

# **RAPE IN MAINE:**

**A Report to the State**

# **One** **in** **eight**

Prepared by the



165 Cannon Street  
P.O. Box 250852  
Charleston, SC 29425

**Dean G. Kilpatrick, Ph.D.  
Kenneth J. Ruggiero, Ph.D.**

**May 15, 2003**

### *What is Forcible Rape?*

Attempts to discuss the topic of rape and other forms of sexual assault are often hampered by the fact that people define terms differently. In this report and in the National Women's Study and the National Violence Against Women Survey, rape is defined as "an event that occurred without the girl or woman's consent that involved the use of force or threat of force, and that involved sexual penetration of the victim's vagina, mouth, or rectum." This is a very conservative definition of rape that meets the legal definition of forcible rape in all jurisdictions within the United States and in the federal criminal code. Although most jurisdictions also include unsuccessful attempts as forcible rapes, this report does not do so. The estimates of forcible rape provided are based on cases that occurred at any time during a woman's life, including when she was a child. Cases of forcible rape were included whether or not they were reported to police and irrespective of whether the perpetrator was a stranger, family member, or acquaintance.

Clearly, many other types of sexual assault exist that do not constitute forcible rape. They occur frequently and often have impacts on the women and children who experience them. However, this report addresses only the forcible rape of women and female children. Other types of sexual assaults, including assaults against men and boys, will not be addressed.

### *Other Types of Rape*

Unfortunately, forcible rape is not the only type of rape that women and children in America experience.

- Attempted forcible rape is legally defined in most jurisdictions as attempts to commit forcible rape that are not successful. Generally, penalties for attempted forcible rape are equal to those as if the attempt was successful.
- Legal statutes in many states as well as at the federal level also prohibit rapes which occur when a perpetrator engages in a sex act with an unwilling victim who is unconscious or who is intoxicated with alcohol or drugs to the point that their ability to appraise or control their conduct is substantially impaired. The Federal Criminal Code defines this type of rape as aggravated sexual abuse by other means. Sometimes it is referred to as drug or alcohol facilitated rape.
- The term incapacitated rape is sometimes used to describe drug or alcohol facilitated rape as well as when the victim is either unconscious or too impaired for any reason to know what she is doing or give consent.
- Another type of rape is statutory rape. This occurs when a perpetrator commits any type of nonforcible sex act with an under aged child. In the Federal Code, sex act is defined as any type of sexual penetration (i.e. vaginal, anal, or oral) including any penetration of the vagina or anus by hands, fingers, or objects.

# Rape in Maine: A Report to the State

Dean G. Kilpatrick, Ph.D.  
Kenneth J. Ruggiero, Ph.D.  
May 15, 2003

Citation:

Kilpatrick, D.G., & Ruggiero, K.J. (2003). *Rape in Maine: A Report to the State*.  
Charleston, SC: National Violence Against Women Prevention Research Center,  
Medical University of South Carolina.

Prepared by the



N A T I O N A L  
V I O L E N C E A G A I N S T W O M E N  
P R E V E N T I O N R E S E A R C H  
C E N T E R



## Executive Summary

**“...over one out of every eight adult women, or over 67,000 adult women in Maine, has been the victim of forcible rape sometime in her lifetime.”**

Having accurate information about the magnitude and nature of the rape problem at the state level is extremely important for policymakers as well as for those who attempt to prevent rape or to provide services to rape victims and survivors. Without such information, it is difficult to know how big the rape problem is or to design effective rape prevention and intervention services. Data on rape from national samples are useful because they provide some indication of the magnitude of the problem in the nation as a whole. However, having state-level data is more useful for those charged with addressing the problem of rape within a state.

This report provides information addressing four goals:

- To identify national sources of information about rape and how we used information from the best sources to estimate rape in Maine
- To produce an estimate of the number and percentage of adult women in Maine who have ever been raped
- To compare the magnitude of the rape problem in Maine with that in the nation at large
- To provide guidance as to how better estimates of Maine's rape problem can be obtained

After reviewing several national sources of information about rape, we determined that the most methodologically sound information comes from the National Women's Study (NWS) and the National Violence Against Women Survey (NVAWS). Data from these studies indicate that approximately 13.4% of adult women in the United States have been victims of completed forcible rape sometime during their lifetime. These studies also found that risk of having ever been raped was related to a woman's current age, her race/ethnicity, and the region of the nation she currently lives in. Both studies also found that the majority of rapes these adult women had experienced occurred when they were under the age of 18.

We then developed a method for estimating the prevalence of rape in Maine using this national information about the prevalence of rape and risk factors for having been raped. Briefly described, we determined demographic and geographic risk factors for rape among the approximately 11,000 women who participated in the NWS and the NVAWS. Next, we obtained a breakdown of the Maine population of women on these risk factors using Census data. Finally, we used this demographic and geographic risk factor information to produce estimates of the percentage of Maine women who had ever been raped by statistically adjusting the

national estimate of rape based on the age and racial/ethnic breakdown of adult women in Maine as well as the geographic region in which Maine is located.

**Using this procedure, we estimated that approximately 13.3% of adult women in Maine have been victims of one or more completed forcible rapes during their lifetime. According to the 2000 Census, there are about 508,000 women age 18 or older living in Maine. This means that the estimated number of adult women in Maine who have ever been raped is nearly 68,000. This estimate of the magnitude of Maine's rape problem is conservative because it does not include women who have never been forcibly raped but who have experienced attempted rapes, alcohol or drug facilitated rapes, incapacitation rapes, or statutory rapes (i.e., rapes in which no force or threat of force was used but the perpetrator had sex with an underage child or young adolescent). Nor does this estimate include any types of rape that have been experienced by female residents of Maine who are currently under the age of 18. Nor does the estimate include male rape victims of any age. This estimate also does not address possible changes in rape prevalence or in disclosures of rape cases to interviewers that may have occurred over time.**

Our estimate of the lifetime prevalence of rape among adult women (i.e., the percentage of adult women who had ever been forcibly raped) in Maine was similar to the estimate for the nation as a whole. This non-significant difference between the 13.3% prevalence in Maine and the 13.4% prevalence nationally is partly due to the fact that Maine is in a region of the nation that has a near-average rape prevalence according to the NWS and NVAWS data. Maine has a substantial rape problem as reflected by our conservative estimate that over one out of every eight adult women, or over 67,000 adult women in Maine, has been the victim of forcible rape sometime in her lifetime. To the extent that adult women in Maine are similar to their national counterparts, it is likely that many of their rape experiences happened when they were children or adolescents.

It is important to note that the methodology we used to estimate the prevalence of rape in Maine is no substitute for conducting a well-designed victimization survey within the state. This point is highlighted by a comparison we did of rape prevalence estimates obtained in a recently completed victimization survey and estimates obtained using the methodology we used for this report. This survey of Washington State women included questions about rape that were similar to victimization questions in the NWS and NVAW. The use of similar questions for each survey enabled us to compare the results of the Washington State survey against our estimate for Washington of the prevalence of rape among women (our estimate for Washington was made using the same methodology described in this Report). We found that our estimate was substantially lower than the estimate obtained from the Washington State survey. This confirms the importance of conducting state level victimization surveys using good methodology.

## Introduction

How much rape occurs each year at the national and state level? How many women in the United States have ever been raped? How many women in Maine have ever been raped? How does the problem of rape in Maine compare to the problem of rape in America? Without the answers to these questions, it is impossible to know the magnitude of Maine's rape problem or to put it in perspective. Public policymakers, the public health system, the criminal justice system, and rape crisis centers cannot determine the effectiveness of their efforts to prevent rape, apprehend and punish rapists, and provide effective services to rape victims without such information.

At the state and local level, most of the information about rape comes either from police reports or from agencies such as rape crisis centers that provide services to sexual assault victims. By their very nature, police reports only include information about recent cases of sexual assault that have been reported to law enforcement. Yet, research suggests that only 1 in 6 rapes are reported to law enforcement (Kilpatrick, Edmonds & Seymour, 1992). Likewise, a significant percentage of sexual assault victims do not seek services from rape crisis or other sexual violence agencies. Therefore, data from police reports or sexual violence agencies clearly cannot provide a comprehensive picture of the new cases of sexual assault that occur each year within a state. In addition, the effects of rape upon its victims are often profound and persistent. These effects of rape on women's physical and mental health can last for years, for decades, or even for a lifetime. Thus, any attempt to measure the magnitude of a state's rape problem should not be limited to an estimate of how many recent rape cases have occurred or how many women have been recently raped. Instead, it is important to determine how many women within a state have ever been raped because many of these women may still be having problems that require services.

At the national level, there are two U.S. Department of Justice-sponsored sources of information about rape that provide data on recent rape cases that occur each year. The FBI Uniform Crime Reports includes information about a subset of new rapes that occur each year that are reported to police. The National Crime Victimization Survey also provides information about new cases of rape that occur each year and includes unreported as well as reported cases. However, both the FBI Uniform Crime Reports and the National Crime Victimization Survey have methodological problems that result in their producing substantial underestimates of the number of new rape cases each year. Unfortunately, neither of these two sources is designed to measure whether a woman has ever been a victim of rape. For these reasons, the FBI Uniform Crime Reports and the National Crime Victimization Survey data are not particularly useful for determining the magnitude of the rape problem within a state.

Most experts agree that the best way to obtain estimates of rape prevalence (i.e., the percentage of women in the population who have ever been raped) is to conduct a well-designed victimization survey. Briefly described, such surveys involve obtaining a representative sample of the groups of people you wish to study and asking them a series of questions that inquire about rape experiences that they may have had within specific time frames. Research indicates that rape is more difficult to measure than many other types of crime in victimization surveys because women are more reluctant to disclose rapes than other crimes. For this reason, there are a number of technical challenges to measuring rape properly in a victimization survey. Among

the many challenges victimization surveys must address are obtaining a representative sample of women to survey, using proper screening questions that measure the types of rape experiences you wish to detect, and establishing a private and confidential environment for the interview that encourages women to disclose their rape experiences to the interviewer.

At the national level, there have been two major victimization surveys that are widely viewed as being the best studies yet conducted with respect to providing information about rape prevalence among adult women. The first study is the National Women's Study (NWS). The NWS generated the information that was used in the *Rape in America* report (Kilpatrick, et al., 1992), and has resulted in numerous scientific and professional publications (see following website for a list of NWS publications: <http://www.musc.edu/cvc/NIDApubs.htm>). The NWS was a peer reviewed research project that was funded by the National Institute of Drug Abuse. The second study was the National Violence Against Women Survey (NVAWS, Tjaden & Thoennes, 2000), another peer reviewed research project that was funded by the National Institute of Justice and Centers for Disease Control and Prevention. Both of these studies used large, nationally representative samples of adult women. Both studies used well-designed, virtually identical screening questions that measured forcible rapes women had experienced throughout their lives. Both studies used only female interviewers and other procedures to insure that women could complete the interviews in private, confidential settings. Both studies have yielded numerous high quality publications to the scientific literature. In short, the NWS and NVAWS provide the best national information we have about the prevalence of forcible rape among adult women in America.

The remainder of this Report provides the following information: 1) What the NWS and NVAWS tell us about the prevalence of rape and about demographic and geographic factors that increase the risk that a woman will have been forcibly raped sometime during her life; 2) A method we developed to use the national data on rape prevalence and risk factors for rape to estimate the prevalence of women in Maine who have ever been raped; 3) The estimates of rape prevalence in Maine that we obtained by using this method; 4) Limitations of the methods we used and the estimates we obtained; 5) The importance of obtaining better estimates of rape in Maine by conducting a good victimization survey within the State.

## **Rape in America: Findings from the NWS and NVAWS**

The NWS, conducted in 1989, and NVAWS, conducted in 1995, both were telephone victimization surveys of adult (ages 18 and older) women in the United States. Together, these studies surveyed national household probability samples of 12,008 women who were asked whether they had been forcibly raped at any time in their lives. Of these women, 11,007 completed one set of questions about rape, whereas approximately 1,000 of the women in the NVAWS were asked a different set of experimental questions about rape. To ensure that we based our estimates upon information obtained with reliable and consistent methods of measuring rape, we used only information obtained from the 10,680 of the 11,007 women who were asked virtually identical questions and who had little if any missing data. A more thorough description of the methodology of these two studies is provided in Appendix I. The actual screening questions used to measure forcible rape are presented in Appendix II.

For both the NWS and NVAWS, several steps were taken to increase the likelihood that women would report their rape experiences accurately, including:

- Ensuring that the interviews were conducted in a private setting
- Introducing questions about rape in a way that clearly communicated the types of rape experiences being measured
- Asking highly specific questions about different kinds of rape
- Using female interviewers only

In the NWS, 12.7% of surveyed women reported that they had been victims of at least one forcible rape in their lifetime. In the NVAWS, 14.8% of women indicated that they had been raped at least once. Together, these studies suggested that about 1 in 7 (14.0%) adult women in America--or 15.1 million women--have been forcibly raped at least once in their lifetime. Findings from the NWS and NVAWS also indicate that 0.43% of all women surveyed had experienced rape *within the past year*. This equates to an estimated 465,000 adult American women in the U.S. who were raped during a 12-month period.

The numbers above represent the estimated *total number of women* who have ever been raped. But it is important to note that many American women have been raped on more than one occasion. In fact, of the women who reported rape in the NWS and NVAWS, nearly one-half stated that they had been raped on two or more occasions. Findings from the NWS and NVAWS also have taught us that rape in America is a tragedy of youth. Nearly 60% of the women who had been raped at some time in their lives were first raped in childhood. Nearly 30% experienced their first or only rape when they were younger than 11 years of age.

### **Who is at Greatest Risk for Having Been Raped?**

Rapists--not the women and children they rape--are wholly responsible for America's rape problem. However, there is evidence that several factors increase women and children's risk of being attacked by a rapist. Our strategy for obtaining an estimate of forcible rape in Maine was to examine the extent to which various demographic characteristics of women and geographical areas in which they currently live were related to risk of forcible rape at the national level. We used information from the NWS/NVAWS to conduct this examination. Of particular interest were characteristics that were measured in both the NWS and NVAWS and that are available at the state level in the 2000 Census. Any such characteristics related to risk of forcible rape at the national level in the NWS/NVAWS can be used to produce an estimate of rape in Maine. We examined several characteristics, including:

- Rural vs. urban vs. suburban areas
- Size of metropolitan area
- Race/ethnicity
- Current household income
- Age at the time of the survey
- Region of the country

Risk for a woman having ever been raped was not related to the size of the metropolitan area in which she lived at the time of the survey. Additionally, although findings from the NWS indicated that women currently living in urban and suburban areas were more likely to have ever been raped than women currently living in rural areas, this information was not available in the NVAWS. Thus, it was necessary to drop these two geographic characteristics from further consideration.

Region of the country was related to a woman's likelihood of having been raped at sometime during her life (See Appendix III for a description of the states that are within each census region division). For example, rape was much more likely to be disclosed by women currently living in the Mountain and Pacific region divisions of the U.S. than in the mid-Atlantic and East South Central region divisions. For the remaining five regions of the country, percentages of women who had ever been raped ranged from approximately 12%-14% (see Figure 1). One important clarification is that the NWS and NVAWS did not measure the state or geographic region of the country in which women had been raped; they measured where women, including rape victims, were living at the time they participated in the surveys. Thus, it is inappropriate to infer that more rapes occur in some census region divisions of the country than others. This may be true, but it cannot be demonstrated using information from these two studies because women may have been raped in one location and now reside in another.

**Figure 1: Census Region Division Differences in the Lifetime Prevalence of Rape**



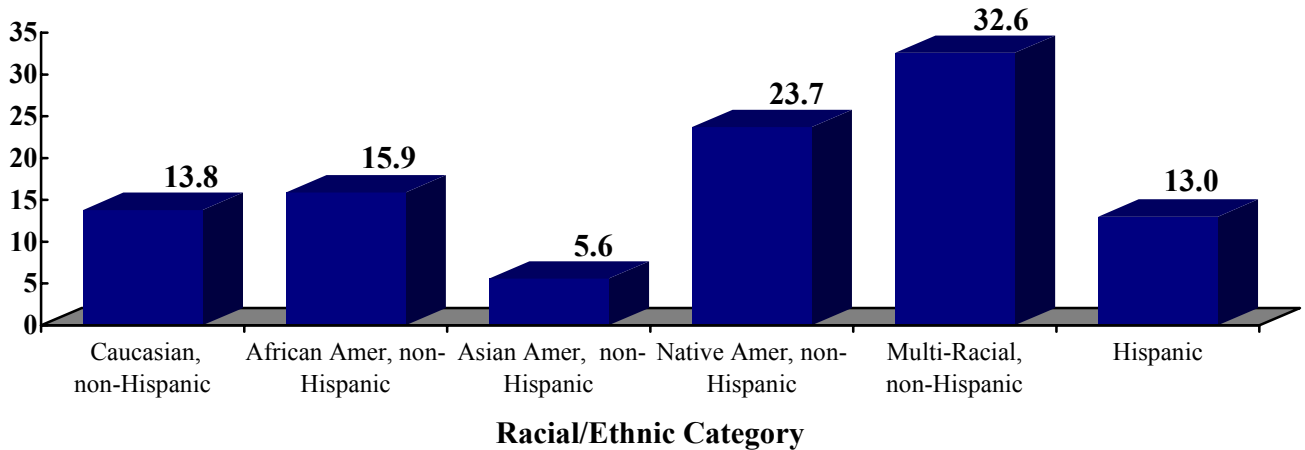
A woman's age at the time of the survey was also related to how likely she was to have ever been raped. Younger women were more likely to have been forcibly raped at some time in their lives than were older women (see Figure 2). Women between the ages of 20-44 had the highest levels of risk for having ever been raped (over 15%), whereas women ages 65 and older had the lowest levels of risk (less than 5%).

**Figure 2: Rape Prevalence As a Function of Current Age**



Racial/ethnic background also was related to whether a woman reported having ever been raped. For example, less than 6% of Asian American women were raped at least once during their life, whereas nearly 24% of Native American women have been raped (see Figure 3). Relatively similar percentages of women ever having been raped were found among the three most populous racial/ethnic groups in the nation: Caucasians, Hispanics, and African Americans.

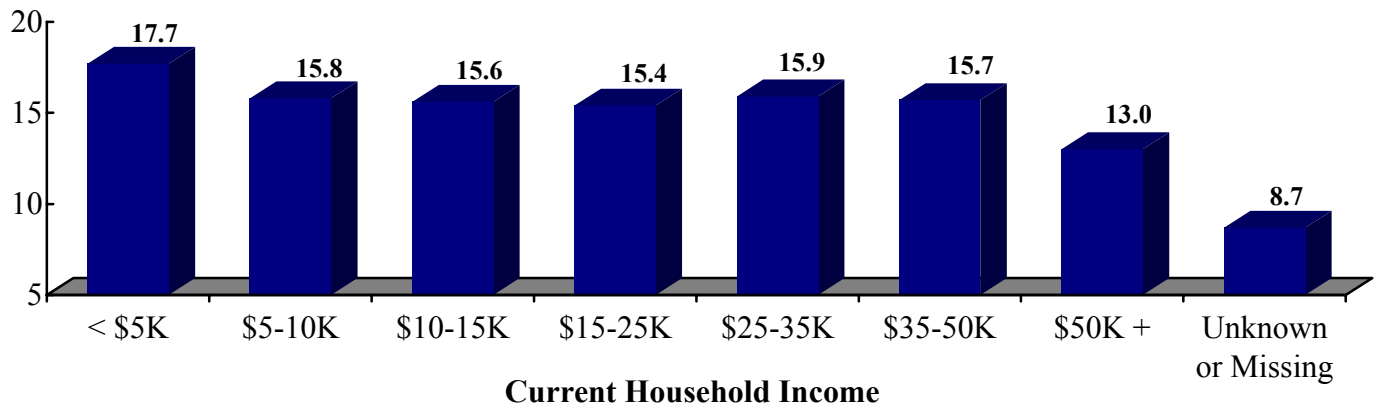
**Figure 3: Rape Prevalence As a Function of Race/Ethnicity**



Household income was related to risk that a woman was ever raped but not in a straightforward way. As is shown in Figure 4, women with extremely low household incomes of less than \$5,000 a year had the highest risk of rape (i.e., 17.7%), and women with incomes of \$50,000 or more per year had the lowest risk (13.0%). Women in the middle income groups, those who made between \$5,000-\$50,000 had a similar risk of rape that was lower than that of the poorest women and greater than that of the most affluent women. Income information was missing for a relatively

high number of cases (approximately 1900). Interestingly, women who either didn't know or didn't answer the income question were least likely to report having ever been raped.

**Figure 4: Rape Prevalence As a Function of Current Household Income**



Census information includes age, racial/ethnic, and household income distributions on the state level. Thus, our next step was to adjust the NWS and NVAWS samples to match the distribution of age, race, and income in Maine. After adjusting for these demographics, we then made further adjustments based on the knowledge that Maine is located in the New England region of the country. The next section provides additional details about how national data from the NWS and NVAWS were used to estimate rape in Maine.

### **Method for Using National Data to Produce State-Level Estimates**

The best way to estimate the extent of the rape problem in Maine is to conduct a properly designed victimization survey. However, we can get some sense of how big the rape problem is in Maine by using information about rape that is available from the NWS and NVAWS. It is important to not simply apply the national estimate at the state level. As shown in Figure 1, the region of the country that a woman lives in is related to her likelihood of having ever been raped. Further, the percentage of women who have ever been raped clearly differs across age groups, racial/ethnic backgrounds, and, to a lesser extent, household income. Because state populations vary widely in their demographic distributions, it is important to take these characteristics into account when estimating the prevalence of rape at the state level.

It was necessary to remove household income from consideration for three reasons. First, 17% of surveyed women were uncertain about or declined to disclose their household income, which limited our ability to make adjustments for this variable. Second, Census information on household income is not broken down by age and race within each state in a way that matched the levels of income used to estimate rape in Maine. Third, it was not possible to take into account inflation since the time of the NWS and NVAWS surveys. For these reasons, our estimates of rape in Maine did not take into account household income. However, to the extent that Maine has a higher percentage of extremely poor women than the nation at large, the estimated percentage of women who have ever been raped would also be higher.

Three factors were used to adjust national data in order to estimate rape in Maine: age, racial/ethnic background, and geographic region. Our estimates for rape in Maine were influenced by adjustments for these variables because Maine's population differs demographically from that of the nation as a whole. To illustrate with the example of racial/ethnic background, according to the 2000 Census:

- 10.3% of adult women in the U.S. are of Hispanic ethnicity, whereas 0.7% of adults in Maine are of Hispanic ethnicity
- 72.1% of adult women in the U.S. are of European descent (non-Hispanic), whereas 96.5% of adults in Maine are of European descent (non-Hispanic)
- 11.7% of adult women in the U.S. are of African descent (non-Hispanic), whereas 0.5% of adults in Maine are of African descent (non-Hispanic)

Although the actual statistical procedures used to produce the estimates of rape prevalence in Maine were complex, the basic approach we used was simple and involved four steps. First, we determined the geographic and demographic risk factors for having ever been raped using the NWS and NVAWS data as described above. Second, we used NWS and NVAWS data to obtain statistical estimates for the prevalence of rape according to the age and race/ethnic groups for the geographical region of the country where Maine is located. Third, we used data from the 2000 Census to provide a breakdown of the adult female population of Maine with respect to age and race/ethnicity. Fourth, we statistically adjusted the rape prevalence estimates we obtained from the NWS and NVAWS to account for the age and race/ethnicity breakdown of adult women living in Maine according to estimates from the 2000 Census.

Refer to Appendix III for more technical details describing the statistical methods we used for estimating rape in Maine.

## Estimating Rape in Maine

Based upon the method described above, we estimate that approximately 13.3% of women in Maine have been raped at some time in their lifetime. Converting this percentage into real numbers yields the following:

- Of the 508,000 adult women living in Maine, over 67,000 have been raped at least once during their lives
- Of the 107,000 women living in Cumberland County, over 14,000 have ever been raped
- Of the 73,000 women living in York County, nearly 10,000 have ever been raped
- Of the 58,000 women living in Penobscot County, over 7,700 have been raped
- Of the 47,000 women living in Kennebec County, about 6,200 have ever been raped
- Of the 41,000 women living in Androscoggin County, about 5,500 have ever been raped
- Of the 30,000 women living in Aroostook County, nearly 4,000 have ever been raped
- Of the 21,000 women living in Hancock County, about 2,800 have ever been raped
- Of the 20,000 women living in Somerset County, over 2,600 have ever been raped

These estimates are conservative because they do not include women who were never forcibly raped but who *have* experienced alcohol- or drug-facilitated rape, incapacitated rape, statutory rape (i.e., rapes in which the perpetrator had sex with an underage child or adolescent without using force or threat of force), or attempted rape. Statutory rape, as well as alcohol- and drug-facilitated rape, and incapacitated rape, were not measured in the NWS and NVAWS. Findings from the NVAWS indicate that 2.8% of surveyed women reported an attempted rape but denied having experienced a completed forcible rape. Particularly in cases where attempted rape includes perceived threat of harm and/or death, such experiences can affect victims in a way that is similar to how victims of completed rape are affected. Note that the rape estimates listed for counties above simply used state level estimates of rape and applied them at the county level, without adjusting for differences in the demographic makeup of each county. Thus, to the extent that a particular county differs demographically from the state as a whole (e.g., higher percentage of minority women, lower percentage of young adults), estimates for that county may be biased.

Our findings clearly demonstrate the fact that Maine has a substantial rape problem, as reflected by our conservative estimate that over one out of every eight adult women, or over 67,000 women in Maine, has been the victim of one or more forcible rapes in her lifetime. Knowing the percentage of women who have been raped and the number of rape victims in Maine is important, but it provides only partial information about Maine's rape problem. Data from the *Rape in America* report compiled using NWS information found that women with a history of rape were at a greater risk for several mental health problems (Kilpatrick, et al., 1992). For example, victims of rape were found to be 6.2 times more likely than nonvictims (31% vs. 5%) to experience posttraumatic stress disorder (PTSD), a debilitating mental health disorder that occurs in response to a traumatic event, such as military combat or violent crime. Similarly, victims of rape were found to be 5.5 times more likely to have PTSD at the time of the survey than women who had never been victims of crime (11% vs. 2%).

If we assume that rape victims in Maine are similar to rape victims nationally and experience the same risk of developing mental health problems, we would estimate that of the 67,000 adult women in Maine who have been forcibly raped, about 21,000 have developed PTSD at some time in their lives, and over 7,400 currently meet full criteria for PTSD. Several other mental health problems often affect rape victims, including:

- Major depression at some time in their lives, experienced by 30% of rape victims (over 20,000 victims in Maine) and 10% of women never victimized by violent crime.
- Current major depression, which is experienced by 21% of rape victims (over 14,000 victims in Maine) and 6% of women who were never victimized by violent crime.
- Serious suicidal thoughts at some time in their lives, experienced by 33% of rape victims (over 22,000 victims in Maine) and 8% of nonvictims of crime.
- Suicide attempt at some time in their lives, reported by 13% of rape victims (about 8,800 victims in Maine) and only 1% of nonvictims of crime.
- Marijuana use at some time in their lives, reported by 52% of rape victims (over 35,000 victims in Maine) and 15.5% of nonvictims.

- Cocaine use at some time in their lives, reported by 15.5% of rape victims (over 10,000 victims in Maine) and 2.6% of nonvictims.
- Use of hard drugs other than cocaine at some time in their lives, reported by 12.1% of rape victims (nearly 8,200 victims in Maine) and only 1.2% of nonvictims.

These and other estimates derived from NWS findings provide compelling evidence about the extent to which rape is associated with increased risk of mental health and substance use problems of women in Maine. Rape poses a threat even to women's continued survival, as indicated by the increased risk of attempting suicide reported by rape victims compared to nonvictims.

## Limitations of Our Estimation Methodology

The estimate in this Report of the number of women in Maine who have ever been raped is almost certainly an underestimate of Maine's rape problem for the following reasons:

- It includes only estimates of adult women who have been victims of forcible rape. Thus, Maine's female children and adolescents who have been forcibly raped are not included in our estimate.
- Alcohol or drug facilitated rapes and other types of incapacitated rapes are not included in our estimates because these types of rape were not measured in either the National Women Study or the National Violence Against Women survey.
- Our estimate does not include statutory rapes (i.e., rapes in which no force or threat of force was involved but the perpetrator had sex with an underage child or adolescent).
- Our estimate does not include attempted rapes.
- Rapes of boys or men are not included.

For reasons that will be described subsequently, it is reasonable to assume that a well-designed victimization survey conducted in Maine using appropriate screening questions would produce a higher estimate of rape than the methodology that was used in this Report.

It is important to remember that our estimate of rape, like all estimates, is subject to a host of potential measurement problems. To the extent that the NWS and the NVAWS excluded some women from their sampling frames (e.g., women who did not reside in households with telephones or who did not speak English or Spanish), rapes experienced by such excluded women could not be measured. To the extent that some participants in the NWS and NVAWS were unwilling to disclose their rape experiences to the interviewers, rape estimates from these two studies would be lower than they should be. Consequently, any measurement problems in the NWS or NVAWS would be reflected in the estimates of rape in Maine we produced. To the extent there are other important aspects of Maine's people or Maine's culture related to risk of rape that we did not include in our methodology, our rape estimates for Maine will be less precise than we would like.

It should also be noted that our estimate that 13.3% of adult women in Maine have been forcibly raped does not mean that all the rapes experienced by these women occurred within the State of

Maine. Clearly, America is a mobile society, and many women change residences often throughout their lives. The methodology we used in this Report was based on rape prevalence within the geographical regions where women were residing at the time they were interviewed in the two surveys - not where they were living when they were raped. As with all national surveys, the number of individuals representing the population within each state is limited, and this can lead to limitations in estimating state prevalences. Only a limited number of risk factors for rape were examined in this study. Prevalence of rape could have varied within different states in the same region, and this variability could affect the accuracy of the estimates. Also, differences in how the surveys and the Census coded race and ethnicity along with differences in how individuals self-identify with a particular race or ethnic group could affect these estimates. Additionally, the NVAWS was conducted in 1995; the NWS Wave 1 was conducted in 1989, and 2000 Census estimates were used. The amounts that rape prevalence and population may have changed during this time period were not addressed in this study. Notwithstanding these limitations, we believe that the estimates we produced for this Report are the best that can be obtained without actually conducting a well-designed victimization survey. For reasons just described, the estimates in this Report are likely to be conservative underestimates of the problem of rape in Maine.

## **Comparing Our Method to Victimization Survey Results**

The method we used to estimate the prevalence of forcible rape in Maine is the best way we could devise to use national information to produce an estimate of rape in Maine. However, it is no substitute for conducting a well-designed victimization survey within the state. To illustrate this point, we will describe the results of a very important study that was recently conducted in the State of Washington. Full details about the study and its findings are contained in a recent report prepared by Lucy Berliner and colleagues (Berliner, Fine, & Moore, 2001).

The Washington State victimization survey was conducted with a household probability sample of adult women who were current residents of the state. In order to permit comparisons with the rest of the nation, the designers of this victimization survey decided to use the same forcible rape screening questions that were used in the NWS and NVAWS. The results of the survey indicated that 23.1% of the adult women in the survey had been forcibly raped. This estimate of 23.1% for the State of Washington was substantially higher than the 13.4% estimate for the nation as a whole obtained from the NWS and NVAWS.

We decided to use the findings from the Washington State victimization survey as a “gold standard” to evaluate how well our estimation procedure worked compared to an actual victimization survey. Using the same procedures we used to estimate rape in Maine, we estimated that 17.7% of adult women in Washington had been victims of at least one forcible rape. This estimate was 4.3 percentage points higher than the national average of 13.4%. However, our estimate was 5.4 percentage points lower than the estimate obtained by the victimization survey.

Although there are several technical reasons that may account for the differences in these two estimates, we believe that the major reason is that well-designed victimization surveys provide better estimates within a state than the type of statistical estimation procedure we used. This

suggests that the best way Maine can improve its information about rape is to conduct a victimization survey.

## Obtaining Better Estimates of Rape in Maine

In the last part of this report, we offer suggestions about some key elements of a well-designed victimization survey. Elsewhere, we have discussed methodological issues involved in conducting good victimization surveys to measure sexual assault (Kilpatrick, 2002; Kilpatrick & Acierno, 2003). However, here we would like to stress three points:

- Who is included and who is excluded from a victimization survey will affect the estimate of rape you obtain
- The types of rape you are attempting to measure and the screening questions you use to measure them will have a profound effect on the estimates of rape you obtain
- It is essential to provide a private confidential setting in which to conduct the victimization survey. Likewise, it is important to use interviewers who are sensitive and well-trained to conduct the survey.

With respect to the first point, it is obvious that rape experiences of groups of people who are excluded from a victimization survey will not be measured and included in an estimate of rape. Thus, to the extent that the methodology of a survey excludes groups of people (e.g., men, non-English speaking people, children and teenagers, the homeless), rapes that they experienced will not be included in state estimates. It is generally impossible to include all groups of interest, but it is important to recognize that excluding them may create an underestimate.

The issue of what types of rape are included and how rape experiences are measured via screening questions is critical. Forcible rape is important, but so are other types of rape and attempted rape. Victimization surveys that measure attempted rape, alcohol and drug-facilitated rape, incapacitated rape, and statutory rape will yield higher estimates of rape than those that only measure forcible rape. Likewise, the screening questions used in a victimization survey are extremely important.

A recently completed victimization survey of rape on college campuses documents the importance of screening questions (Fisher, Cullen, & Turner, 2000). The authors of this study conducted two large victimization surveys with nationally representative samples of female higher education students. Students were asked about forcible rape experiences occurring since the start of the current school year. The screening questions for one survey were those used in the U.S. Justice Department National Crime Victimization Survey. In the second survey, screening questions quite similar to those used the NWS and NVAWS were used. All other methods used in the two surveys were identical. **When the results of the two surveys were compared, the prevalence of forcible rape was 11 times greater when the NWS/NVAWS screening questions were used than when the NCVS screening questions were used.** We believe that this finding has two important implications. First, it documents that the NWS/NVAWS screening questions for forcible rape are much more sensitive than those used in the NCVS. Second, because the NCVS screening questions are so insensitive, the data on past year rapes from the NCVS are likely to substantially underestimate the true extent of past year rape in America.

With respect to the need for privacy and confidentiality for victimization survey respondents, it is obvious that most people are more likely to disclose unpleasant and potentially stigmatizing experiences if they are in a private setting and if they believe that what they tell you will be kept confidential. Therefore, it is extremely important to design victimization surveys to maximize privacy and confidentiality. Careful selection and training of interviewers is also important. Most experts believe that use of female interviewers is preferable. Likewise, careful training is needed to insure that interviewers are comfortable asking sensitive questions, that they follow the survey interview protocol, and that they know how to deal with interview participants who become distressed.

Although many people are concerned that conducting victimization surveys might cause extreme trauma for some victims, experience suggests otherwise. Over 16,000 women were interviewed in the NWS, NVAWS, and the campus rape study, and only a small handful of participants were sufficiently upset to require their needing to talk with a mental health professional. In no cases did distressed participants require actual mental health intervention. However, we think it is a good idea to build in access to a mental health professional with violence against women experience to manage the rare instances in which women become unduly upset.

## Final Suggestions

If you decide to conduct a victimization survey, here are a few suggestions:

Suggestion 1. Start with a survey of adult women. If you have sufficient resources, expand the survey to adult men. If you have even more resources or have a particular focus on youth, conduct a victimization survey of teenagers. Start out with household samples because most people live in houses. Surveys of particularly underserved groups who do not live in houses or apartments are more difficult to conduct and require more complicated sampling methods.

Suggestion 2. Use the NWS/NVAWS forcible rape screening questions. They have been demonstrated to be feasible to use and are much more sensitive than the National Crime Victimization Survey questions. If you use them, you will be able to compare rape prevalence in your state with the prevalence in the nation as a whole. If you use different questions, it will be impossible for you to compare your findings about forcible rape in your state with national estimates or with those in other states such as Washington.

Suggestion 3. If possible, expand your victimization survey to include attempted rape, drug or alcohol-facilitated rape, incapacitated rape, and statutory rape. The National Violence Against Women Prevention Research Center is currently conducting a national study of young adults that is measuring drug or alcohol-facilitated rape. We would be pleased to consult with you regarding appropriate screening questions.

## Appendix I: Overview of NWS and NVAW Methodology

### National Women's Study

The National Women's Study (NWS) was a 3-wave longitudinal survey of a large national probability sample of adult women in the United States. Telephone interviews for the NWS were conducted first in 1989 (follow-up surveys were conducted in 1990 and 1991, but are not included in this Report). Of the 4,008 women surveyed, 2,008 represented a cross-section of all adult women in America, and 2,000 comprised an oversample of younger women ages 18-34 years. In addition to accumulating information about forcible rapes that occurred at any time during women's lifetimes, the NWS also examined major mental health problems such as posttraumatic stress disorder, suicide attempts, alcohol abuse and dependence, and drug abuse and dependence.

Potential respondents for the NWS included all women at least 18 years of age in the residential population of the United States. Respondents were identified using a two-staged area probability sampling procedure. In the first stage, the U.S. was divided into four geographic regions and three census size-of-place strata, which yielded a total of 12 mutually exclusive and exhaustive groupings of the U.S. population. In the second stage of sample selection, random-digit dialing was used to select households located within each geographic area. The number of households selected within each of the 12 strata was proportional to the percentage of the entire U.S. population that resided in each stratum. These sampling procedures yielded a population-based random-digit-dialing sample of households. Within households, the number of adult women residing in the household was determined, and one adult woman was randomly selected for interviewing.

Eighty-five percent of eligible respondents agreed to participate in the study and completed the NWS interview. Because the survey included an oversample of younger women, the sample data were weighted to U.S. Census projections of the demographic distribution of the adult female population. That is, adjustments were made to the sample of 4,008 women on the basis of age and race to bring the sample demographically in line with 1989 Census estimates of the distribution of these demographic characteristics in the United States. All sample selection and survey interviewing were done by female interviewers from Schulman, Ronca, and Bucuvalas, Inc. (SRBI), a national survey research organization in New York City. Dr. John Boyle directed the survey for SRBI.

### National Violence Against Women Survey

The National Violence Against Women survey (NVAWS) also was a victimization survey of adult women. Specifically, telephone interviews were conducted in 1995-1996 with a national household probability sample of 8,000 women in the United States. Rape screening questions used in the NVAWS were virtually identical to the questions used in the NWS, which enabled us to combine these samples to examine the magnitude of the rape problem at the national and state level with greater precision than is possible with only one sample. As with the NWS, NVAWS questions assessed victimization experiences that were not reported to authorities in addition to those that were reported. Unlike the NWS, major mental health problems were not examined in the NVAWS.

Potential respondents for the NVAWS included all women at least 18 years of age in the residential population of the United States. The sample was managed at the level of U.S. Census region, which provided mutually exclusive, comprehensive groupings of the U.S. population. Within each region, a simple random-digit dialing procedure was used to draw participants from households with a telephone, with nonworking and nonresidential numbers being screened out. In households that had more than one eligible adult, the adult woman with the most recent birthday was selected for interviewing.

Seventy-two percent of eligible respondents agreed to participate in the study and completed the NVAWS interview. As with the NWS, all sample selection and survey interviewing were done by female interviewers from SRBI, a national survey research organization in New York City. Dr. John Boyle directed the survey for SRBI.

## Appendix II: NWS and NVAWS Screening Questions

It was important to use screening questions that clarified the types of rape experiences being measured (i.e., those that occurred at any time during a woman's life, that included any type of perpetrator, and that may or may not have been reported to police). The screening questions also measured the key elements of forcible rape as defined by law:

- Use of force or threat of force
- Lack of consent; and
- Sexual penetration

The NWS pioneered the use of clear, explicit screening questions in victimization surveys. Part of the procedure used was the following introduction that set the context for the actual screening questions:

"Another type of stressful event that many women have experienced is unwanted sexual advances. Women do not always report such experiences to police or other authorities or discuss them with family or friends. The person making the advances isn't always a stranger but can be a friend, boyfriend, or even a family member. Such experiences can occur at any time during a woman's life--even as a child. Regardless of how long ago it happened or who made the advances..."

After this introduction, the NWS screening questions were as follows:

- Has a man or boy ever made you have sex by using force or threatening to harm you or someone close to you? Just so there is no mistake, by sex we mean putting a penis in your vagina.
- Has anyone, male or female, ever made you have oral sex by using force or threat of harm? Just so there is no mistake, by oral sex we mean that a man or a boy put his penis in your mouth or someone, male or female, penetrated your vagina or anus with their mouth or tongue.
- Has anyone ever made you have anal sex by using force or threat of harm? Just so there is no mistake, by anal sex we mean that a man or boy put his penis in your anus.
- Has anyone, male or female, ever put fingers or objects in your vagina or anus against your will by using force or threats?

The introduction used in the NVAWS differed somewhat from the one used in the NWS, but covered many of the same general points. Here is the NVAWS introduction:

"We are particularly interested in learning about violence women experience, either by strangers, friends, relatives or even by husbands and partners. I'm going to ask you some questions about unwanted sexual experiences you may have had either as an adult or as a child.

You may find the questions disturbing, but it is important we ask them this way so that everyone is clear about what we mean. Remember the information you are providing is confidential. Regardless of how long ago it happened..."

The NVAWS used the following four screening questions to measure forcible rape:

- Has a man or boy ever made you have sex by using force or threatening to harm you or someone close to you? Just so there is no mistake, by sex we mean putting a penis in your vagina.
- Has anyone, male or female, ever made you have oral sex by using force or threat of harm? Just so there is no mistake, by oral sex we mean that a man or boy put his penis in your mouth or someone, male or female, penetrated your vagina or anus with their mouth or tongue.
- Has anyone ever made you have anal sex by using force or threat of harm? Just so there is no mistake, by anal sex we mean that a man or boy put his penis in your anus.
- Has anyone, male or female, ever put fingers or objects in your vagina or anus against your will by using force or threats?

As is apparent, the approach used to measure forcible rape in the NWS and NVAWS was quite similar, and the screening questions were virtually identical. The fact that the two studies used such similar methods to measure forcible rape and that the screening questions tapped all of the key elements of forcible rape provided considerable justification for combining the data on rape from the NWS and NVAWS.

### Appendix III: Methods for Estimating Rape in Maine (Technical Details)

Initially, Census 2000 population estimates for Maine were obtained for each of the 13 age groups (i.e., 18-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, and 75 and over) and 6 racial/ethnic groups (i.e., African-American, Asian-American, Caucasian, Native American, multi-racial, and Hispanic). However, due to sparse data for these 78 age-by-race subgroups, the 13 age groups subsequently were collapsed into 6 groups (i.e., ages 18-24, 25-34, 35-44, 45-54, 55-64, and 65 and over).

SUDAAN (2002), a software product designed to analyze clustered data in epidemiological studies and complex sample surveys, was used to generate beta coefficients (via multiple logistic regression) taking the sampling design and weighting into account for each of the age-by-race/ethnicity- by -region subgroups entered into the analysis. These coefficients were converted to rape-prevalence point estimates for each region-specific age-by-race/ethnicity subgroup and weighted by corresponding age-by-race/ethnicity Census 2000 population estimates for Maine. Statistical programming written in SAS (2002) specifically for this project then used standard errors generated with the regression analysis to obtain estimates of the corresponding standard errors for rape prevalence estimates.

This method used region-specific estimates of the odds of rape (i.e., risk of ever having been raped for women living in one region relative to women living in the lowest risk region) to calculate state-specific prevalence proportions. In this case where the prevalence of completed rape is not rare, the transformation of the region-specific race/ethnicity-by-age log odds to the corresponding prevalence proportions produces an unbiased estimate of the prevalence compared to the method of multiplying a prevalence estimate by the odds ratio. Also, this methodology took the original sampling design into account before adjusting to the Census 2000 numbers by using weighted data in the multiple logistic regressions. Had sampling design not been taken into account, this method would have produced biased standard errors and confidence intervals.

#### Census Region Divisions of the United States

*New England:* New Hampshire, Vermont, Massachusetts, Connecticut, Maine, Rhode Island

*Middle Atlantic:* New York, Pennsylvania, New Jersey

*East North Central:* Illinois, Indiana, Ohio, Wisconsin, Michigan

*West North Central:* Missouri, Nebraska, Minnesota, Kansas, North Dakota, South Dakota, Iowa

*South Atlantic:* Florida, Georgia, South Carolina, North Carolina, Virginia, District of Columbia, Maryland, West Virginia, Delaware

*East South Central:* Alabama, Tennessee, Kentucky, Mississippi

*West South Central:* Texas, Oklahoma, Louisiana, Arkansas

*Mountain:* Arizona, New Mexico, Utah, Colorado, Montana, Nevada, Idaho, Wyoming

*Pacific:* California, Washington, Oregon, Alaska, Hawaii

### Limitations

Note that, to the extent that states within regions vary in rape prevalence (i.e., extent to which, within the New England region, rape prevalence in Maine differs from that in New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island), the estimates produced by these procedures may be biased. Additionally, with the differences in time between the years in which the surveys were conducted (i.e., 1989 and 1995) and Census 2000 estimates, secular and cohort trends may be possible but could not be examined. Further, only a limited number of covariates were included in the logistic regression models due to sparse data and limited information. Of particular note are the complications associated with estimating prevalence for persons of Hispanic/Latino ethnicity as well as interpretation of the racial category “two or more races.”

### References

- Berliner, L., Fine, D., & Moore, D. (2001). *Sexual assault experiences and perceptions of community response to sexual assault: A survey of Washington state women*. Seattle, WA: Harborview Medical Center.
- Fisher, B. S., Cullen, F. T., & Turner, M. G. (2000). *The sexual victimization of college women*. (NCJ 182369). Washington, DC: U.S. Department of Justice, National Institute of Justice.
- Kilpatrick, D. G. (2002, March). *Making sense of rape in America: Where do the numbers come from and what do they mean?* Presented at the Violence Against Women Supplement Meeting, Centers for Disease Control, Atlanta, GA.
- Kilpatrick, D. G., & Acierno, R. (2003). Mental health needs of crime victims: Epidemiology and outcomes. *Journal of Traumatic Stress, 16*, 119-132.
- Kilpatrick, D. G., Edmonds, C. N., & Seymour, A. (1992). *Rape in America: A report to the nation*. Arlington, VA: National Victim Center & Medical University of South Carolina.
- SAS for Windows (Version 8.2) [Computer software]. Cary, NC: SAS Institute.
- SUDAAN (Version 8) [Computer software]. Research Triangle Park, NC: Research Triangle Institute.
- Tjaden, P. & Thoennes, N. (2000). *Full report of the prevalence, incidence, and consequences of violence against women: Findings from the National Violence Against Women Survey*. (NCJ 183781). Washington, DC: US Department of Justice, National Institute of Justice.
- U.S. Bureau of Census. (2001). *Census 2000 Summary File 1*. Washington, DC: U.S. Government Printing Office.

*Place information about state sexual assault coalition here.*

*Place information about state Rape Prevention Education program here*

### *Acknowledgements*

The National Violence Against Women Prevention Research Center, this project, and the preparation of this report were supported by Cooperative Agreement No. U49/CCU415877 from the Centers for Disease Control and Prevention (CDC). This project and report would not have been possible without the financial support provided by the Program Implementation and Dissemination Branch of the Division of Violence Prevention at the CDC. We express our strong appreciation to our collaborators at the CDC, Corinne Graffunder, MPH, Rita Noonan, Ph.D., Janet Saul, Ph.D., Len Paulozzi, M.D., MPH, and Jim Mercy, Ph.D., for their support and constructive criticism of the project and report. Likewise, we wish to thank the Co-Directors of the NVAWPRC, Drs. Patricia Resick and Linda Williams, for their feedback, suggestions, and encouragement. Several other team members contributed to the preparation of this report. They include Drs. Ron Acierno and Heidi Resnick, and Ms. Vickey Cornelison-Grant. Drs. Robert McKeown and James Hussey and Ms. Robin Puett from the University of South Carolina developed special statistical programming for the analyses conducted for this report, and we thank them for their contributions. Finally, we wish to express our profound appreciation to more than 12,000 women who participated in the NWS and NVAWS. Without the contributions of these women in general, and those of the many rape victim participants in particular, our knowledge about rape would be substantially diminished. We owe them much.

### THE NATIONAL VIOLENCE AGAINST WOMEN PREVENTION RESEARCH CENTER

*“To help prevent violence against women by advancing knowledge about prevention research and fostering collaboration among advocates, practitioners, policy makers, and researchers.”*

Mission Statement

The National Violence Against Women Prevention Research Center (NVAWPRC) was established in 1998 by the Centers for Disease Control and Prevention. The NVAWPRC is a consortium of researchers and practitioners concerned with violence against women from the Medical University of South Carolina, National Crime Victims Research and Treatment Center, Charleston, SC; Wellesley College, Wellesley Centers for Women, Wellesley, MA; and University of Missouri-St. Louis, Center for Trauma Recovery, St. Louis, MO. The Co-Directors of the Center are Drs. Dean G. Kilpatrick, Patricia A. Resick, Nan Stein, and Linda M. Williams.

The Center's goals are to improve prevention research and foster partnerships among researchers, advocates, practitioners, and public policy makers by identifying and overcoming the barriers to these collaborations. NVAWPRC also serves as a clearinghouse for prevention strategies by keeping researchers and practitioners aware of training opportunities, policy decisions, and recent research findings. The NVAWPRC website contains the latest research on violence against women and serves as a resource to everyone involved in the field of violence prevention. The NVAWPRC has also developed several special reports and training materials that may be obtained by contacting the Center at (843)-792-2945 or at our web address: <http://www.vawprevention.org>.





N A T I O N A L  
V I O L E N C E A G A I N S T W O M E N  
P R E V E N T I O N R E S E A R C H  
C E N T E R