, the results shown in Model 1 reveal that during the 1970s and 1980s rapes by non-strangers were significantly less likely ($b=-.541$, $p \leq .05$) to be reported than those committed by strangers (see also Dukes and Mattley, 1977; Feldman-Summers and Ashworth, 1981; Greenberg and Ruback, 1992; Lizotte, 1985; Williams, 1984); the effect of this relatively crude indicator of relationship on third-party reporting is stronger than the effect on victim reporting (see Model 2). In contrast, the findings for relationship effects in the 1990s, presented in Models 3 and 4 of Table 2, are consistent with Bachman's (1998) conclusions. Controlling for other factors, rapes disclosed to NCVS interviewers by women assaulted by non-strangers are just as likely to be reported to the police as rapes committed by strangers ($b=.078$, $p > .50$).

Table 3 displays a similar set of regression models, save for the victim-offender relationship variable, which now is represented by a series of dichotomous variables that reflect more detailed types of non-stranger relationships. As seen in Model 1, the more detailed analyses of relationship categories for the 1973-1991 period reveals negative coefficients for all non-stranger relationships, indicating a general reluctance to notify the police when the victim and offender know each other in any way; however, not all effects are statistically significant. In addition, Model 2 shows that the effects of two victim-offender relationships are much stronger for third party than victim reporting: third parties are particularly unlikely to report incidents involving spouses and persons known by sight-only (see also Felson et al., 1999). For the 1992-2000 period, the results displayed in Table 3 indicate that victim-offender relationship does not affect the likelihood of police notification during this period, net of other factors.

Table 3 about here

Table 4 presents findings from a more direct examination of changes over time in the

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likelihood of police notification within the different relationship types, as well as whether the gap the likelihood of police notification between stranger and non-stranger rapes has diminished over time. Results are shown for seven distinct multiplicative equations within each period. Equation 1 evaluates changes in reporting of rapes by non-strangers relative to rapes by strangers during the two periods; equations 2-6 examine changes in reporting for each of the detailed relationship classifications, respectively (in each case, relative to all other incidents); and equation 7 shows how reporting for the detailed categories changed relative to change in stranger incidents in particular. These equations were estimated both for the binary measure of police notification using logistic regression and the polytomous measure using a multinomial regression approach. For ease of presentation, only the coefficients and standard errors for the interaction terms relevant to these issues are shown (the actual equations also include the additive terms for year and relationship and all control variables discussed above).

Table 4 about here

The left side of Table 4 (Models 1 and 2) displays results for the 1973-1991 period. The first row (equation 1) shows a statistically significant interaction between year and non-stranger relationship from 1973-1991. This indicates that, during this period, changes in police notification of rapes by non-strangers were greater than changes in police notification of rapes by strangers. Thus, although a significant difference was observed overall in the likelihood of police notification in stranger and non-stranger rape cases during the 1970s and 1980s (see Model 1 of Table 2), this difference has diminished slightly during the period (see also Bachman, 1993).[14] Inspection of the remaining rows in Table 4 (equations 2 through 7) for this period reveals a statistically significant interaction for only one of the relationship types: spouses. Increases in the likelihood of police notification for rapes committed by husbands and ex-

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husbands between 1973-1991 were larger than those observed for other types of incidents, including stranger incidents (the reference category in equation 7), for which police notification did not increase significantly. Given that the main effects for year in the equations that include a multiplicative term for the interaction between year and spouse are effectively zero, this indicates a significant increase in the likelihood of police notification during the 1970s and 1980s in police notification among women raped by spouses. Moreover, the larger relative increase in reporting in spousal rape cases is partly responsible for the overall relative increase in reporting for non-stranger rapes during the 1970s and 1980s.

On the right hand side of Table 4 (Models 3 and 4), parallel results are presented for the 1990s. They reveal no statistically significant interactions, suggesting that changes over time in the likelihood of police notification during this period did not differ by victim-offender relationship and, consequently, differences in the likelihood of reporting between strangers and non-strangers did not change significantly during the period.

Figure 3 about here

The main story that emerges from the analysis of rape incidents is summarized visually in Figure 3, which presents predicted probabilities of police notification over time for the two periods, assuming mean values for all variables except the year of incident (e.g., Bachman and Paternoster, 2004; Long, 1997). Figure 3 illustrates that, net of other factors, the probability of police notification in non-stranger rapes increased at a greater pace than stranger rapes during the 1970s and 1980s and, consequently, the difference in the likelihood of reporting between stranger and non-stranger incidents by the early 1990s was quite small. Consistent with this pattern, the NCVS data from the 1990s reveal trends in police notification that are quite similar for stranger and non-stranger rapes; the likelihood of police notification among women raped by

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both strangers and non-strangers has increased considerably during the 1990s, and the gap in reporting between stranger and non-stranger incidents is relatively small throughout the period.[15]

Supplementary Analyses

Although not listed as an objective in the original proposal, to better understand the context of the findings presented for rape, a supplementary analysis was conducted for other (non-sexual) assaults experienced by females and reported in the NCS and NCVS between 1973-2000. Assessments about the forces that may have driven changes in police notification by rape victims may be confounded by other factors (e.g., declines in social capital, which could have stimulated broader increases in police notification) that may have influenced reporting during this period; comparing the results obtained for rape with other offenses may help to shed further light on the matter.

The samples for the supplementary analyses include 14,724 non-sexual assaults reported by females in the NCS (1973-1991) and 6,519 non-sexual assaults reported by females in the NCVS (1992-2000). The measures and methods used for this analysis parallel exactly those described above for rape incidents. The corresponding results are presented in Tables 5-8.

Table 5 about here

Descriptive statistics for the samples used in the supplementary analysis are displayed in Table 5. Unlike the findings for rape, the descriptive results for non-sexual assaults indicate that rates of police notification are not much lower in the redesigned NCVS as compared to the NCS. In both periods, about half of all non-sexual assaults experienced by women were reported to the police, and about 15 percent of incidents disclosed to interviewers were reported to the police by third parties. Other aspects of the sample more closely mirror those observed in the analysis of

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rape incidents. During the 1970s and 1980s, about two-thirds of the non-sexual assaults were reported to have been committed by a non-stranger, but in the 1990s, the redesigned data reveal that this fraction had increased to nearly four-fifths, with most of the change attributed to movement within the "well-known" acquaintance category.

Table 6 presents regression models that evaluate whether the likelihood of police notification among non-sexual assault victims has increased since the early 1970s and whether the likelihood of police notification differs significantly between victims assaulted by strangers and non-strangers during this period. As with the analysis of rape incidents, results are shown separately for 1973-1991 (Models 1 and 2) and 1992-2000 (Models 3 and 4), and within each period results are presented from logistic regression models that contrast police notification with non-reporting, and from multinomial logit models that disaggregate police notification into victim reporting and third-party reporting.

Table 6 about here

In contrast with the results observed for rape, the findings shown in Models 1 and 2 indicate that the likelihood of police notification (by victims, third parties, or overall) did not increase significantly between 1973 and 1991, net of changes in the types of victims, offenders, and characteristics of these incidents. Thus, whatever the forces responsible for the increases observed in the likelihood of police notification among rape victims during this period, they apparently were not equally influential to women who experienced other types of assaults.

The results for the 1990s are more consistent with those observed in the analysis of rape incidents. As shown in Model 3, between 1992 and 2000 the likelihood of police notification among female victims of non-sexual assault increased significantly ($b=.061$, $p \leq .05$). The magnitude of this increase is smaller than that observed for rape, however, like the pattern shown

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for rape, the magnitude of observed changes in the likelihood of police notification by female victims of other assaults is similar among both victims and third parties to these incidents (see Model 4).[16]

Table 6 also presents evidence on the matter of whether there were significant differences in the likelihood of police notification in stranger and non-stranger assaults within the two study periods. The patterns are generally similar to those observed for rape incidents (compare with Table 2). During the 1970s and 1980s assaults committed by non-strangers were significantly less likely ($b=-.338$, $p \leq .05$) to be reported than those committed by strangers (Model 1), and the effect on third-party reporting was stronger than the effect on victim reporting (Model 2). In contrast, for the 1990s (Model 3), the results indicate no significant differences in the likelihood of police notification between strangers and non-strangers overall. However, third parties do appear to be significantly less likely to notify the police in non-stranger assaults than stranger assaults during the 1990s, which was not the case for rapes (Model 4).

Table 7 about here

Table 7 shows a similar set of regression models with more detailed relationship categories. Overall, the findings for non-sexual assaults are very similar to the findings observed for rape incidents (compare with Table 3). For the 1973-1991 period, the results shown in Table 7 reveal negative coefficients for all relationship types, indicating a general reluctance to notify the police when the victim and offender know each other (Models 1 and 2). The negative coefficients observed for all but one of the relationship types ("sight only acquaintances)" in the 1990s (Model 3) suggest that women who were assaulted by somebody they knew during this period also were somewhat less likely to notify the police than women attacked by strangers, however, the only statistically significant difference observed was for non-intimate family

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members; these incidents are significantly less likely to be reported than are stranger incidents, with most of that difference attributed to low levels of reporting by third parties (Model 4). A more distinct pattern that emerges is that third parties remain very reluctant to report assaults when the victim and offender are acquainted, especially when they are closely acquainted. Overall, however, the results for 1992-2000 indicate weaker effects of victim-offender relationship on the likelihood of police notification among female victims of non-sexual assault than observed in the prior period.

Table 8 examines more directly changes over time in the likelihood of police notification within the different relationship types (only the coefficients and standard errors for the interaction terms relevant to these issues are shown; the actual equations also include the additive terms and the control variables discussed above). The results shown in Table 8 clearly indicate that there have not been significant and distinctive *increases* in the likelihood of police notification among women assaulted by acquaintances. The first row of Table 8 (equation 1) shows a statistically significant interaction between year and non-stranger relationship for victim reporting during the 1973-1991 period, but in contrast to the results observed for rape, this interaction term is *negative*. This indicates that during the 1970s and 1980s the likelihood of police notification among females assaulted by non-strangers declined significantly more than the likelihood of police notification in stranger assaults. As equations 2 and 7 further reveal, this pattern mainly reflects a distinctive change in the likelihood that women assaulted by spouses notified the police as compared to women assaulted by other types of acquaintances or by strangers. Given that the main effect for year in these equations is approximately zero (not shown), the results indicate that there was a significant decline during the 1970s and 1980s in the likelihood that females victimized by spouses notified the police. Thus, it appears that forces

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were at work during the 1970s and 1980s which *lowered* the likelihood that persons involved in marital (or ex-marital) relationships would contact the police. At the same time, however, women assaulted by non-intimate family members, well-known acquaintances, and those whom they knew only by sight became slightly more likely (albeit not significantly so) to contact the police during this period, which appears to be the principal reason for the declining significance overall of differences in the likelihood of police notification between strangers and non-strangers over the full period (compare the NCS and NCVS results in Table 8).

Table 8 about here

On the right side of Table 8, a parallel set of regression models are presented for the 1990s. Similar to the results presented for rape, they reveal overall that changes over time in the likelihood of police notification during this period did not differ by victim-offender relationship and differences in the likelihood of reporting between strangers and non-strangers did not change significantly during this period. The only significant interactions observed for this period was for incidents involving non-intimate family members. During the 1990s, increases in third party reporting were greater in instances where a female was assaulted by a non-intimate family member than in other types of assaults.

Figure 4 summarizes the key findings from the analysis of changes in the likelihood of police notification among female non-sexual assault victims. The predicted probabilities displayed assume mean values for all variables except the year of incident. As Figure 4 illustrates, controlling for other factors, the likelihood of police notification among female victims of non-sexual assault did not increase significantly during the 1970s and 1980s, nor is there evidence of greater increases in police notification among females assaulted by non-strangers. In fact, the likelihood of police notification in non-stranger assaults declines slightly

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during this period, while the trend in reporting stranger assaults is relatively flat. One consequence of these patterns is a slight increase in the gap in the likelihood of police notification in female stranger and non-stranger assaults during the period, with females assaulted by non-strangers becoming relatively less likely to notify the police as compared to females assaulted by strangers (see also Table 8). Figure 4 also shows that a moderate, albeit non-significant, difference in the probability of police notification in stranger and non-stranger female assault incidents remains during the 1990s, but the two most noteworthy patterns for this period are that relatively large and comparable increases in the likelihood of police notification are observed for both stranger and non-stranger assaults, and that because non-stranger incidents compose such a large majority of the incidents, the temporal trend in police notification for these cases is virtually indistinguishable from the trend in non-sexual assaults overall.

Figure 4 about here

In summary, the temporal patterns in police notification by non-sexual assault victims during the 1970s and 1980s diverge from the patterns found for rape incidents. Whereas a significant increase in the likelihood of police notification overall was observed for rape incidents during this period, this was not the case for other assaults. Further, unlike the findings for rape, the likelihood of police notification by females assaulted by non-strangers did not increase significantly during the 1970s and 1980s. A different story emerges in the 1990s. The NCVS data reveal patterns of police notification that are more similar across crime types – the likelihood of police notification increased significantly during the 1990s both among female victims of rape and female victims of other types of assaults.

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VI. CONCLUSIONS

This study examined whether the overall likelihood of police notification by rape victims has increased during the past three decades, whether any observed increase in the likelihood of police notification during this period has been more prominent among (or perhaps restricted to) incidents involving non-strangers, and whether differences in the likelihood of police notification between incidents involving strangers and non-strangers have diminished significantly over time. In addition, a parallel analysis was conducted on reporting among females who disclosed that they were victims of non-sexual assaults.

The results suggest that the likelihood of police notification for incidents of rape has increased since the early 1970s. During the 1970s and 1980s the increase in reporting was due mainly to changes in third-party reporting and changes in victims' reporting of non-stranger rapes; the increase in reporting was particularly large among women raped by their husbands or ex-husbands. During the 1990s, the rate of change accelerated and broadened in scope: there was an increase in both victim and third party reporting of rapes committed by strangers as well as non-strangers, though the increase among third parties was not quite statistically significant. The study also suggests that the difference between the likelihood of police notification for incidents involving strangers and non-strangers diminished during the 1970s and 1980s and, by the early 1990s there was no significant difference. In the 1990s, rapes committed by non-strangers were apparently just as likely to be reported to the police as rapes committed by strangers. Finally, the results suggest that it is important to distinguish between victim and third party reporting. Note, however, that third parties and victims may influence each other to report an incident (Ruback et al., 1984; Ruback, 1994). In addition, increases in third party reporting may reflect either increases in the tendency for victims to confide in them more or an increased

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proclivity of third parties to report to the police. It is not possible to differentiate between these alternative possibilities with the NCS or NCVS data.

The findings are consistent with the univariate and bivariate analyses of studies based on aggregate data that show an upward trend from 1973 to the mid-1980s in police notification in non-stranger rapes (Orcutt and Faison, 1988; Jenson and Karpos, 1993). The present study shows that this trend continued through the early 1990s. However, contrary to some prior research (Jenson and Karpos, 1993), the present research also reveals a significant increase in the likelihood of police notification overall after controlling for other factors. The results also bear on a debate that emerged in the literature during the mid-1990s about whether victim-offender relationship remains an important predictor of the likelihood of police notification by rape victims (see Bachman, 1993, 1995; Pollard, 1995; Ruback, 1993). Consistent with Bachman's (1993, 1998) research on rape cases and with recent research on non-sexual assaults (Felson et al., 1999), the study suggests that in the 199s women are just as likely to report to the police rapes by people they know as they are to report rapes by strangers. Comparisons of coefficients from the 1990s with the earlier period suggests that the divergence in findings regarding the effects of non-stranger relationship on police notification across the two periods might have arisen because women raped by acquaintances (i.e., those known well, casually, or by sight only) are no longer *significantly* less likely to notify the police than are women raped by strangers.

It is possible that the social and legal changes associated with the rape reform movement influenced the responses women give to survey administrators when asked about sexual victimizations. For instance, perhaps for many of the same reasons women have become more likely to notify the police, during the past three decades women who are raped, especially those raped by an acquaintance, have become more likely to disclose their victimizations to

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interviewers in the NCS and NCVS. A comparison of the nature of rape incidents disclosed in the NCS (1973-91) and NCVS (1992-2000)—that is, before and after the redesign—reveals evidence consistent with this assertion and, although less certain, a similar trend may have occurred within the periods covered by these two data collections. Yet, if women have become more likely to disclose rapes to interviewers, the present analyses would underestimate the magnitude of the increase in the true likelihood of police notification for rapes during the past three decades, particularly if the previously undetected incidents that became more likely to be acknowledged to survey administrators were unlikely to be reported to the police. The influence of changes in survey response patterns on the role of victim-offender relationship in reporting is more complex, but assuming that the fraction of women in the U.S. raped by non-strangers who acknowledge these crimes to NCS and NCVS interviewers grew over time (relative to stranger rapes), the analysis would underestimate both the initial gap in reporting between stranger and nonstranger incidents and, even more important, the pace at which that gap diminished (see also Gartner and Macmillan, 1995; Harlow, 1991; Lizotte, 1985). Thus, the empirical pattern that emerges from the present study cannot be easily dismissed as an artifact of changes in survey response; the NCS and NCVS data appear to provide a meaningful assessment of the extent to which the likelihood of police notification has changed overall, and in relative terms for stranger and non-stranger incidents.

One interpretation of the results presented for rape is that they reflect broader trends in police notification of violent crime between 1973-2000. For instance, levels of social capital have declined significantly during the past three decades in the U.S. (e.g., Putnam 2000), and it is plausible that, confronted with fewer informal mechanisms in the aftermath of a crime, crime victims overall became more likely to enlist the help of the police during this period. However,

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the supplementary analyses of non-sexual assaults suggest that the changes in police notification observed among rape victims were unique, at least during the 1970s and 1980s. The results for rape for this period are consistent with the intended objectives and expected outcomes of legal reforms and cultural changes about rape. Much of the early rape reform movement focused on broadening the legal definition and public perception of rape to include incidents committed by acquaintances, which are most likely to elicit controversy over definitions. Consistent with those efforts, the analysis showed a significantly larger increase in police notification for non-stranger rapes only during the 1970s and 1980s. In addition, police notification of rapes but not other types of assaults committed by spouses were particularly likely to increase during this period. This pattern may be due to publicity and changing attitudes toward marital rape and violence. The passage of laws in various states regarding spousal rape occurred in the 1980s (Allison and Wrighsman, 1993), and mandatory arrest laws for domestic violence were instituted in the 1980s and early 1990s (Bachman, 1995).

Legal, social, and political efforts to alter the way Americans define and respond to rape intensified in the latter part of the 1980s and during the 1990s (Campbell, 1998; Campbell and Ahrens, 1998; Epstein and Langenbahn, 1994; Iovanni and Miller, 2001; Ledray, 2001; Little, 2001; Valente et al., 2001). Consistent with this expanded scope, the analysis indicates that increases in police notification have broadened over time. During the 1970s and 1980s the increases were primarily due to changes in reporting by third parties and in victim reporting of rapes committed by non-strangers, but during the 1990s increases occurred both among third parties and victims and in rapes by non-strangers and strangers. Although the increases among third parties were not statistically significant, they were relatively large and comparable to the significant increases observed among victims. This pattern is consistent with the increase in the

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scope of the rape reform movement and other social changes that have occurred during the past 30 years. Moreover, the expansion of legal reforms in the 1990s that have focused more generally on violence against women may help to explain why similar temporal patterns were observed for rapes and non-sexual assaults during this period.

Finally, in the 1990s the findings for rape and non-sexual assaults reveal little consistent evidence that the police are less likely to be notified by rape victims when the offender is known to the victim. This pattern seems surprising given discussions of privacy, fear of reprisal, and other factors that scholars have suggested inhibit reporting when the offender is a family member or friend. However, recent research suggests that researchers have ignored the possibility that there are also greater incentives for reporting assaults when victims know the offender (Felson et al., 1999; Felson et al., 2002). For example, victims often call the police in order to gain protection from future attack, and this incentive is much greater when they know the offender; strangers are unlikely to be seen again. These factors apparently counteract the inhibitory factors, producing no victim-offender effect on reporting.

In sum, with respect to the key issues addressed in the project, the results indicate a significant increase during the 1970s and 1980s in the likelihood of police notification by female rape victims; the increase was greater among third-party reporting, and among women raped by non-strangers, which resulted in a declining significance of differences in reporting between strangers and non-strangers over time. These changes coincided with the large-scale media and social campaigns that occurred during this period and that focused the public's attention stigma on the issue of these "hidden" rapes. During the 1990s, the scope and momentum of these campaigns appear to have accelerated, translating into increases in police notification among both victims and third parties, and in both stranger and non-stranger rapes.

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Although the project did not formally evaluate criminal justice operations or policies, the results provide the first definitive evidence on temporal patterns in the likelihood of police notification among rape victims, and this evidence can be used to indirectly assess the efficacy of practices designed to affect women's reporting behaviors and to highlight potentially fruitful avenues of future research that could do so more directly. The temporal patterns of police notification presented for rape are suggestive that the substantial legal reforms and the growth in legal and non-legal services available to rape victims have been influential in elevating the likelihood that women notify the police when they are raped. The results also support the claim that the expansion of prevention and response efforts to encompass in a more coordinated fashion criminal justice, medical, and community resources during the past decade has been particularly influential, with the likelihood of police notification in rape incidents increasing nearly two-fold during this period. Thus, the results of this study point in favor of recent policy practices geared toward increasing police notification. Nonetheless, the most recent data presented above indicate that a majority of rape victims still do not report their attacks to the police, so the research also points to a need for further efforts aimed at encouraging and assisting rape victims in contacting the police to help initiate legal proceedings.

Further research is needed to more precisely identify the types of practices that might best facilitate additional increases in police notification among rape victims. Although the present study was well-suited for identifying *whether* the likelihood of police notification has changed, the type of analyses presented herein are not capable of isolating *which specific policies or practices affected the observed changes*, nor does a set of policies that might help continue those changes emerge from the study. Future large-scale studies of police notification could provide more detailed information for policy by capturing jurisdictional differences in legal statutes and

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procedures, social norms, and victim perceptions. Such a multilevel, longitudinal analysis is feasible with the area-identified NCS and NCVS data, and if pursued should capitalize not only on the collection of policy relevant external data that can be merged to the NCVS, but also on the inherent panel structure of the NCVS. The present study relied on repeated cross-sectional data, an approach that does not allow for a direct examination of changes in police notification *within persons* over time or for an examination of the effects of changes in survey administration such as time in sample and the prevalence of unbounded interviews. Capitalizing on the panel structure of the NCVS in future investigations of police notification could provide valuable policy insights, especially if combined with data on temporal or jurisdictional difference in existing policy approaches and social conditions. Doing so, however, would be a substantial and expensive undertaking and would require logistical support from the U.S. Census Bureau and the Bureau of Justice Statistics in addition to one or more funding agencies. Retrospective ethnographic studies of rape victims from different jurisdictions also would provide beneficial data for criminal justice policymakers if the design could incorporate sufficient differences in the legal, social, service, and family environments to which rape victims are exposed. Finally, it would be useful to implement new policies aimed at increasing police notification among rape victims and field more concentrated victimization surveys in these (and matched, control) jurisdictions before and after implementation to determine whether police notification is greater or increasing at a faster pace in areas with particular types of programs and policies. These types of studies would help illuminate ways in which to increase police notification, which in turn may increase the likelihood of arrest and prosecution and, ultimately, the deterrent efficacy of the criminal justice system.

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ENDNOTES

[1]The data shown are from annual publications of *Criminal Victimization in the United States*. Following Bachman (1993), the data points have been smoothed using three-year running averages to illustrate more clearly the general trend in rates of police notification. See Hart and Rennison (2003) for comparable figures based on data from the NCVS.

[2]Changes in rates of completion, weapon use, police notification, and other aspects of rape cases as measured in self-report surveys may reflect changes in victim responses in addition to actual changes in the nature of rapes experienced in the United States. For instance, it is plausible that the pattern shown for weapon use in Figure 2 partially reflects a disproportionate increase in the reporting to NCS interviewers by women raped by unarmed offenders (compared to those raped by armed offenders); if so, the NCS data would reveal a decline in the proportion of rapes committed with a weapon even if the actual prevalence of weapon use in rapes did not change. The implications of changes in survey response as they relate to the results obtained in the present study are discussed in the conclusion.

[3]The data for weapon use and completion rates are presented to illustrate the logic of the argument. There are several other factors that exhibit significant bivariate relationships with police notification among rape victims and significant temporal variation over this period (e.g., occurrence in a private location, offender age, number of offenders, victim race and educational attainment, and victim injury) and, therefore, may complicate the interpretation of aggregate trends in police.

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[4]Data on rape victimizations for this research are from ICPSR studies #6406, #8864, #8608, and #8625 (see U.S. Department of Justice, 2000a, 2000b, 2000c, 2002). The analysis of the NCS data is restricted to incidents that were reported to have occurred in 1991 or earlier because, although the data include some incidents from 1992, the sample for this year is very small (n=18) due to the phase-in of the redesign. Further, sexual assaults other than rapes are excluded from the analysis of the 1992-2000 data. It is unclear whether and, if so, how these incidents (sexual assaults not perceived as incidents of rape by victims) were classified in the NCS (see also Rand et al., 1997), but restricting the redesigned sample to reported rapes seems like the most defensible strategy for comparisons with the NCS data.

[5]There were 2,015 rapes reported in the NCS between 1973-1991, 1,844 of which involved a male offender and female victim; the analysis excludes 217 of these incidents due to missing data on the dependent and independent variables. In the 1992-2000 redesigned NCVS there were 787 incidents of rape reported, of which 709 involved a male offender and female victim; the analysis focuses on 636 of these cases for which complete data were available on the dependent and independent variables. In both periods, the majority of cases that were excluded did not contain information on key attributes of the offender, including relationship to the victim.

[6]This operationalization of "year" allows for an assessment of whether the likelihood of police notification changed in a linear fashion within the two periods. Several other functional forms were considered as well. In analyses not shown, squared and cubed terms were added to models containing the linear year variable. Supplementary analyses also modeled the year effects with spline functions defined in various ways (e.g., using different combinations of adjacent years to

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form multiple time segments) within the two periods. None of these analyses revealed evidence of a significant departure from linearity in temporal patterns.

[7]It is important to note that reports published by the Bureau of Justice Statistics (BJS) and research based on the data presented in these reports (e.g., Jensen and Karpos, 1993; Orcutt and Faison, 1988) use a broader definition of "stranger violence" that includes both offenders who are unknown to the victim and offenders who are known to the victim by sight only. On its face, this seems like a reasonable strategy. However, the results presented below suggest that, at least during the 1970s and 1980s, a more appropriate strategy would be to classify persons known by sight only as non-strangers.

[8]For multiple offender incidents, victim-offender relationship is coded according to the closest relationship, offender age refers to the age of the oldest offender, and offender sex is coded with responses consistent with the majority of offenders. The few incidents that involved multiple offenders of different races were excluded from the analysis.

[9]These models were estimated using Stata, 7.0 (StataCorp, 2001). The PSU and strata variables needed to estimate survey regression models were not available for three interview quarters during the 1992-2000 period (the last quarter of 1992, and the first and second quarters of 1993). To account for this gap, survey regression models based on data for all other data collection quarters during the period were estimated and the corresponding covariate-specific design effects obtained in those models were applied to the data collection quarters for which the design variables were missing. The substantive conclusions drawn are not sensitive to this decision: the

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magnitude of the standard errors obtained in the model-based and design-based regression approaches was very similar.

[10]An important methodological objective of the project was to go beyond past work on police notification by estimating survey regression models for the full period covered in the study (1973-2000). This was not possible because the 1973-1986 NCS files that contain the strata and cluster variables needed to estimate survey regression models have not yet been made available to researchers outside the Census Bureau.

[11]This approach assumes that the covariate-specific design effects observed for the 1987-1991 period are identical to those observed for the 1973-1986 period. This is a questionable assumption, however, based on the available evidence it seems more reasonable than the alternative, which is to assume that the covariate-specific design effects for the earlier period in the NSC are nearly two times larger than those observed either in the later period of the NCS or for the more recent data obtained from the NCVS.

[12]The divergence between the findings reported here and those reported by Jensen and Karpos (1993) is a function of controlling for other features of rapes that change over time, not the inclusion of data from 1991 (their study focuses on 1973-1990).

[13]The year 2000 is a slight outlier in the analysis; the year coefficients are about 30 percent smaller than those presented in Table 2 after data from 2000 are excluded, but are still statistically significant.

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[14]Although they do not present results separately for rape, Gartner and Macmillan (1995) draw similar conclusions about the effect of victim-offender relationship on police notification based on retrospective reports contained in cross-sectional data on violence against women in Canada.

[15]Supplementary analyses (not shown in tabular form) examined whether changes in police notification were stronger for rapes that were less violent and thus more difficult to prosecute (Bryden and Lengnick, 1997). These analyses revealed no evidence in either period that change in police notification depended on whether the victim was injured, the offender used a weapon, or the offense was completed. Nor was there evidence, for the latter period, that change in police notifications were stronger for sexual assaults than rape.

[16]Various forms of possible non-linearity in temporal trends in police notification among victims of non-sexual assault were considered, including quadratic and cubic functional forms. These analyses (not shown) revealed no evidence of a significant non-linear trend in police notification.

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Figure 1. Percentage of Rapes Reported to the Police in the NCS, 1973-1991

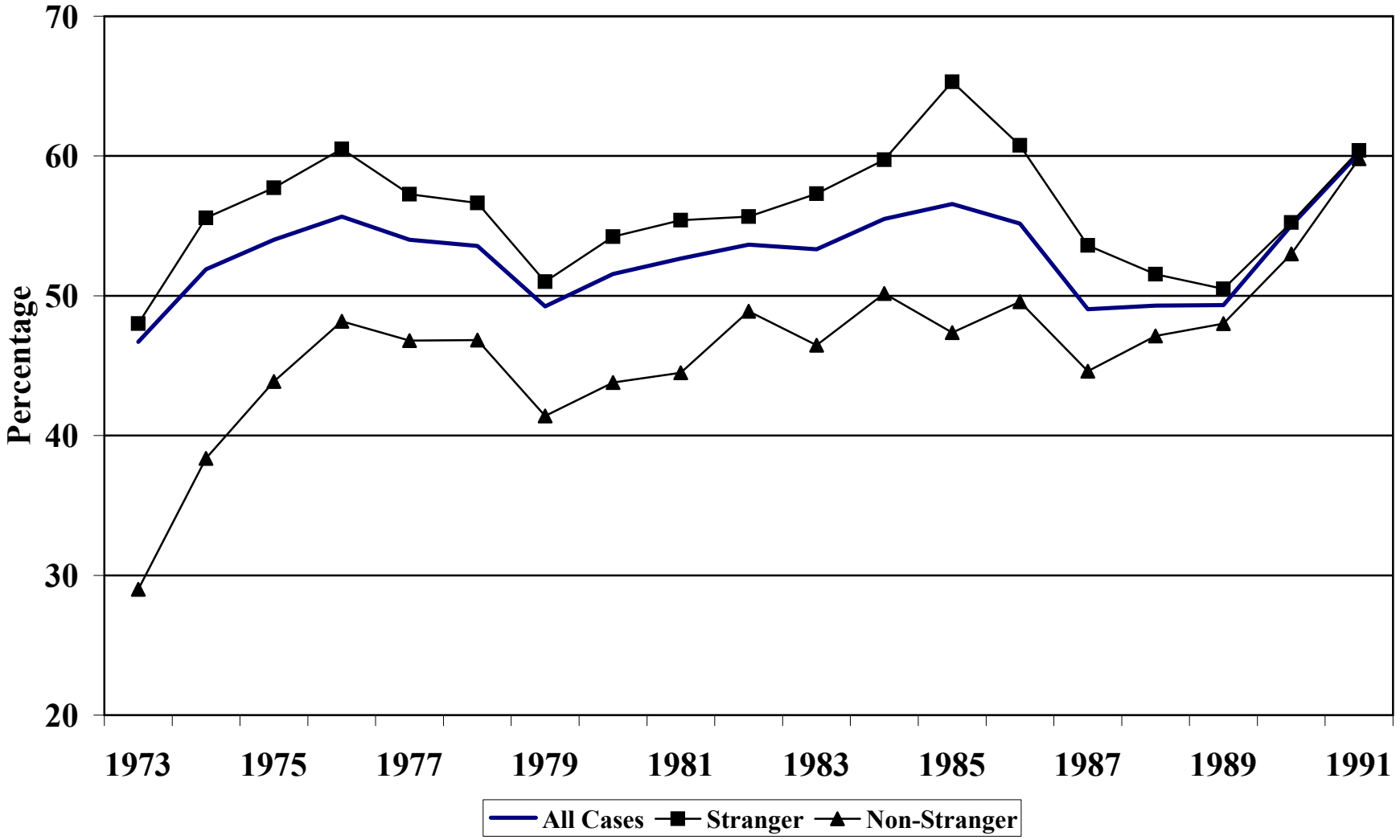

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Figure 2. Trends in Characteristics of Rapes Reported in the NCS, 1973-1991

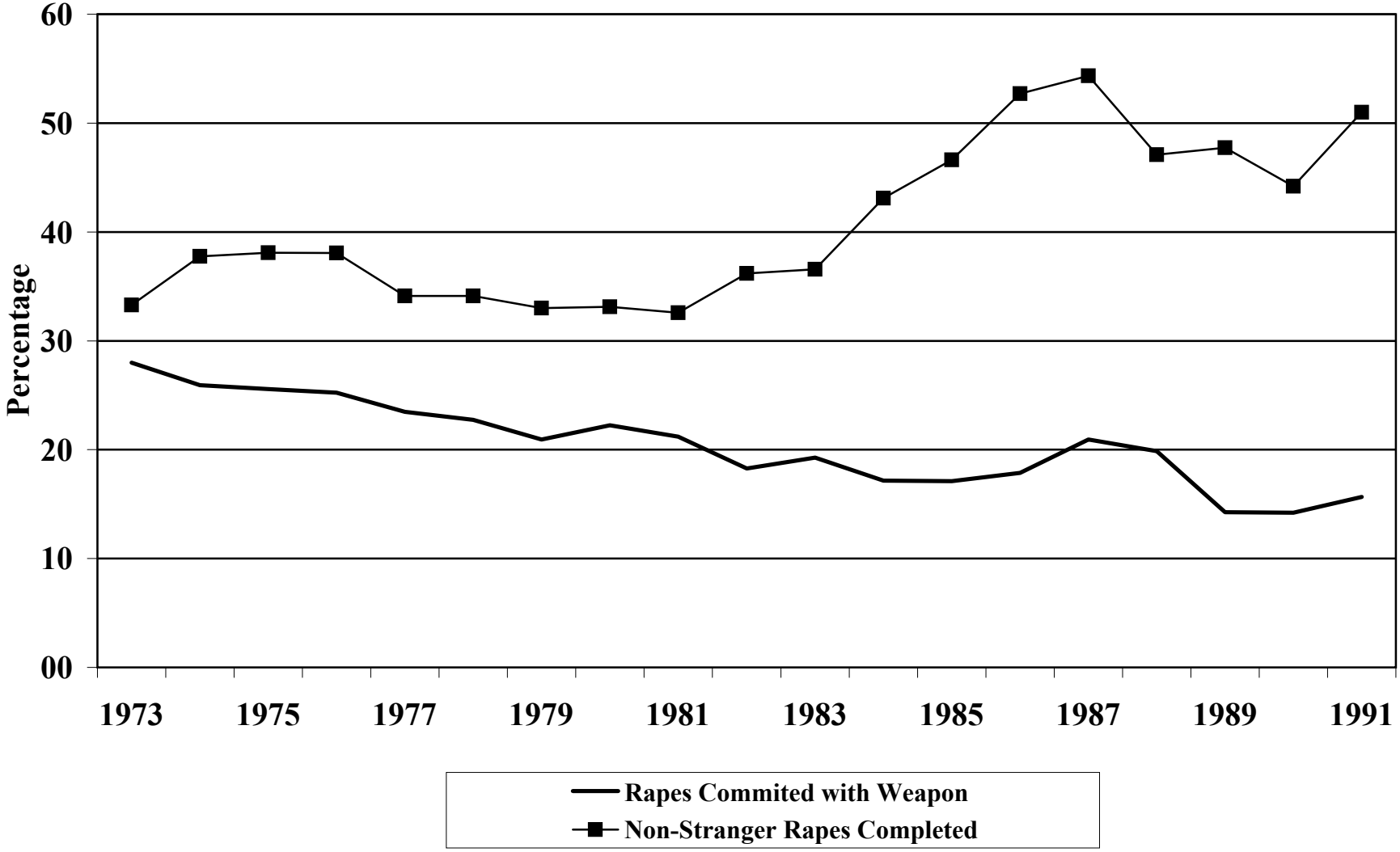

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Table 1. Percentage Distributions for Variables Included in Analysis of Police Notification by Victims of Rape (NCS 1973-91, NCVS 1992-2000).

	NCS 1973-1991	NCVS 1992-2000
Dependent Variables		
Police Notified	52.5	29.6
Victim Reported	37.2	19.0
Third Party Reported	15.3	10.6
Independent Variables		
Strangers	49.4	15.7
Non-Strangers	50.6	84.3
Spouses	4.2	11.8
Other Family Members	3.1	3.5
Well-Known Acquaintances	17.5	38.7
Casual Acquaintances	17.1	24.4
Sight Only Acquaintances	8.7	6.0
Control Variables		
Victim Characteristics		
Non-Hispanic Black	17.0	14.2
Non-Hispanic White	75.7	77.0
Hispanic	5.3	6.1
American Indian or Asian	1.9	2.7
Married	17.0	11.5
Age (Mean)	24.7	27.0
Household Poverty	30.0	33.8
Education (Mean)	14.5	15.6
Homeowner	33.9	34.3
Interviewed in Person	73.6	39.1
Interviewed by Phone (CATI)	1.8	27.2
Interviewed by Phone (non-CATI)	24.6	33.7
Offender Characteristics		
Black	32.9	22.5
White	61.3	68.6
Other	5.8	8.8
Under age 18	9.6	8.2
Age 18 and Older	90.4	91.8
Incident Characteristics		
Completed Crime	34.6	57.6
Multiple Offenders	13.8	5.2
Offender Had Gun	8.6	4.7
Offender Had Other Weapon	13.9	6.3
Offender Had No Weapon	67.8	84.1
Weapon Use Unknown	9.7	4.9
Third Party Present	26.4	22.6
Other Physical Injury to Victim	39.0	33.5
Offender Used Physical Force	28.0	20.4
Private Location	48.0	74.8
Unweighted N	1,609	636

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Table 2. Regression Coefficients for Time and Relationship Effects on Police Notification by Rape Victims (NCS & NCVS)

	1973-1991			1992-2000		
	(1) Logistic Regression	(2) Multinomial Regression		(3) Logistic Regression	(4) Multinomial Regression	
	Police Notified	Victim Reported	Third Party Reported	Police Notified	Victim Reported	Third Party Reported
Independent Variables						
Year	.023*	.004	.071*	.098*	.100*	.098
	(.010)	(.015)	(.015)	(.037)	(.043)	(.067)
Non-Strangers	-.541*	-.483*	-.719*	.078	.073	.207
	(.137)	(.137)	(.190)	(.308)	(.335)	(.458)
Control Variables						
Victim Characteristics						
Non-Hispanic Black	-.134	-.124	-.160	-.029	.046	-.165
	(.178)	(.189)	(.244)	(.362)	(.422)	(.499)
Hispanic	.448	.473	.406	-.787	-.799	-.824
	(.266)	(.270)	(.352)	(.457)	(.544)	(.767)
Other	-.670	-.657	-.670	-1.309	---	-.462
	(.399)	(.422)	(.645)	(.779)	---	(.850)
Married	.159	.152	.199	.232	.137	.518
	(.158)	(.165)	(.239)	(.302)	(.368)	(.474)
Age	.005	.013*	-.026*	.003	.017	-.037
	(.008)	(.005)	(.012)	(.011)	(.013)	(.021)
Household Poverty	-.055	-.118	.128	.483	.351	.867*
	(.149)	(.140)	(.207)	(.266)	(.307)	(.350)
Education	-.040*	-.035*	-.052*	-.055*	-.026	-.120*
	(.011)	(.013)	(.019)	(.023)	(.023)	(.039)
Homeowner	.147	.128	.168	.275	.332	.246
	(.120)	(.140)	(.192)	(.259)	(.276)	(.392)
Interviewed by Phone (non-CATI)	-.066	-.130	.089	-.703*	-.825*	-.509
	(.118)	(.146)	(.193)	(.241)	(.260)	(.433)
Interviewed by Phone (CATI)	-.213	-.166	-.366	-.778*	-.746*	-.867*
	(.347)	(.415)	(.533)	(.280)	(.281)	(.425)

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Table 2. (Continued)

	1973-1991			1992-2000		
	(1) Logistic Regression	(2) Multinomial Regression		(3) Logistic Regression	(4) Multinomial Regression	
	Police Notified	Victim Reported	Third Party Reported	Police Notified	Victim Reported	Third Party Reported
Offender Characteristics						
Black	.141	.062	.335	.546	.510	.594
	(.145)	(.157)	(.206)	(.280)	(.313)	(.483)
Other	-.162	-.106	-.333	-.302	-.253	-.362
	(.235)	(.254)	(.395)	(.383)	(.477)	(.537)
Under age 18	.392*	.344	.473	-.242	-1.16	.046
	(.186)	(.220)	(.284)	(.394)	(.583)	(.475)
Incident Characteristics						
Completed Crime	.174	.067	.435*	-.118	-.376	.394
	(.122)	(.135)	(.177)	(.240)	(.292)	(.354)
Multiple Offenders	.235	.199	.300	.047	.439	-.583
	(.165)	(.195)	(.232)	(.562)	(.719)	(.812)
Offender Had Gun	.630*	.637*	.563*	1.39*	1.34*	1.35
	(.201)	(.230)	(.281)	(.483)	(.474)	(.764)
Offender Had Other Weapon	.576*	.612*	.478*	.425	.188	.769
	(.177)	(.185)	(.242)	(.399)	(.473)	(.632)
Weapon Use Unknown	.181	.175	.176	-.257	.211	---
	(.196)	(.205)	(.276)	(.422)	(.475)	---
Third Party Present	.214	.105	.480*	.587*	.320	.957*
	(.135)	(.146)	(.183)	(.283)	(.302)	(.400)
Other Physical Injury to Victim	.349*	.353*	.362*	.233	.274	.123
	(.155)	(.142)	(.179)	(.241)	(.290)	(.353)
Offender Used Physical Force	.409*	.301*	.674*	.546*	.568	.588
	(.142)	(.146)	(.196)	(.265)	(.312)	(.465)
Private Location	.405*	.370*	.503*	-.390	-.373	-.526
	(.139)	(.138)	(.185)	(.235)	(.289)	(.319)
-2 Log Likelihood	2078.47	3021.02		675.51	866.28	
Model Chi-Square	150.29*	217.15*		97.50*	157.78*	

*$p \leq .05$, two-tailed test

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Table 3. Regression Coefficients for Detailed Relationship Effects on Police Notification by Rape Victims (NCS & NCVS)

	1973-1991			1992-2000		
	(1) Logistic Regression	(2) Multinomial Regression		(3) Logistic Regression	(4) Multinomial Regression	
	Police Notified	Victim Reported	Third Party Reported	Police Notified	Victim Reported	Third Party Reported
Independent Variables						
Year	.023*	.003	.073*	.099*	.098*	.104
	(.010)	(.015)	(.016)	(.036)	(.043)	(.067)
Spouses	-.449	-.188	-1.32*	-.072	.370	-2.06
	(.280)	(.289)	(.490)	(.503)	(.520)	(1.10)
Other Family Members	-.448	-.521	-.396	.812	.462	1.32
	(.326)	(.366)	(.433)	(.650)	(.669)	(.840)
Well-Known Acquaintances	-.613*	-.599*	-.694*	.073	.200	-.018
	(.167)	(.182)	(.225)	(.329)	(.362)	(.486)
Casual Acquaintances	-.431*	-.418*	-.492*	-.159	-.297	.157
	(.169)	(.179)	(.240)	(.356)	(.414)	(.547)
Sight Only Acquaintances	-.664*	-.511*	-1.13*	.586	.390	1.09
	(.202)	(.215)	(.335)	(.444)	(.512)	(.670)
Control Variables						
Victim Characteristics						
Non-Hispanic Black	-.122	-.113	-.138	-.009	.024	-.040
	(.179)	(.190)	(.246)	(.358)	(.420)	(.502)
Hispanic	.463	.488	.446	-.721	-.840	-.537
	(.267)	(.271)	(.351)	(.464)	(.554)	(.749)
American Indian or Asian	-.676	-.638	-.740	-1.26	---	-.324
	(.400)	(.423)	(.643)	(.791)	---	(.868)
Married	.161	.143	.252	.285	.119	.596
	(.159)	(.164)	(.238)	(.313)	(.369)	(.494)
Age	.005	.013*	-.024*	.004	.013	-.025
	(.008)	(.005)	(.012)	(.012)	(.014)	(.020)
Household Poverty	-.051	-.111	.134	.447	.361	.837*
	(.148)	(.140)	(.206)	(.257)	(.299)	(.344)
Education	-.041*	-.035*	-.052*	-.053*	-.024	-.120*
	(.011)	(.014)	(.020)	(.022)	(.022)	(.039)

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Table 3. (Continued)

	1973-1991			1992-2000		
	(1) Logistic Regression	(2) Multinomial Regression		(3) Logistic Regression	(4) Multinomial Regression	
	Police Notified	Victim Reported	Third Party Reported	Police Notified	Victim Reported	Third Party Reported
Victim Characteristics						
Homeowner	.146	.122	.173	.267	.375	.128
	(.120)	(.139)	(.190)	(.267)	(.285)	(.396)
Interviewed by Phone (non-CATI)	-.057	-.116	.094	-.670*	-.836*	-.480
	(.119)	(.145)	(.195)	(.230)	(.255)	(.364)
Interviewed by Phone (CATI)	-.186	-.118	-.390	-.685*	-700*	-.758
	(.345)	(.414)	(.534)	(.280)	(.290)	(.520)
Offender Characteristics						
Black	.145	.065	.344	.515	.549	.435
	(.146)	(.155)	(.209)	(.287)	(.328)	(.466)
Other	-.160	-.091	-.378	-.304	-.226	-.345
	(.235)	(.252)	(.400)	(.388)	(.472)	(.524)
Under age 18	.398*	.356	.472	-.215	-1.24	.190
	(.188)	(.221)	(.286)	(.391)	(.605)	(.477)
Incident Characteristics						
Completed Crime	.173	.068	.435*	-.074	-.385	.565
	(.122)	(.139)	(.175)	(.241)	(.286)	(.362)
Multiple Offenders	.238	.206	.281	.012	.404	-.619
	(.166)	(.193)	(.233)	(.558)	(.528)	(.820)
Offender Had Gun	.636*	.645*	.568*	1.44*	1.45*	1.35
	(.202)	(.231)	(.280)	(.493)	(.475)	(.776)
Offender Had Other Weapon	.582*	.626*	.463*	.363	.184	.630
	(.177)	(.184)	(.225)	(.387)	(.462)	(.619)
Weapon Use Unknown	.192	.190	.170	-.268	.264	---
	(.199)	(.203)	(.279)	(.406)	(.462)	---
Third Party Present	.206	.096	.475*	.546*	.328	.910*
	(.135)	(.144)	(.184)	(.275)	(.292)	(.383)

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Table 3. (Continued)

	1973-1991			1992-2000		
	(1) Logistic Regression	(2) Multinomial Regression		(3) Logistic Regression	(4) Multinomial Regression	
	Police Notified	Victim Reported	Third Party Reported	Police Notified	Victim Reported	Third Party Reported
Incident Characteristics						
Other Physical Injury to Victim	.344*	.349*	.358*	.284	.320	.182
	(.155)	(.144)	(.179)	(.236)	(.280)	(.352)
Offender Used Physical Force	.410*	.284	.709*	.537*	.541	.596
	(.143)	(.148)	(.195)	(.270)	(.315)	(.460)
Private Location	.403*	.363*	.506*	-.438	-.464	-.487
	(.139)	(.137)	(.184)	(.243)	(.303)	(.330)
-2 Log Likelihood	2076.61	3010.56		669.45	849.63	
Model Chi-Square	152.16*	227.61*		103.56*	176.73*	

*p ≤ .05, two-tailed test

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Table 4. Regression Coefficients for Temporal Variation in Effects of Relationship on Police Notification by Rape Victims (NCS & NCVS)

		1973-1991			1992-2000		
		(1) Logistic Regression	(2) Multinomial Regression		(3) Logistic Regression	(4) Multinomial Regression	
		Police Notified	Victim Reported	Third Party Reported	Police Notified	Victim Reported	Third Party Reported
Equation	**Interaction Terms**						
(1)	Year*Non-Stranger	.038*	.044*	.023	.045	.028	.062
		(.018)	(.022)	(.042)	(.102)	(.099)	(.172)
(2)	Year*Spouses	.158*	.182*	.096	-.021	-.012	-.269
		(.068)	(.071)	(.113)	(.180)	(.180)	(.574)
(3)	Year*Other Family Members	-.047	-.064	-.044	-.160	-.642	.188
		(.089)	(.109)	(.103)	(.187)	(.345)	(.297)
(4)	Year*Well-Known Acquaintance	.010	.005	.014	-.026	-.014	-.069
		(.037)	(.037)	(.046)	(.081)	(.100)	(.140)
(5)	Year*Casual Acquaintances	.035	.035	.028	.085	.021	.185
		(.036)	(.039)	(.046)	(.090)	(.115)	(.136)
(6)	Year*Sight Only Acquaintances	.014	.011	.062	.118	.374	-.142
		(.046)	(.045)	(.075)	(.194)	(.259)	(.291)
(7)	Year*Spouses	.165*	.189*	.097	.013	.003	-.229
		(.066)	(.067)	(.101)	(.160)	(.217)	(.573)
	Year*Other Family Members	-.044	-.056	-.052	-.108	-.582	.258
		(.077)	(.099)	(.106)	(.222)	(.353)	(.333)
	Year*Well-Known Acquaintance	.020	.020	.012	.016	.012	-.002
		(.035)	(.038)	(.049)	(.103)	(.115)	(.169)
	Year*Casual Acquaintances	.043	.046	.026	.103	.038	.202
		(.038)	(.039)	(.047)	(.133)	(.146)	(.193)
	Year*Sight Only Acquaintances	.025	.025	.067	.147	.359	-.059
		(.044)	(.045)	(.078)	(.237)	(.233)	(.279)

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*p < .05, two-tailed test Note: Models shown include main effects for year and all victim, offender, and incident control variables.

Figure 3. Predicted Probabilities of Police Notification for Female Victims of Rape, 1973-2000

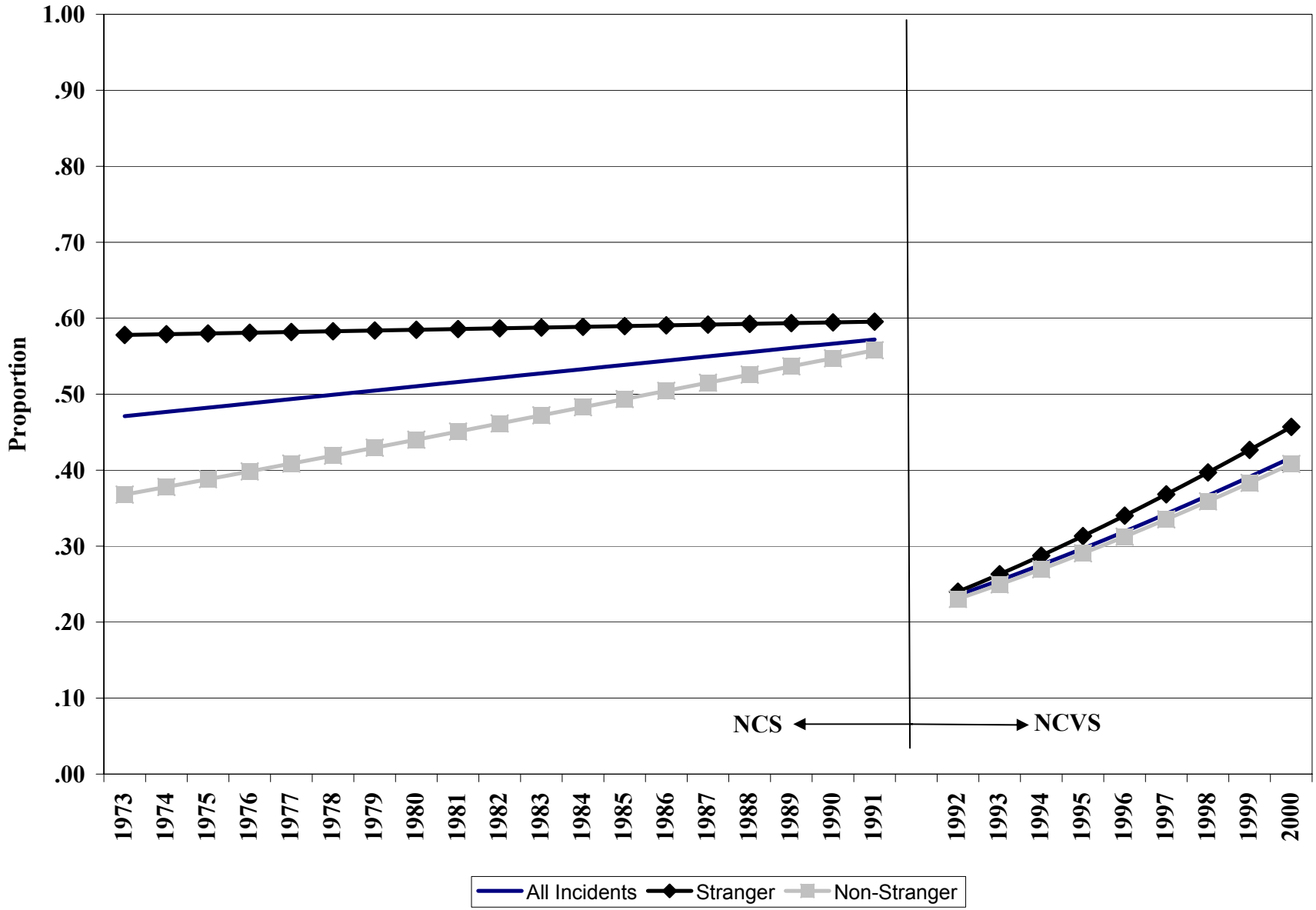

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Table 5. Percentage Distributions for Variables Included in Analysis of Police Notification by Female Victims of Non-Sexual Assault (NCS 1973-91, NCVS 1992-2000).

Dependent Variables	NCS 1973-1991	NCVS 1992-2000
Police Notified	54.3	49.3
Victim Reported	39.5	33.9
Third Party Reported	14.8	15.4
Independent Variables		
Strangers	33.8	22.8
Non-Strangers	66.2	77.2
Spouses	17.4	16.9
Other Family Members	5.6	6.9
Well-Known Acquaintances	24.1	31.1
Casual Acquaintances	11.1	13.1
Sight Only Acquaintances	7.9	9.2
Control Variables		
Victim Characteristics		
Non-Hispanic Black	13.0	12.6
Non-Hispanic White	79.8	77.0
Hispanic	5.7	7.9
American Indian or Asian	1.6	2.7
Married	29.3	28.2
Age (Mean)	29.3	31.5
Household Poverty	42.0	25.6
Education (Mean)	14.5	16.03
Homeowner	43.5	46.7
Interviewed in Person	68.5	35.3
Interviewed by Phone (CATI)	2.9	32.4
Interviewed by Phone (non-CATI)	28.6	32.3
Offender Characteristics		
Black	25.4	23.4
White	70.7	67.7
Other	3.9	8.3
Under age 18	18.0	17.5
Age 18 and Older	82.0	82.5
Incident Characteristics		
Completed Crime	32.8	60.3
Multiple Offenders	18.2	12.2
Offender Had Gun	10.2	7.5
Offender Had Other Weapon	15.8	12.3
Offender Had No Weapon	64.8	72.3
Weapon Use Unknown	8.3	6.8
Third Party Present	61.8	59.3
Physical Injury to Victim	34.8	28.0
Offender Used Physical Force	36.1	28.3
Private Location	50.2	54.3
Unweighted N	1,472	6,519

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Table 6. Regression Coefficients for Time and Relationship Effects on Police Notification by Female Victims of Non-Sexual Assault (NCS & NCVS)

	1973-1991			1992-2000		
	(1) Logistic Regression	(2) Multinomial Regression		(3) Logistic Regression	(4) Multinomial Regression	
	Police Notified	Victim Reported	Third Party Reported	Police Notified	Victim Reported	Third Party Reported
Independent Variables						
Year	-.013	-.012	-.015	.061*	.066*	.049*
	(.013)	(.015)	(.025)	(.014)	(.015)	(.019)
Non-Strangers	-.338*	-.271*	-.687*	-.070	.042	-.337*
	(.055)	(.048)	(.099)	(.083)	(.095)	(.117)
Control Variables						
Victim Characteristics						
Non-Hispanic Black	.206*	.279*	-.205	.405*	.416*	.401*
	(.069)	(.075)	(.130)	(.106)	(.118)	(.149)
Hispanic	-.073	-.049	-.215	.257*	.274*	.218
	(.090)	(.092)	(.170)	(.122)	(.133)	(.149)
Other	-.019	-.024	.014	-.183	-.318	.071
	(.170)	(.173)	(.306)	(.176)	(.215)	(.238)
Married	.258*	.313*	-.055	.103	.160	.019
	(.055)	(.050)	(.085)	(.080)	(.088)	(.108)
Age	.011*	.010*	.017*	.012*	.015*	.005
	(.002)	(.002)	(.004)	(.002)	(.003)	(.004)
Household Poverty	-.017	-.053	.172*	.066	.160	-.169
	(.045)	(.046)	(.079)	(.081)	(.084)	(.116)
Education	-.030*	-.028*	-.045*	-.021*	-.012*	-.039*
	(.006)	(.005)	(.009)	(.005)	(.005)	(.007)
Homeowner	.030	.050	-.061	.047	.036	.051
	(.045)	(.046)	(.078)	(.075)	(.077)	(.114)
Interviewed by Phone (non-CATI)	-.134*	-.142*	-.082	-.150	-.119	-.235*
	(.057)	(.058)	(.105)	(.079)	(.088)	(.109)
Interviewed by Phone (CATI)	.254	.001	1.19	-.533*	-.535*	-.546*
	(1.40)	(1.75)	(.2.25)	(.085)	(.094)	(.124)

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Table 6. (Continued)

	1973-1991			1992-2000		
	(1) Logistic Regression	(2) Multinomial Regression		(3) Logistic Regression	(4) Multinomial Regression	
	Police Notified	Victim Reported	Third Party Reported	Police Notified	Victim Reported	Third Party Reported
Offender Characteristics						
Black	-.094	-.099	-.097	-.069	-.144	.082
	(.056)	(.058)	(.095)	(.086)	(.100)	(.114)
Other	-.242*	-.190	-.544*	-.058	-.056	-.056
	(.105)	(.109)	(.222)	(.107)	(.122)	(.154)
Under age 18	-.550*	-.527*	.693*	-.626*	-.868*	-.306*
	(.062)	(.066)	(.100)	(.094)	(.110)	(.124)
Incident Characteristics						
Completed Crime	-.687*	-.696*	-.631*	-.112	-.150	-.006
	(.099)	(.102)	(.145)	(.077)	(.085)	(.118)
Multiple Offenders	.310*	.330*	.197*	.301*	.322*	.274*
	(.058)	(.060)	(.090)	(.106)	(.120)	(.130)
Offender Had Gun	.762*	.716*	1.02*	.894*	.898*	.902*
	(.078)	(.075)	(.115)	(.144)	(.148)	(.199)
Offender Had Other Weapon	.240*	.186*	.509*	.392*	.323*	.542*
	(.053)	(.053)	(.099)	(.094)	(.108)	(.119)
Weapon Use Unknown	.288*	.281*	.311*	.228	.225	.242
	(.077)	(.075)	(.112)	(.148)	(.159)	(.195)
Third Party Present	.331*	.278*	.627*	.449*	.176*	1.19*
	(.046)	(.044)	(.088)	(.067)	(.075)	(.099)
Victim Physical Injury	.885*	.814*	1.23*	.515*	.355*	.843*
	(.096)	(.099)	(.159)	(.095)	(.107)	(.121)
Offender Used Physical Force	.269*	.244*	.423*	.254*	.229*	.321*
	(.070)	(.065)	(.105)	(.094)	(.103)	(.124)
Private Location	.663*	.789*	-.085	.608*	.722*	.373*
	(.049)	(.050)	(.086)	(.074)	(.085)	(.109)
-2 Log Likelihood	18910.11	24888.98		8274.95	11621.09	
Model Chi-Square	1493.10*	1906.59*		754.46*	1129.51*	

*p ≤ .05, two-tailed test

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Table 7. Regression Coefficients for Detailed Relationship Effects on Police Notification by Female Victims of Non-Sexual Assault (NCS & NCVS)

	1973-1991			1992-2000		
	(1) Logistic Regression	(2) Multinomial Regression		(3) Logistic Regression	(4) Multinomial Regression	
	Police Notified	Victim Reported	Third Party Reported	Police Notified	Victim Reported	Third Party Reported
Independent Variables						
Year	-.012	-.011	-.015	.060*	.065*	.048*
	(.013)	(.013)	(.022)	(.014)	(.015)	(.019)
Spouses	-.553*	-.483*	-.877*	-.011	.125	-.431*
	(.070)	(.072)	(.125)	(.127)	(.139)	(.172)
Other Family Members	-.061	.063	-.873*	-.324*	-.111	-.813*
	(.096)	(.100)	(.225)	(.139)	(.147)	(.204)
Well-Known Acquaintances	-.366*	-.331*	-.542*	-.140	-.027	-.387*
	(.065)	(.069)	(.142)	(.093)	(.107)	(.137)
Casual Acquaintances	-.438*	-.370*	-.804*	-.147	-.121	-.275
	(.070)	(.072)	(.160)	(.102)	(.118)	(.150)
Sight Only Acquaintances	-.014	.090	-.620*	.135	.281*	-.203
	(.072)	(.074)	(.147)	(.121)	(.131)	(.167)
Control Variables						
Victim Characteristics						
Non-Hispanic Black	.212*	.290*	-.220	.414*	.420*	.414*
	(.068)	(.070)	(.125)	(.105)	(.117)	(.149)
Hispanic	-.070	-.046	-.210	.246*	.265*	.210
	(.092)	(.096)	(.160)	(.121)	(.132)	(.149)
American Indian or Asian	-.008	-.018	.037	-.181	-.315	.063
	(.170)	(.175)	(.307)	(.175)	(.215)	(.238)
Married	.243*	.296*	-.057	.094	.147	.020
	(.055)	(.052)	(.065)	(.080)	(.085)	(.108)
Age	.011*	.009*	.018*	.011*	.015*	.005
	(.002)	(.002)	(.003)	(.002)	(.003)	(.004)
Household Poverty	-.021	-.055	.164*	.081	.174*	-.162
	(.045)	(.041)	(.080)	(.080)	(.084)	(.117)
Education	-.030*	-.027*	-.046*	-.021*	-.012*	-.039*
	(.006)	(.008)	(.009)	(.005)	(.005)	(.007)

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Table 7. (Continued)

	1973-1991			1992-2000		
	(1) Logistic Regression	(2) Multinomial Regression		(3) Logistic Regression	(4) Multinomial Regression	
	Police Notified	Victim Reported	Third Party Reported	Police Notified	Victim Reported	Third Party Reported
Victim Characteristics						
Homeowner	.033	.053	-.053	.052	.038	.055
	(.045)	(.048)	(.080)	(.075)	(.077)	(.113)
Interviewed by Phone (non-CATI)	-.133*	-.140*	-.085	-.143	-.116	-.225*
	(.059)	(.062)	(.106)	(.077)	(.087)	(.109)
Interviewed by Phone (CATI)	.216	-.044	1.15	-.531*	-.534*	-.549*
	(1.55)	(1.85)	(2.44)	(.084)	(.095)	(.121)
Offender Characteristics						
Black	-.109	-.115*	-.107	-.071	-.134	.050
	(.057)	(.059)	(.099)	(.087)	(.100)	(.117)
Other	-.247*	-.194	-.556*	-.053	-.045	-.071
	(.104)	(.108)	(.225)	(.107)	(.120)	(.154)
Under age 18	-.593*	-.572*	-.718*	-.598*	-.838*	-.299*
	(.055)	(.059)	(.107)	(.091)	(.104)	(.126)
Incident Characteristics						
Completed Crime	-.679*	-.690*	-.617*	-.100	-.140	.008
	(.096)	(.100)	(.125)	(.076)	(.085)	(.120)
Multiple Offenders	.299*	.319*	.187*	.268*	.291*	.239
	(.058)	(.065)	(.092)	(.104)	(.118)	(.131)
Offender Had Gun	.761*	.715*	1.01*	.891*	.897*	.901*
	(.078)	(.080)	(.121)	(.142)	(.148)	(.200)
Offender Had Other Weapon	.234*	.180*	.505*	.382*	.315*	.531*
	(.056)	(.054)	(.086)	(.094)	(.108)	(.121)
Weapon Use Unknown	.278*	.273*	.302*	.212	.208	.224
	(.080)	(.083)	(.130)	(.147)	(.158)	(.196)
Third Party Present	.328*	.272*	.636*	.470*	.196*	1.21*
	(.048)	(.049)	(.085)	(.069)	(.076)	(.103)

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Table 7. (Continued)

	1973-1991			1992-2000		
	(1) Logistic Regression	(2) Multinomial Regression		(3) Logistic Regression	(4) Multinomial Regression	
	Police Notified	Victim Reported	Third Party Reported	Police Notified	Victim Reported	Third Party Reported
Incident Characteristics						
Victim Physical Injury	.894*	.822*	1.23*	.502*	.340*	.841*
	(.093)	(.092)	(.160)	(.094)	(.1018)	(.122)
Offender Used Physical Force	.295*	.272*	.430*	.266*	.237*	.343*
	(.068)	(.068)	(.102)	(.094)	(.108)	(.123)
Private Location	.710*	.836*	-.040	.641*	.738*	.450*
	(.055)	(.065)	(.088)	(.079)	(.087)	(.117)
-2 Log Likelihood	18849.71	24842.12		8260.52	11603.41	
Model Chi-Square	1553.50*	1988.06*		768.86*	1152.92*	

*$p \leq .05$, two-tailed test

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Table 8. Regression Coefficients for Temporal Variation in Effects of Relationship on Police Notification by Female Victims of Non-Sexual Asault (NCS & NCVS)

		1973-1991			1992-2000		
		(1) Logistic Regression	(2) Multinomial Regression		(3) Logistic Regression	(4) Multinomial Regression	
		Police Notified	Victim Reported	Third Party Reported	Police Notified	Victim Reported	Third Party Reported
Equation	**Interaction Terms**						
(1)	Year*Non-Stranger	-.032	-.042*	.014	.008	-.008	.028
		(.025)	(.019)	(.035)	(.028)	(.031)	(.041)
(2)	Year*Spouses	-.065*	-.085*	.062	.019	.022	-.013
		(.029)	(.030)	(.055)	(.034)	(.035)	(.054)
(3)	Year*Other Family Members	.018	.023	-.038	-.010	-.062	.143*
		(.054)	(.054)	(.111)	(.046)	(.049)	(.065)
(4)	Year*Well-Known Acquaintances	.021	.018	.039	.010	.012	.010
		(.026)	(.028)	(.048)	(.026)	(.028)	(.046)
(5)	Year*Casual Acquaintances	-.026	-.026	-.026	.005	-.024	.059
		(.039)	(.037)	(.070)	(.033)	(.038)	(.049)
(6)	Year*Sight Only Acquaintances	.044	.070	-.170	-.049	-.019	-.126
		(.046)	(.048)	(.103)	(.038)	(.042)	(.066)
(7)	Year*Spouses	-.071*	-.093*	.060	.021	.011	.010
		(.031)	(.035)	(.056)	(.040)	(.044)	(.062)
	Year*Other Family Members	-.001	-.004	-.025	-.004	-.064	.155*
		(.055)	(.055)	(.115)	(.048)	(.051)	(.069)
	Year*Well-Known Acquaintances	-.003	-.013	.038	.013	.001	.029
		(.030)	(.034)	(.055)	(.033)	(.036)	(.050)
	Year*Casual Acquaintances	-.045	-.052	-.019	.011	-.029	.074
		(.038)	(.039)	(.074)	(.041)	(.047)	(.060)
	Year*Sight Only Acquaintances	.013	.032	-.179	-.040	-.025	-.093
		(.047)	(.049)	(.110)	(.045)	(.049)	(.066)

*p < .05, two-tailed test. Note: Models shown include main effects for year and all victim, offender, and incident control variables.

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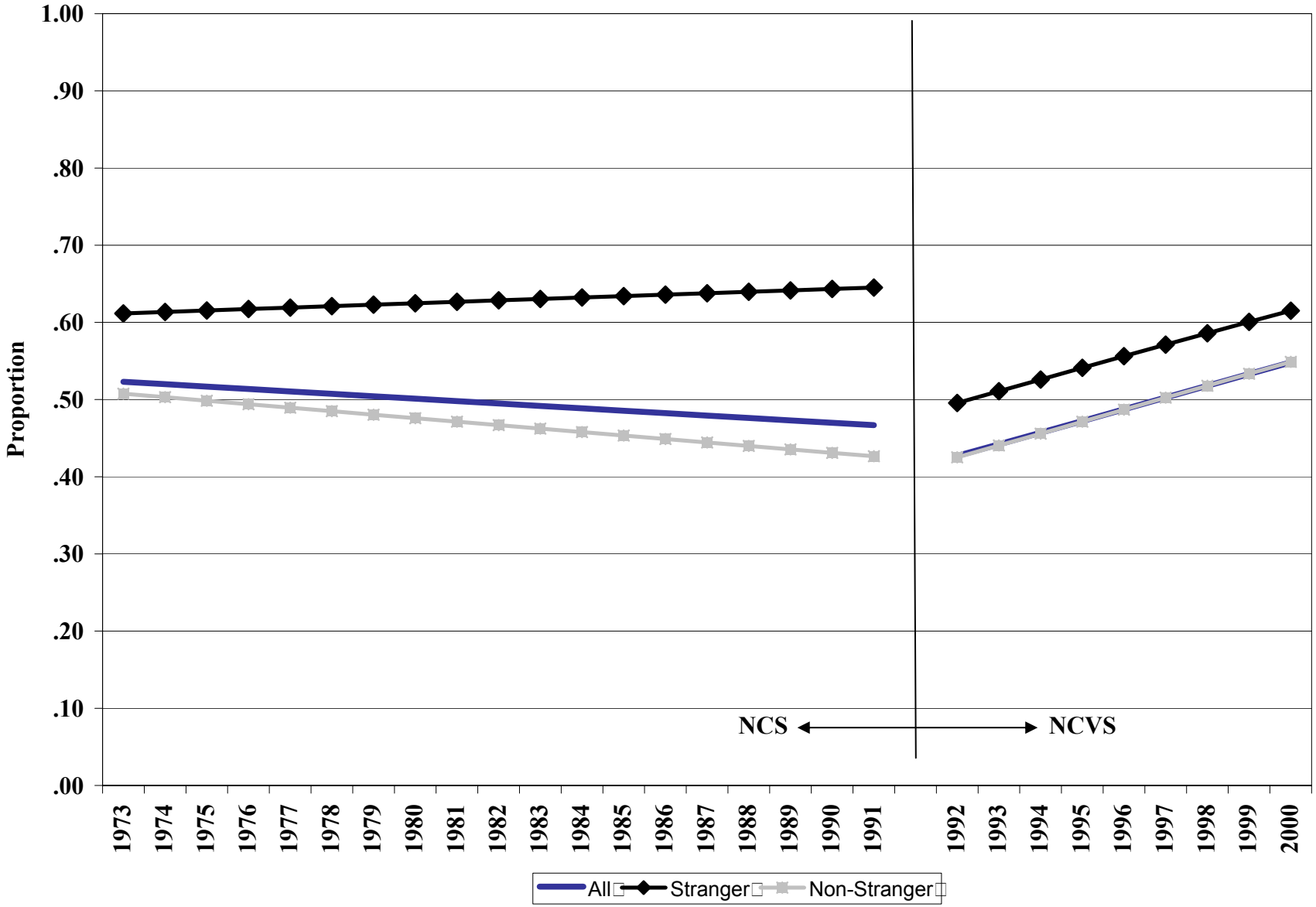
Figure 4. Predicted Probabilities of Police Notification for Female Victims of Non-Sexual Assault, 1973-2000



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Appendix A. Definitions and Metrics for Control Variables Included in Analysis of Changes in the Likelihood of Police Notification, 1973-2000

Dependent Variables	**Variable Definition and Metric**
Police Notified	Dichotomous variable coded 1 if the victim or somebody else reported the incident to the police and coded 0 for incidents in which the police were not notified.
Victim or Third Party Reported	Polytomous variable coded 1 if the victim reported the incident to the police, coded 2 if a third party (i.e., another household member, a non law enforcement official, or anybody else) reported the incident, and coded 3 if the incident was not reported to the police.
Explanatory Variables	
Year	Continuous indicator of the year of occurrence of the incident reported by the victim, coded chronologically within the two study periods.
Non-Strangers	Dichotomous variable coded 1 for incidents in which the victim identified the offender as a spouse or ex-spouse, parent, brother, sister, child, other relative, current and former boyfriend/girlfriend, friend, co-worker, neighbor, or roommate, and coded 0 for incidents that involved an offender who was a stranger.
Spouses	Dichotomous variable coded 1 for incidents committed by current and former husband, and coded 0 otherwise.
Other Family Members	Dichotomous variable coded 1 for incidents committed by a parent, sibling, child, or other relative, and coded 0 otherwise.
Well-Known Acquaintances	Dichotomous variable coded 1 for incidents committed by a current or former boyfriend, co-worker, neighbor, roommate, or other non-relative who the victim knew well, and coded 0 otherwise.
Casual Acquaintances	Dichotomous variable coded 1 for incidents committed by a co-worker, neighbor, roommate, or other non-relative who the victim knew casually, and coded 0 otherwise.
Sight Only Acquaintances	Dichotomous variable coded 1 for incidents committed by somebody known only by sight, and coded 0 otherwise.

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Appendix A. (Continued)

Control Variables	**Variable Definition and Metric**
Victim Characteristics	
Race	Four dichotomous variables that distinguish between victims who self-identify as Hispanic, non-Hispanic white, non-Hispanic black, or American Indian or Asian.
Marital Status	Dichotomous variable scored 1 for victims who report being married at the time of the interview and 0 for all others.
Age	Victim's age in years.
Household Poverty	Dichotomous variable scored 1 for victims with household income below the federal poverty threshold for year of interview and coded 0 for all others.
Education	Number of completed years of schooling.
Homeowner	Dichotomous variable scored 1 for victims who own their home (or whose family owns its home) and 0 for all others.
Offender Characteristics	
Race	Dichotomous variable scored 1 for offenders identified by victims as black and 0 for offenders identified as non-black.
Age	Dichotomous variables indicating the victim's report of whether the offender was under age 18 or 18 and older.
Incident Characteristics	
Completed Crime	Dichotomous variable scored 1 for completed rapes and 0 for attempted rapes.
Multiple Offenders	Dichotomous variable scored 1 for incidents involving more than one offender and 0 for incidents committed by a lone offender.
Offender Weapon Possession	Four dichotomous variables that distinguish incidents in which the victim reported that the offender had a gun, the offender had some other weapon, the victim was not certain about whether the offender was armed, and the offender was unarmed.
Third Party Present	Dichotomous variable scored 1 if somebody besides the victim and offender was present during the incident, and coded 0 otherwise.
Physical Injury to Victim	Dichotomous variable scored 1 if the victim received gunshot or knife wounds, broken bones or teeth, internal injuries, or bruises, cuts, or scratches, and coded 0 otherwise.
Offender Used Physical Force	Dichotomous variable scored 1 for incidents in which the offender hit or shot the victim, stabbed or attacked the victim with a knife, hit the victim with another object, or slapped or knocked down the victim, and coded 0 if no force was used.
Private Location	Dichotomous variable scored 1 if the incident occurred in a private place, and coded 0 otherwise.
Interview Type	Three dichotomous variables that distinguish incidents in which the victim was interviewed in person, through CATI, or by phone (non-CATI).

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