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The Costs of Crime on Victims

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Introduction

This Research Report documents the results of a 2-year multidisciplinary research effort to estimate the costs and consequences of personal crime for Americans. Personal crime is estimated to cost $105 billion annually in medical costs, lost earnings, and public program costs related to victim assistance. These tangible losses do not account for the full impact of crime on victims, however, because they ignore pain, suffering, and lost quality of life. Including pain, suffering, and the reduced quality of life increases the cost of crime to victims to an estimated $450 billion annually. Violent crime (including drunk driving and arson)

accounts for $426 billion of this total, property crime $24 billion. These estimates exclude several crimes that were not included in this study but that also have large impacts, notably many forms of white collar crime (including personal fraud) and drug crimes.

Below are some yardsticks that put the costs into context.

- Violent crime causes 3 percent of U.S. medical spending and 14 percent of injury-related medical spending.
- Violent crime results in wage losses equivalent to 1 percent of American earnings.
- Violent crime is a significant factor in mental health care usage. As much as 10 to 20 percent of mental health care expenditures in the United States may be attributable to crime, primarily for victims treated as a result of their victimization. About half of these expenditures are for child abuse victims who are receiving treatment for abuse experienced years earlier. These estimates do not include any treatment for perpetrators of violence.
- Personal crime reduces the average American's quality of life by 1.8 percent. Violence alone causes a 1.7 percent loss. These estimates are conservative. They include only costs to victimized households, ignoring the broader impact of crime-induced fear on our society.

This study highlights the importance of explicitly considering crime victims' pain, suffering, and lost quality of life when analyzing public policy. A complete characterization of criminal victimization costs can be an important tool in formulating criminal justice policy. Identifying and quantifying costs and consequences of victimization may be helpful both in characterizing the crime problem and in examining ways to address it. Ignoring the nonmonetary benefits of crime reduction can lead to a misallocation of resources. For example, suppose that an additional year of incarceration for a rape offender would prevent one additional rape incident. Considering only tangible, out-of-pocket costs, the average rape (or attempted rape) costs $5,100--less than the $15,000-$20,000 annual cost of a prison cell. The bulk of these expenses are medical and mental health care costs to victims. However, if rape's effect on the victim's quality of life is quantified, the average rape costs $87,000--many times greater than the cost of prison.

By allowing analysts to combine statistics on disparate crimes into a single, readily understood metric, monetary valuations of crime costs can help guide resource allocations across crimes. For

example, is a patrol pattern that prevents a rape better than one that prevents three burglaries? One way to answer such a question is to ask residents of the affected area, through polling or referendums, which they prefer. In many instances, however, policymakers must rely on less direct methods of determining an appropriate choice. In such cases, one would need to have a metric that allows for comparisons between rapes and burglaries.

Although placing a dollar value on the suffering resulting from violent crime may seem cold and impersonal, such information is useful in the public policy arena. Without a common metric to compare various crimes, it is difficult to assess the merits of criminal justice or victim assistance programs. For example, the aggregate out-of-pocket costs of rape are about $7.5 billion, roughly equal to the out-of-pocket costs to burglary victims and less than the approximately $9 billion cost to larceny victims. Yet the crimes of burglary and larceny have much less severe psychological effects on victims. When pain, suffering, and lost quality of life are quantified, the cost of rape--$127 billion--dwarfs the estimated costs of either burglary or larceny.

Violence against children is one of the least well-documented areas of personal crime. This Research Report presents several new estimates of the incidence, costs, and consequences of violence against children. Although this study's results should be viewed as preliminary, they

suggest that violence against children accounts for a significant portion of our nationwide victim costs. Out-of-pocket costs for child victims are estimated to be more than 20 percent of all out-of-pocket crime victim costs and more than 35 percent of all costs (including pain, suffering, and lost quality of life).

The National Crime Victimization Survey (NCVS) is the government's main source of information about criminal victimization. To collect information for the NCVS, the Bureau of Justice Statistics polls people over age 12 about rape, robbery, assault, larceny, burglary, and motor vehicle theft. Partly because of the difficulty in obtaining certain information in a survey format, the NCVS does not collect data on certain crime categories (such as child abuse and drug abuse) and undercounts others (such as rape and domestic violence). The NCVS format does not attempt to comprehensively measure crime costs and consequences or document and assess crime-induced

permanent disability and mental health treatment, which would cover such intangibles as the pain, suffering, fear, and lost quality of life that victimization brings. The survey documents numbers of crimes as reported by households and asks victims to quantify their short-term out-of-pocket losses due to victimization. This Research Report aims to add valuable information to the findings of the NCVS by estimating the full cost of crime to victims and by including many other types of crime.

The incidents of crime

Number of victimizations. It is difficult to know how much crime is committed in the United States. The Federal Bureau of Investigation's Uniform Crime Reports (UCR) collect data from police departments about the number of crimes reported or known to the police. The NCVS survey of households also obtains information about crimes not known to the police and thus identifies more criminal offenses than the UCR, but it still probably undercounts the total crimes, especially those regarding gunshot and knife assaults, domestic violence, and rape (National Research Council, 1993). As mentioned previously, the NCVS also excludes many crimes, among them murder, arson, drunk driving, child abuse and neglect, and crimes against children under 12. Also, the survey sample of U.S. households largely omits the homeless and others not attached to traditional households.

This project reviewed available estimates of the under-reported crimes, seeking more comprehensive incidence data. The data sources included national surveys and local studies. One difficulty with analyzing these studies was the variety of definitions used for the same crime. For example, some researchers defined rape as any unwanted sexual encounter, whether or not the victim believed she had been raped. Others were more restrictive, including only forced penetration that the victim characterized as rape. Another problem is that many studies have not used nationally representative samples; also, rape surveys have often polled only women. Ultimately, the researchers for this project focused almost entirely on data from nationally representative surveys where the crime definition was clearly reported. In some cases, they generated new estimates of crime incidence based on an analysis of earlier studies.

Total crimes. People and households in the United States faced more than 49 million crime attempts annually in 1987-1990. The annual toll includes more than 16 million violent crimes and attempted crimes (murder, rape, robbery, assault, child abuse, drunk driving, and arson). In 1990, 31,000 deaths resulted.

Table 1 distinguishes between victims and victimizations. The victimization counts in the last column of table 1 differ from most published NCVS counts. The reason is that the researchers included series victimizations, a chain of three or more similar crimes that respondents did not describe in detail. The NCVS asks series victims to estimate how many times they were victimized.

Recent NCVS validation efforts suggest respondents can remember details of up to six related victimizations if pressed. This study accepted the serial victimization counts to a maximum of 10 per series but examined the effect of more and less aggressive choices in sensitivity analysis. Thus, if a man beat his wife every Saturday night, for example, table 1 records 1 victim and 10 victimizations annually (labeled "series=r"). Table 1 also shows a more conservative victimization count that treats a series of crimes which the victim is unwilling to describe individually as a single victimization (labeled "series=1 "). Even this count exceeds NCVS victimization counts, which completely exclude the series victimizations.

The victim counts in table 1 generally are not additive between crime types. The same person may be the victim of a rape and a burglary during one year, so the sum would double count. Duplication was eliminated within the NCVS data, however. The unduplicated annual victim count for NCVS crimes alone approaches 31 million.

Table 1

Victims and Victimization, 1987-1990 (average)

	Victims	Victimizations	
		Series = 1	Series = r
Fatal Crime	**31,079**	**31,079**	**31,079**
Rape-Murder	265	265	265
Roberry Deaths	2,384	2,384	2,384
Child Abuse Deaths	791	791	791
Child Neglect Deaths	464	464	464
Other Fatal Assault	20,164	20,164	20,164
Arson Deaths	864	864	864
Drunk Drving Deats(DWI)	6,147	6,147	6,147
Child Abuse	**794,000**	**878,000**	**926,000+**
Completed Rape	71,000	71,000	90,000
Other Secual Abuse	114,000	114,000	143,000
Physical Abuse	308,000	355,000	355,000+
Emotional Abuse	301,000	337,000	337,000+
Rape and Sexual Assault (excluding Child Abuse)	**1,133,000**	**1,163,000**	**1,467,000**
Other Assault/Attempt	**Unknown**	**7,326,000**	**9,906,000**
NCVS with Injury	1,400,000	1,790,000	2,237,000
Age 0-11 with Injury	97,000	107,000	139,000
Non-NCVS Domestic	1,645,000	1,645,000	1,919,000
No Injury	3,065,000	3,784,000	5,521,000
Robbery/Attempt	**1,084,000**	**1,135,000**	**1,351,000**
With Injury	387,000	398,000	480,000
No Injury	697,000	737,000	871,000
Drunk Driving	**Unknown**	**2,283,000**	**2,283,000**
With Injury	Unknown	509,000	509,000
No Injury	Unknown	1,774,000	1,774,000
Arson	**Unknown**	**137,000**	**137,000**
With Injury	Unknown	15,000	15,000
Fires, No Injury	Unknown	122,000	122,000
Larceny/Attempt	**20,200,000**	**222,834,000**	**25,012,000**
Burglary/Attempt	**5,217,000**	**5,681,000**	**6,321,000**
Motor Vehicle Theft/Attempt	**1,677,000**	**1,745,000**	**1,813,000**

Total	**Unknown**	**43,000,000**	**49,000,000+**

Notes:

(1) "Victims" Counts the number of individuals who were victimized at any time during the year. "Victimization" counts the number of times that any individual was victimized. Totals were computed before rounding. See text.

(2) Drunk driving counts ignore deaths or injuries to those who are perpetrators and are thus restrictied to innocent victims. Arson count excludes wildfires without injury. Fatal crime couts are for 1990. **"No injury"** cases involve no physical injury but may involve psychological injury.

The section that follows systematically describes the findings about crimes for which this study's incidence estimates go beyond those of the NCVS.

Fatal crimes. Including victims of drunk drivers, crime took 31,079 lives in 1990. This count largely derives from Vital Statistics data, which recorded 4,500 crime deaths, primarily negligent manslaughter cases, excluded from the Federal Bureau of Investigation's Uniform Crime Reports. The number excluded deaths due to legal intervention, as well as 2,376 deaths of unknown intent, many of them poisonings and firearm deaths. Some of the latter deaths probably were homicides. For example, child abuse deaths are likely to be undercounted because some children who allegedly die of Sudden Infant Death Syndrome (SIDS) are actually abuse victims. Vital Statistics data also exclude victims whose bodies are never recovered. The drunk driving count excludes intoxicated drivers and nonoccupants. As described below, the number further reduces the victim count in an attempt to remove crash deaths that would have happened even if everyone involved had been sober.

Child abuse. Existing estimates of child abuse vary considerably. The two main sources of national information on child abuse are the National Incidence and Prevalence Survey of Child Abuse and Neglect (NIS) (Sedlak, 1991) and the National Family Violence Surveys (Gelles and Straus, 1985; Straus and Gelles, 1976). The latter produce estimates far greater than the former, mainly due to differences in the samples employed. Gelles and Straus used a probability sample of adults with children, and Sedlak relied on a sample of child protective services (CPS) and other government agencies to generate counts of actual cases that came to their attention. The CPS-based estimate undoubtedly represented only serious cases and is thus an underestimate of the total number of child abuse victims. The Gelles and Straus estimates were based on

self-reported behaviors that are difficult to validate with external measures.

This study's researchers base estimates on data from the 1986 NIS but use a statistical technique, capture-recapture modeling, that estimates the number of people unknown to the system from the number detected by various sources (Miller, Kilpatrick, and Resnick, 1994). The estimates are conservative. They largely exclude the 1.3 million cases annually that child protective services agencies are unable to substantiate or do not classify as abuse and neglect using NIS definitions.

The unduplicated count of 1990 abuse victims is at least 794,000. In order of precedence for victims of multiple types of abuse, 185,000 children were sexually abused, 308,000 were physically abused, and 301,000 were emotionally abused. Unlike the victim count, the victimization count treats a child who was the victim of both physical and sexual abuse as being victimized twice.

The estimate is thus higher than Sedlak's estimate of 590,800 total abuse cases (of which 133,600 were sexual abuse victims) but lower than Straus and Gelles' estimates. Straus and Gelles (1986, 1987) estimated about 1.3 million children are physically abused annually, including children targeted with thrown objects that missed their mark.

This project's estimate equates to about 13-17 million adults who were physically abused by parents or adult caretakers as children and 355,000 new physical abuse cases annually. The Commonwealth Fund (1993) estimated that 20 million adults were "physically abused" by someone as children. The Family Violence Prevention Fund (EDK Associates, 1993) estimate is that 15 million adults were "beaten by their parents or witnessed a sibling's beating." This estimate probably is low since people who had never witnessed a parent beating a child were not asked if they personally had been beaten.

More recently, Finkelhor and Dziuba-Leatherman (1994) used a telephone survey of youths to estimate the criminal victimizations of children ages 10-16 during 1991. They estimated that 0.5 percent of children ages 10-16 were victimized by a parent or parent-substitute. Based on Sedlak's (1991) estimate that 89 percent of child physical abuse was by a parent or substitute, and an estimated

24.3 million children ages 10-16, the Finkelhor and Dziuba-Leatherman estimate translates into 246,000 child abuse victims (with 95 percent confidence limits of 137,000 to 355,000). By comparison, the present study estimates 170,000 child physical abuse victims ages 10-16 (out of 308,000 child abuse victims).

Rape. Until 1992, the NCVS did not ask directly about rape, but left it to the victim to mention (and define), a method that resulted in criticism for undercounting rape. After an extensive redesign process, a new NCVS questionnaire was fielded in 1992 that, among other things, directly asks about rape. Preliminary data released in the fall of 1994 suggest

that estimates of completed and attempted rape are about 2.7 times higher than those based on the older questionnaire. In addition, the new form developed estimates of nonrape sexual assault for the first time. Together, 607,000 rapes and other sexual assaults were estimated to have occurred in 1992 (BJS, October 1994). This amount excludes about 114,000 rape or sexual assault victims who were subject to series rapes in excess of six or more times and an additional 113,000 victims of "unwanted sexual contact without force." If these estimates are added together, there were approximately 834,000 victims in 1992.

Because the redesigned NCVS instrument had not yet been implemented at the time of this research (i.e., as of May 1995, the 1992 data files had not yet been released), alternative national estimates of rape were used. The best data the researchers could find that coincided with the time period under study were produced from the National Women's Study (NWS) developed by Kilpatrick et al. (1992). The NWS surveyed women age 18 years and older in 1990 and found approximately 683,000 women had been raped or sexually assaulted in the previous year. Followups of the same sample (providing 1-year bounded reference periods) in 1991 and 1992 produced annual estimates averaging 632,000, an amount that closely matched the original findings (Kilpatrick et al., 1994). Kilpatrick's questions about rape were clear and direct. They explicitly included vaginal intercourse, oral and anal sex, and/or other sexual penetration by force, threat of force, or lack of consent. The Kilpatrick numbers are similar to the preliminary estimates from the 1992 NCVS, even though the questions were worded differently. Using the Kilpatrick estimates for 1990 is thus not an unreasonable approach to avoiding the undercount in the pre-1992 NCVS.

Several adjustments to the Kilpatrick estimates are necessary for comparability with the rest of this study's incidence data. This research started with the 1991-92 Kilpatrick estimate of the number of adult female

rape victims (632,000). Because Kilpatrick surveyed only women, the ratio of female to male rapes in the NCVS (17 percent of victims are male) was used to inflate the estimate. Next, because persons under 18 were not included in the NWS, an adjustment for child rapes was made. The NWS asked women if they were raped as children. From these responses, the number of children that would have been raped per year was estimated in order to report such a response as adults. Although the NWS did distinguish attempts from completed rapes, it is not clear whether respondents excluded attempts; it is also possible that respondents to the pre-1992 NCVS considered oral sex and other sexual assaults as attempted assaults, events that Kilpatrick defines as rape. To be conservative, this study did not, therefore, increase the NWS completed rape estimate to account for attempts. Finally, because the Kilpatrick estimate is a prevalence estimate (a count of victims) and not an incidence estimate (a count of victimizations), the NWS figure was multiplied by 1.27, the ratio of victimizations to victims from NCVS. The result is an estimated 1.1 million rape and sexual assault victims--very close to the recently released redesigned NCVS preliminary estimates of 834,000 victims noted above.

AssaultThere is no single source of data on assaults. Based on NCVS data, an estimated 7.8 million assaults and attempted assaults occur annually, representing about 4.4 million victims. About 30 percent of these assaults involve injury. The NCVS excludes children under age 12 and undercounts domestic assaults.

To supplement the data, this study estimates that nonfatal assaults against children under age 12 number 139,000 annually (97,000 victims). To avoid double counting, this estimate excludes physical child abuse, defined as assault by adult caretakers or by others who parents let assault their children (Sedlak, 1991). This estimate was computed by multiplying the NCVS count of nondomestic assaults on children ages 12-17 times the ratio of medically treated nondomestic assaults for children ages 0-11 versus children ages 12-17. That ratio came from proprietary health care system data on 13,528 hospitalized crime victims and 65,555 crime victims treated in emergency rooms and released. (By comparison, the unweighted 1987-91 NCVS data included fewer than 250 overnight hospital admissions and 1,000 other victims treated in hospital emergency or outpatient departments.) The hospitalized data cover all victims admitted in California, Vermont, and Washington at times when those States required coding of injury causes. The nonhospitalized data are from a convenience sample of 21 hospital emergency departments spread across 9 cities. They include all but one of the emergency departments this study could identify nationally that coded injury cause and type and maintained data on extractable computer files. However, since these emergency departments are not nationally representative samples, the assault count for children under age 12 should

be viewed as preliminary and is reported separately.

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Nonfatal domestic assaults have been undercounted in the NCVS. Of the 4.4 million assault victims identified in the NCVS, only about 355,000 were domestic assault cases. Straus and Gelles (1986) estimated that 2 million people endure severe spousal violence annually (interpreted here as violence with at least minor physical injury), with an additional 2 million subjected to less severe violence. Straus and Gelles' estimates are open to criticism (National Research Council, 1993). A further concern about these estimates is that domestic rape often may be included.

The Straus and Gelles severe violence estimate appears to be better than its critics claim. Under some reasonable assumptions, it proved consistent with NCVS data. Assume the underreporting rate for domestic rape relative to other rape in the NCVS equals the underreporting rate for domestic assault. Under this assumption, physically injured domestic assault victims would number about 1.75 million annually. This estimate should be lower than Straus' and Gelles' estimate; it excludes assaults by unmarried partners, which Straus and Gelles include.

The Straus and Gelles estimates also are consistent with the 1993 Commonwealth Fund survey. In this survey, 3.9 million women reported physical abuse by their partners, with far more reporting verbal or emotional abuse. As a final confirmation of the Straus and Gelles estimates, with the NCVS distribution of medical treatment and victimizations per victim for domestic assault, they imply 1.85 million emergency department visits annually. For women, the total would be 25 percent of injury visits, excluding visits due to motor vehicle crashes--21 percent including these visits (computed from the injury visit count in McCaig, 1994). Four emergency department studies find this percentage ranges from 16 to 30 percent.

Due to their tenuous nature, this study included only the estimates of 2 million spousal victims with severe enough violence to cause injury. This number has been reduced by 355,000 victims of domestic violence estimated in the NCVS data.

Since NCVS undercounts gunshot and knife assaults with physical injury, estimates of gunshot assaults came from nationally representative health care data. The knife assault estimate was computed from the gun assault estimate and the health care data used in the child assault analysis (see Miller and Cohen, 1995).

Drunk driving.Drunk driving is illegal. This study considers it a violent crime when a drunk driver maims or kills innocent victims or damages their property. Some crashes involving a drunk driver, however, would have happened even if the driver had been sober. They might have been due to a mechanical failure, the error of another driver or pedestrian, or an error the

drunk driver would have made even when sober. Therefore, simply counting the number of crashes where one driver had a blood alcohol content (BAC) of 0.1 percent or more would overestimate the harm attributable to drunk driving. To estimate attributable crashes, this study relied on the methodology in Levy and Miller (1995). These estimates are somewhat tentative as they were based on a 1962 Michigan study that attempted to differentiate between crashes that were "caused" by drunk driving and those that would have occurred anyway. The U.S. Department of Transportation is currently updating that 1962 study.

Drunk drivers victimize almost 2.9 million innocent people annually. Because they are driving drunk, they kill about 6,150 people, physically injure 500,000, involve another 2.4 million people in sometimes psychologically devastating crashes, and damage 1.15 million vehicles.

Arson.Arson injures relatively few people but can be deadly. The arson counts are from the National Fire Incident Reporting System. They include all arson fires that damaged buildings or vehicles and outdoor fires that resulted in death or physical injury.

Excluded crime.This study focuses on crimes against persons or households. Some incidents--like child neglect--that may not be characterized as crimes in all States and have varying definitions are excluded. Also excluded are crimes against business (theft, fraud, embezzlement, etc.); crimes against the government (regulatory offenses, fraud, tax evasion, etc.); all forms of white collar crime (including fraud); and most "victimless" crimes such as drug offenses, gambling, loan sharking, and prostitution. Here are some of the estimates on the prevalence of these crimes:

Criminal child neglect.This form of child maltreatment is defined by State laws in widely varying ways and is generally a misdemeanor. Several States' neglect statutes, for example, include "environmental neglect," essentially failure to provide shelter. That makes homelessness a crime. Such neglect could be the result of poverty and the inability of the social services system to find the family a home rather than

a deliberate attempt to harm the child. Few States require Child Protective Services (CPS) to report cases that they substantiate to the police. Instead, CPS and Family Courts resolve many cases. Criminally neglected children are victims and may require outside intervention if they are to become productive members of society. However, using the same methodology employed for child abuse (applying capture-recapture modeling to the 1986 NIS data), an estimated 1.7 million children were neglected. This includes about 1,236,000 children who were physically neglected and another 475,000 who were subject to educational neglect. These estimates are for children who were not otherwise child abuse victims.

Personal fraud. According to a National Institute of Justice survey (Titus, Heinzelmann, and Boyle, 1995), 24 million Americans experience more than 38 million fraud attempts annually. The survey defined fraud as "involving the deliberate attempt to deceive with promises of goods, services, or other financial benefits that in fact do not exist or that were never intended to be provided."

Drug abuse. According to the 1992 National Household Survey on Drug Abuse, about 11 percent of Americans age 12 or older admitted using an illicit drug at least once within the past year. This translates into approximately 22.8 million drug users. However, only about half of that number reported using an illicit drug within the past month. One estimate is that about 5.5 million Americans are "in need of treatment" (ONDCP, 1991).

Costs and Consequences of Victimization

Crimes--both violent and nonviolent--impose many different kinds of losses on both victims and society. The costs and consequences of crime are categorized in the section "Comprehensive List of Costs and Consequences of Crime." This study focuses on victims' costs; hence it ignores society's response to victimization--including the very real costs to the criminal justice system and other social costs associated with the fear of crime, such as changed behavior (failure to walk outside at night, moving to safer neighborhoods, etc.) and private security expenditures by the general population who are concerned about crime. More details about the nonvictim costs of crime are contained in Cohen, Miller, and Rossman (1994) and Cunningham, Strauchs, and Van Meter (1991). To victims, the costs are mainly (1) out-of-pocket expenses such as medical bills and property losses, (2) reduced productivity at work, home, and school, and (3) nonmonetary losses--such as fear, pain, suffering, and lost quality of life. Although some of these losses are tangible and easily quantified, even the intangible losses (such as lost quality of life) may be valued in dollar terms (Cohen, 1988).

Table 2 contains a detaled estime of each category of victimization cost on a per-crime basis. These costs are

Table 2
Losses per Criminal Victimization (Including Attempts)

	Productivity	Medical Care/Ambulance	Mental Health Care	Police/ Fire Services	Social/ Victim Services	Property Loss/ Damage	Subtotal: Tangible Losses	Quality of life	Total
Fatal Crime									
Rape, Assault, etc.	$1,000,000	$16,300	$4,800	$1,300	$0	$120	$1,030,000	$1,910,000	$2,940,000
Arson Deaths	724,000	17,600	4,800	1,900	0	21,600	770,000	1,970,000	2,940,000
DWI	1,150,000	18,300	4,800	740	0	9,700	1,180,000	1,995,000	3,180,000
Child Abuse	**2,200**	**430**	**2,500**	**29**	**1,800**	**10**	**7,931**	**52,371**	**60,000**
Sexual Abuse	2,100	490	5,800	56	1,100	0	9,500	89,800	99,000
Physical Abuse	3,400	790	2,700	20	2,100	26	9,000	57,500	67,000

Emotional Abuse	900	0	2,700	20	2,100	0	5,700	21,100	27,000
Rape & Sexual Assault	**2,200**	**500**	**2,200**	**37**	**27**	**100**	**5,100**	**81,400**	**87,000**
Other Assault or Attempt	**950**	**425**	**76**	**60**	**16**	**26**	**1,550**	**7,800**	**9,400**
NCVS with Injury	3,100	1,470	97	84	46	39	4,800	19,300	24,000
Age 0-11 with Injury	2,800	1,470	100	84	46	39	4,600	28,100	33,000
Non-NCVS Domestic	760	310	81	0	0	39	1,200	10,000	11,000
No Injury	70	0	65	69	9	15	200	1,700	2,000
Robbery or Attempt	**950**	**370**	**66**	**130**	**25**	**750**	**2,300**	**5,700**	**8,000**
With Injury	2,500	1,000	65	160	44	1,400	5,200	13,700	19,000
No Injury	75	0	66	110	15	400	700	1,300	2,000
Drunk Driving	**2,800**	**1,400**	**82**	**40**	**?**	**1,600**	**6,000**	**11,900**	**18,000**
With Injury	12,100	6,400	82	120	?	3,600	22,300	48,400	71,000
No Injury	170	0	82	17	0	1,000	1,300	1,400	2,700
Arson	**1,750**	**1,100**	**18**	**1,000**	**?**	**15,500**	**19,500**	**18,000**	**37,500**
With Injury	15,400	10,000	24	1,000	?	22,400	49,000	153,000	202,000
No Injury	8	0	18	1,000	0	14,600	16,000	500	16,000
Larceny or Attempt	**8**	**0**	**6**	**80**	**1**	**270**	**370**	**0**	**370**
Burglary or Attempt	**12**	**0**	**5**	**130**	**5**	**970**	**1,100**	**300**	**1,400**
Motor Vehicle Theft or Attempt	**45**	**0**	**5**	**140**	**0**	**3,300**	**3,500**	**300**	**3,700**
* Child Neglect	25	3	910	2	840	0	1,800	7,900	9,700

Notes: All estimates in 1993 dollars. Totals may not add due to rounding. Major categories are in bold, subcategories listed under bold headings. ? = unknown. * Non-educational child negelect is not included in any of the total figures reported in the remaining tables. See text.

averages and include attempts that result in minimal consequences as well as extremely violent crimes that result in long hospital stays and devastate victims' quality of life for years to come. Thus, the fact that the average rape costs about $500 in medical expenses reflects the fact that only about 25 percent of all rape victims in the NCVS reported receiving any medical treatment; only about 2 percent of rape victims stayed overnight in a hospital. A brief explanation of what these categories are and how they were estimated follows.

Tangible losses

Property damage and loss: the value of property damaged and of property taken and not recovered, plus insurance claims administration costs that arise in compensating victims' property losses.

Most of these losses are taken directly from NCVS data. In cases where losses were insured, 16 percent was added to account for insurance claims processing costs, a published loss-adjustment expense ratio from Best (1993). Supplementary published sources were also used for drunk driving (Miller and Blincoe, 1994) and

arson cases (Hall, 1993).

Property damage is typically a very small percentage of the cost of violent crime, often less than 1 percent of the total tangible costs. However, costs related to property damage are typically the bulk (60-80 percent) of the cost of property! household crimes such as burglary, larceny, and arson. The average arson victim incurs $15,500 in property damage; the average motor vehicle theft costs $3,300; while the average property value loss to robbery victims is $750.

Medical care: payments for hospital and physician care, as well as emergency medical transport, rehabilitation, prescriptions, allied health services, medical devices, coroner costs, premature funeral expenses, and related insurance claims processing costs. Also included in this category are victim legal expenses incurred in recovering medical costs from drunk drivers and their insurers.

Although the NCVS contains estimates of medical care costs, these estimates are self-reported by victims and only include medical costs up to a few months after the incident. This approach underestimates medical costs because the victim may not receive bills for the full cost of medical care, and it does not consider long-term costs. Although NCVS provides some details on the nature of injury, the categories are quite broad, e.g., broken bones or gunshot wounds and hospitalized versus nonhospitalized status.

In order to estimate lifetime medical costs, this study started with the distribution of injuries as reported in NCVS and made several adjustments. For hospitalized injuries, within the broad NCVS injury categories, an estimate was developed of the "ICD9" (International Classifications of Diseases, Ninth Edition, Clinical Modification Code) injury distribution by examining all hospitalized injuries in California, Vermont, and Washington, three States that have identified injuries by ICD9 code and cause (allowing us to isolate violence victims from unintentional victims and suicide attempts). Using the actual lengths of hospital stay from the State data and the medical payments per day (and other injury information) by ICD9 code from Miller, Pindus et al. (1995), the treatment costs were estimated for each hospitalized assault or rape victim. The average cost per injury by NCVS injury category was then computed. Although having a nationally representative sample of hospitalized intentional injuries

would have been preferred, using all hospitalized rape and assault cases in only States that collected these data seemed reasonable. Since the research started with NCVS broad injury categories, the research team only used the three-State injury data to estimate the body parts and severity of injury within each category. It is unlikely that the typical "broken bone" in these three States is significantly more or less severe than the typical broken bone elsewhere in the United States. Data becoming available in 1994-1996 from a dozen other States will allow verification of this hypothesis.

For nonhospitalized injuries a similar approach was tried, but the estimated short-term medical costs by injury category were so similar to the NCVS estimates that the NCVS estimates of short-term costs were used. These estimates were multiplied by lifetime-to-short-term-cost ratios for nonhospitalized injuries by ICD9 code groupings (in the NCVS categories) computed from the ratios in Miller, Pindus et al. (1995) and the injury distribution from 21 hospital emergency departments that code ICD9 nature of injury and cause of injury for nonadmitted injuries.

The researchers know of no estimates of the medical costs associated with homicide victims. Instead, medical costs for fatal injuries were taken from Miller, Pindus et al. (1995), based on all fatal workers' compensation cases in 41 States. Similarly, virtually no estimates of medical costs are available for child abuse. Data on medical costs per child abuse case were obtained directly from the above-mentioned health care data and an inferred hospitalization rate. Thus,

this study's estimates for child abuse should be viewed as very rough and worthy of further study.

Insurance administrative costs were estimated to be 7.5 percent of medical costs covered under health insurance policies and 13 percent for workers' compensation-related cases. These estimates were based on insurance statistics as explained in Miller (1992, volume 2).

A final caveat on the costing methodology is that managed care systems appear to be changing health care utilization patterns and payments dramatically (e.g., the distribution of hospitalized versus

nonhospitalized incidents, length of stay, etc.). The estimates do not reflect those changes.

Mental health care: payments for services to crime victims by psychiatrists, psychologists, social workers, and pastoral counselors, and associated insurance claims processing costs.

This cost category has been one of the least studied areas of crime costs. Since there were no known estimates available, the research team conducted a pilot survey of 168 mental health care professionals (Cohen and Miller, 1994b). This survey, using a stratified random sample of members of seven different professional organizations, asked respondents to detail the number of visits by clients being served primarily as a result of crime victimization. (See "Mental Health Care Following Victimization.")

The average murder puts 1.5 to 2.5 people into counseling. Rape and child abuse victims also frequently obtain mental health care, with usage rates approaching 25-50 percent or more. Thus,mental health care costs are the largest component of tangible losses for most forms of child abuse and rape. For example, the cost of mental health care for the typical child sexual abuse victim is estimated to be $5,800. Mental health care usage for other crimes is much lower, generally 1-4 percent of victims. Thus, the average cost per victim is relatively small, generally under $100.

Police and fire services: initial police response and followup investigation, as well as fire service costs related to arson and drunk driving crashes. The cost of other aspects of the criminal justice system is not included.

These estimates are derived from various surveys and other published statistics on the cost of police and emergency response costs, many of which were reported in Cohen, Miller, and Rossman (1994). Compared to the direct impact on victims, police and fire service costs are a relatively small portion of the cost of crime, generally under $100 per case. However, they add up to about $4 billion per year and may be a significant portion of municipal budgets. Exceptions are the costs of

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Table 3
Annual Mental Health Care Use by Crime Victims (1991)

	1000s of Crime Victims Treated	Standard Error (1000s)	% Treated

	(Mean Estimate)		
Witnessing a Murder or Losing a Loved One to Murder	74	22	242
Rape/Recent Child Sexual Abuse	553	253	49*
Child Sexual Abuse Years Earlier	1,621	263	9
Recent Child Physical Abuse	370	116	42
Child Physical Abuse Years Earlier	1,003	255	4
Other Assault	412	71	4
Roberry	86	44	6
Drunk Driving	110	38	4
Arson	11	6.5	6
Larceny/Fraud/Other	64	24	0.1
Burglary/Theft	26	17	0.3

*The mean includes 72% of children raped by family members and 35% of other rapes.

Source: Cohen and Miller (1994b), survey of a stratified fandom sample of 168 mental health care providers. Percentage treated was computed from the incidence estimates shown earlier, adjusted for respondent reports that 27% of victims are treated for more than 1 year.

arson and murder, which each average about $1,400 per incident. Unlike other crimes, where less than half are even reported to police, virtually all arson or murder cases involve fire or police services.

Victim services: activities of Victim Services Agencies and Child Protective Services agencies, as well as foster care for maltreated children removed from their homes, special education for maltreated children, and services aimed at reintegrating families with maltreatment problems.

Few data exist on the extent of victim services by type of victim served. Since this study did not attempt to do primary research in this area, the researchers had to rely on a few existing studies. For the crimes of rape, robbery, and assault, victim service costs were based on the dollar value of Federal Government grants to victim service agencies. This estimate was inflated to account for the non-Federal portion, as described in Cohen, Miller, and Rossman (1994). The result is an extremely conservative estimate that undercounts many private organizations that do not receive Federal funding and ignores the value of time spent by volunteers in these organizations. The estimate that the typical rape victim receives $27 in victim services is clearly an underestimate. Further research on the full extent of victim services would be desirable.

Victim service costs for child abuse are much larger ($1,000 to $2,000 per incident). However, like victim services for adults, these estimates are based on little hard data and several reasonable and conservative assumptions. These estimates primarily involve foster care stays and child protective services for domestic child abuse victims (see Daro, 1988; and McCurdy and Daro, 1993).

Productivity: wages, fringe benefits, housework, and school days lost by victims and their families. This category also includes productivity lost by co-workers and supervisors recruiting and training replacements for disabled workers, worrying about an injured co-worker, etc., and by people stuck in traffic jams caused by drunk driving crashes. Finally, it includes insurance claims processing costs (for example, life insurance claims for fatalities and workers' compensation disability claims for people victimized while working) and legal expenses incurred in recovering productivity losses from drunk drivers and their insurers.

The NCVS data include estimates of the number of hours of work and earnings lost due to medically related problems associated with victimization. The research team imputed

Mental Health Care Following Victimization

One of the least documented consequences and costs of cnme is the mental health care treatment needed and received by victims and their families. Most previous studies have documented mental health care for a nonrandom, clinical sample of victims. This approach Is useful for practitioners who need to understand major symptoms, treatment techniques, etc., but the studies are of limited value to researchers interested in the frequency and severity of crime-induced mental health problems in the United States.

In order to begin to fill this gap, this study conducted a stratified random sample of 168 mental health care professionals, including social workers, pastoral counselors, psychologists, and psychiatrists (Cohen and Miller, 1 994b). Respondents were asked to identify the total number of clients they treated in one calendar year and the percentage of those who were treated primarily as a result of victimization (by type of crime). They were also asked for the typical number of visits a crime victim would make. Table 3 reports the annual mean and median number of victims treated by type of crime, along with associated standard errors. Both mean and median estimates are reported because the means are generally much higher. Although medians are generally more appropriate when sampling with small cell sizes, a good case can be made for using mean estimates in this study. In particular, there appears to be some specialization in treating crime victims, as some respondents no doubt

worked in victim service organizations. For purposes of this study's cost estimates in the remainder of this document, the mean estimates are used. In the aggregate, the difference between the mean and median estimates is about 20 percent, or $1 billion.

Although the results should be viewed as preliminary, If they are replicated and expanded upon in the future, they could yield important new findings. At least 10 percent and perhaps as much as 20 percent of U.S. mental health care spending probably is used to treat victims of violence. Victim-related revenue by mental health care providers in 1991 was estimated to be between $5.8 billion and $6.8 billion, with about one-half of that amount caused by crimes committed that year and the remainder caused by child abuse years eerier. Table 3 also shows estimated mental health services use rates by crime. Notably, survey responses suggest that each murder puts 1.5 to 2.5 witnesses, friends, and relatives into therapy. Mental health treatment also Is quite frequent following rape or child abuse known to the authorities, with estimates ranging from 25-50 percent of all victims receiving some form of mental health treatment.

Two caveats about this study's survey are especially important when interpreting the estimated rate of mental health care use due to abuse years earlier. First, changes in public perceptions probably make victims of child abuse much more likely to seek mental health care today than in the past. Thus, there may be a temporary increase in adults seeking help. If so, current adult treatment rates traceable to childhood victimization may exceed the long-term average. Second, the rates reported reflect therapists' impressions about the reasons underlying treatment. Their impressions are obviously imperfect and may be confounded by patients' false memories and by other mental illness risk factors in patients' lives.

this information when it was missing. Following the procedure in Miller (1993), they estimated days of household work lost from days of work lost. Based on employment status and age reported in NCVS, they estimated the value of housework days lost by victims from the regression equations in Douglass et al. (1990). Since the NCVS only covers short-term costs, the resulting data do not reflect lost productivity that occurs more than a few months after the victimization. Although most crime victims have few long-term productivity losses, some suffer substantial wage losses. Thus, the researchers used the expected lifetime earnings (absent an injury) from a standard age-earnings model similar to the model described in Rice et al. (1989) and permanent disability probabilities from workers' compensation claims (by body part and nature of injury) to estimate long-term productivity losses by body part and nature of injury. Those estimates were then applied to the distribution of

physical injuries in criminal victimizations.

Because of age-related differences in recuperative power, the probabilities may underestimate the disability impacts of crime against the elderly and infants or overestimate the impacts of crime against youths. They also may underestimate disability probabilities due to the greater force and targeting of vulnerable areas involving an intentional injury as compared to a typical workplace injury. For example, a knife that slips while slicing a bagel is likely to inflict less damage than a knife that disarms a robber. This has a dramatic effect on estimated wage losses, with long-term losses averaging 5 to 10 times the short-term losses. For example, short-term productivity loss for the average assault victim was estimated to be $356, while long-term productivity losses were estimated to be $2,035.

Several smaller loss components were also estimated. NCVS includes data on the number of hours of work and wages lost by family members aiding victims and being involved with victims in the legal system. The first component adds about $5 to $10 per victim and the second adds about $10 to $20 per victim. For victims under age 12, this study assumed that an equal number of days of parent productivity are lost when a child victim is medically treated as when a family member loses work due to victimization of an unmarried, unemployed relative. The estimated losses average $65 to $85 per child victim. Employers also suffer indirect losses due to their employee's victimization, such as management time hiring replacements and otherwise dealing with the emotional trauma associated with an employee victimized by crime. Based on earlier studies by Miller (1992) and Miller and Rossman (1990), this study very roughly estimated these losses to be approximately $120 to $140 per rape, robbery, or assault victim.

Finally, school-age children who are victimized may be absent from school while they are recuperating. Based on the number of work days lost for comparable crimes and injuries reported in the NCVS, the number of school days lost for child victims were estimated. The researchers adopted a straightforward and conservative approach to valuing a lost school day by using the average amount spent on education per child per day (see Cohen, Miller, and Rossman, 1994, for details). Placing dollar values on the returns to education is a

more appropriate measure of the loss but is a complicated theoretical and empirical exercise that is beyond the scope of this project. However, since the average number of school days lost is relatively small, this cost category will be a small portion of overall costs regardless of the valuation approach.

Intangible losses

Unlike tangible losses such as medical expenses or lost wages, pain, suffering, and reduced quality of life do not have a market price and cannot be bought and sold. Nevertheless, these losses are real. Victims would pay dearly to avoid them.

Economists use varied methods to place monetary values on the intangible losses (see Cohen, Miller, and Rossman, 1994). Monetary estimates of lost quality of life due to fatalities are generally based on the amount people routinely spend (in dollars or time) to reduce their risk of death. (Miller, 1990; and Viscusi, 1993, review the extensive literature on this subject.) Typical studies have assessed the market for safety by examining the increased demand for smoke detectors as prices dropped, the demand for safer cars, and the differential in worker pay due to different levels of risk exposure. Estimates of the monetary value of a fatality (including lost wages and other tangible losses) range from $500,000 to $7 million. This study adopted the mean estimate from the literature review and synthesis by Miller (1990-adjusted to reflect victims' life expectancies), a total loss of about $2.7 million (inflated to 1993 dollars), with the lost quality of life component being about $1.9 million.

For nonfatal injuries, the research team estimated values of pain, suffering, fear, and lost quality of life by analyzing jury awards to crime victims and burn victims (Cohen and Miller, 1994a; Miller, Brigham et al., 1993). Although violent offenders rarely have adequate assets and are thus infrequently sued for damages, some victims are able to sue third parties for inadequate security or other forms of negligence. These suits have become common enough that the researchers were able to obtain data from 1,106 jury awards and settlements to assault survivors and 361 to rape survivors (including 39 assault awards and many rape awards involving psychological injury only), as well as 606 to burn survivors (used to

compute arson losses). This study ignored jury awards for punitive damages and instead focused solely on that portion of the jury verdict designed to "compensate" the victim for pain, suffering, and lost quality of life. Since cases brought to trial are not necessarily representative of crime cases, the researchers could not apply the pain and suffering estimates directly. Instead, they estimated the functional relationship between the out-of-pocket costs of crime (lost wages and medical expenses); characteristics of the victim (age, sex, work status, etc.); severity of injury (body part, hospitalization, etc.); and the jury's award for pain and suffering. This functional relationship was then applied to the actual distribution of crime victims in the project's data set. In this manner, the researchers were able to estimate what the average jury award for pain and suffering would be for the typical crime in the project's data set.

Analysis of jury awards was based on victims, not victimizations. The data did not permit disentanglement of the effect of series victimizations on pain and suffering. Thus, the lost quality of life estimates for nonfatal injuries are lower than the estimated jury award to a crime victim. For example, the researchers estimated that the 1.1 million rape victims suffer 1.45 million rape victimizations annually. That means annual rape victimizations average 1.27 per victim. Multiplying 1.27 by the $81,400 quality of life loss per rape victimization yields estimated quality of life losses of $103,400 per rape victim.

Serious errors can occur if policy analysts ignore the intangibles when allocating resources. For example, Cohen (1988) describes a study of an early release program in which the authors compared the out-of-pocket costs of crime committed by early release recidivists to the savings to the community that decided not to build more prison space. That earlier study concluded that the program passed a benefit-cost test. However, when the value of pain, suffering, and lost quality of life were added, the early release program failed the benefit-cost test; more prison space was preferable.

Today, benefit-cost analyses typically include the intangible losses. Miller (1993) cites the extensive theoretical literature supporting their use. The U.S. Office of Management and Budget (1989)

requires regulatory analysts to use a method that includes intangible losses whenever a benefit-cost analysis values saving human lives.

Intangible costs--lost quality of life--are clearly the largest cost component for crimes of violence. They are also subject to the most uncertainty, a subject that is discussed in a later section. Perhaps more importantly, however, intangible costs are less meaningful when applied to any one particular crime victim. For example, although the lost quality of life for a murder victim is $1.9 million, that does not mean anyone would voluntarily exchange their life for $1.9 million. Instead, that number is arrived at by estimating the incremental amount that individuals are willing to pay for a reduced risk of death, where the commodity is "risk of death," not death itself. Thus, if 100,000 people would collectively pay $30 each to reduce their risk of dying from 1/100,000 to 0, one would say that the group values the "statistical life" that is likely to be saved by $3 million ($30 x 100,000 people).

Victimization and victim costs per crime

Intangible costs are the largest component for all but burglary, larceny, and motor vehicle theft. Intangible pain, suffering, and lost quality of life costs generally exceed all other tangible categories combined. Within the tangible loss category, productivity losses are generally the largest, although medical costs are also substantial. For example, the average rape victim incurs about $500 in medical costs and $2,200 in productivity losses. Drunk driving victims average $1,400 in medical costs, while productivity losses are $2,700. If only those with injury are included, medical costs increase to $6,400, while productivity losses increase to $15,400.

Table 4 summarizes the costs per crime in table 2 and provides two other methods of calculating total costs. The first column repeats the estimates in table 2. The second column excludes the crime of murder and instead allocates each murder to its underlying crime. This is the approach taken

in Cohen (1988), where crime seriousness includes the fatality risks imposed on victims as well as the direct harm. For example, a rape victim may be murdered in the course of the

rape. Table 2 (and the first column of table 3) counted that victim as a murder victim. The second column of table 4 adds a risk of death component to these losses. This component equals the probability that a victim was murdered in the course of victimization times the cost of a murder. To the extent that juries include the risk of death in their pain and suffering awards to victims of nonfatal crimes, this method may double count.

The third and fourth columns in table 4 report on the cost per victim instead of per crime or victimization. The earlier columns (and table 2) use crimes or victimizations as the unit of analysis. This distinction is important in domestic violence, sexual assault, and other crimes prone to repeat victimization.

Aside from murder, child sexual abuse is the most serious crime, followed by rape, child physical abuse, and arson. In terms of monetary and injury consequences, drunk driving and arson are more serious crimes than robbery or assault. Caution should be used in drawing inferences from these comparisons, however, since the researchers could not always use consistent crime definitions. In particular, this study's NCVS crime estimates include attempts that may result in little or no physical contact or injury. The cost per arson case, however, does not include attempted arsons. Drunk driving costs are somewhat unique. Since only the cost of actual crashes is included, there is no cost estimate associated with drunk drivers who pose only a risk of crash and injury. However, the study includes drunk driving crashes that result in property damages but no physical injury. Conceptually, one could argue that this is similar to including "attempts" since nobody is actually injured. Following that line of reasoning, threats or verbal assaults (which are not often included in the NCVS data and hence are not in the cost estimates of assault) are similar to drunk driving incidents that result in no crash.

Excluded costs. As mentioned above, this study deliberately excludes two of the largest costs associated with crime--the cost of operating the criminal justice system and the cost of

Table 4
Crime Severity Measure by Monitized Losses per Crime Victimization
or per Crime Victim (in 1993 dollars)

	Per Victimization		Per victim	
	w/o risk of death	w/risk of death	w/o risk of death	w/risk of death
Child Abuse:Sexual	$99,000	*	$125,000	*
Rape and Sexual Assault	$87,000	$87,000	$109,000	$110,000
Child Abuse: Physical	67,000	*	77,000	*
Child Abuse (all types)	60,000	63,000	70,000	74,000
Arson	38,000	54,000	38,000	54,000
Child Abuse:Emotional	27,000	*	30,000	*
Drunk Driving	18,000	26,000	18,000	26,000
Assault or Attempt	9,000	19,000	12,000	31,000
Assault (any)	9,000	15,000	14,000	23,000
Robbery or Attempt	8,000	13,000	10,000	16,000
Motor Vehicle Theft	4,000	4,000	4,000	4,000
Burglary	1,400	1,500	1,600	1,700
Larceny	370	370	400	400

Note: Assault, robbery, motor vehicle theft, burglary, and larceny include "attempted" crimes that are never successfully carried out. If the other crime categories excluded attempts, the arson and drunk driving categories might drop in the rankings. See text.
* Deaths due to child abuse are not categorized by type of child abuse (e.g., sexual, physical, or emotional). Thus, no estimates are provided that include the risk of death. However, a combined child abuse category is included in this table, which includes the risk of death estimate.

actions taken to reduce the risk of becoming a crime victim. Instead, the focus is on quantifying the costs incurred directly by or on behalf of the crime victim.

For lack of solid data, this study also omits some victimization costs. Major omissions include (1) expenses for processing public and private disability insurance payments and welfare payments to those permanently disabled by crime, (2) long-term effects on victim earnings resulting from psychological injury caused by domestic violence, and (3) "second generation costs" such as crimes committed by persons who were themselves victims (such as juveniles or adults who became criminals because they were neglected or abused as children). See "Comprehensive List of Costs and Consequences of Crime."

Aggregate annual victim costs in the United States

The data can be combined to estimate the total cost of crime to victims in the United States. Including the value of intangible quality of life losses, victim losses due to crimes against individuals and households amounted to $450 billion annually during the 1987-1990 time period. This equals about $1,800 per U.S. resident. Tangible costs alone exceed $400 per resident. These losses included $18 billion in medical and mental heath care spending; $87 billion in other tangible costs; and pain, suffering, and reduced quality of life valued at $345 billion. The largest tangible expense is property damage and loss. The second major tangible cost component is lost productivity.

All of the cost estimates reported here are expressed in discounted present value terms. In other words, although medical

Table 5
Annual Losses Due to Crime (M=millions, in 1993 dollars)

	Medical	Other Tangible	Quality of Life	Total
Fatal Crime (1990)	**$700 M**	**$32,700 M**	**$60,000**	**$93,000 M**
Rape/Robbery/Abuse/Neglect/Assault	510 M	24,200 M	46,000 M	71,000 M
Arson Deaths	20 M	600 M	1,700 M	2,000 M
Drunk Driving Deaths	140 M	71,000 M	12,300 M	20,000 M
Child Abuse	**3,600 M**	**3,700 M**	**48,000 M**	**56,000 M**
Rape	560 M	300 M	8,000 M	9,000 M
Sexual Abuse	900 M	500 M	12,800 M	14,000 M
Physical Abuse	1,240 M	2,000 M	20,400 M	24,000 M
Emotional Abuse	910 M	1,000 M	7,100 M	9,000 M
Rape and Sexual Assault	**4,000 M**	**3,500 M**	**119,000 M**	**127,000 M**
Other Assault or Attempt	**5,000 M**	**10,000 M**	**77,000 M**	**93,000 M**
NCVS with Injury	3,640 M	7,500 M	44,900 M	56,000 M
Age 0-11 with Injury	220 M	400 M	3,900 M	5,000 M
Non-NCVS Domestic	740 M	1,500 M	19,100 M	21,000 M
No Injury	360 M	900 M	9,500 M	11,000 M
Roberry or Attempt	**600 M**	**2,500 M**	**8,000 M**	**11,000 M**
With Injury	530 M	2,000 M	6,600 M	9,000 M
No Injury	60 M	500 M	1,100 M	2,000 M
Drunk Driving	**3,400 M**	**10,000 M**	**27,000 M**	**41,000 M**
With Nonfatal Injury	3,300 M	8,000 M	24,600 M	36,000 M
No Injury	150 M	2,200 M	2,500 M	5,000 M
Arson	**160 M**	**2,500 M**	**2,400 M**	**5,000 M**
With Nonfatal Injury	150 M	600 M	2,400 M	3,000 M
No Injury	2 M	1,900 M	65 M	2,000 M
Larceny or Attempt	**150 M**	**9,000 M**	**0 M**	**9,000 M**
Burglary	**30 M**	**7,000 M**	**1,800 M**	**9,000 M**
Motor Vehicle Theft or Attempt	**9 M**	**6,300 M**	**500 M**	**7,000 M**

Total	**18,000 M**	**87,000 M**	**345,000 M**	**450,000 M**

Note: Totals were computed before rounding. "No Injury" cases involve no physical injurybut may involve psychological injury. NCVS fatal crimes = all crime deaths except drunk driving and arson. Personal fraud/attempt is excluded to prevent possible double counting with larceny.

and wage losses are labeled "annual" costs due to crime, more precisely, they are the "total discounted present value of short-term and long-term costs associated with 1 year of crime." Thus, they are the total losses imposed by crimes that occur in a given year--regardless of when the losses actually occurred.

Overall, rape has the highest annual victim costs at $127 billion per year (excluding child sex abuse), followed by assault at $93 billion, murder (excluding arson and drunk driving deaths) at $71 billion, drunk driving (including fatalities) at $61 billion, and child abuse at $56 billion.

Excluded crimes. As mentioned earlier, several crime categories were not included in this study. However, other estimates of two common crimes--fraud and drug abuse--are reported, as is a preliminary estimate of the cost of child neglect.

Personal fraud. A recent survey of personal fraud victimization estimated the annual tangible costs for fraud to be $45 billion (Titus et al., 1995).

Drug abuse. Although drug abuse might lead to other forms of crime (either through violence associated with the distribution process or property crimes in support of a drug habit), these costs are already included in this study's victim cost estimates. The cost of illegal drug abuse itself, however, was not estimated. According to data published by the Bureau of Justice Statistics (1992), the annual health care costs for illegal drug users were $5.2 billion in 1985, and drug treatment costs were an estimated $1.73 billion in 1989. Other costs not included were property losses caused by drug abuse and lost labor productivity due to drug abuse of those in (or who would otherwise have been in) the legitimate labor force. One other indicator of the cost of drug abuse is the value of sales, estimated at $40 billion to $50

billion annually.

Table 6
Incidence and Annual Losses Due to Adult Domestic Violence (in 1993 dollars)

Incidence	Victims	Victimizations	
		Series = 1	Series = 2
Fatal Crime, No Arson/DWI	4,001	4,001	4,001
Rape	259,000	259,000	327,000
Other Assault or Attempt	1,960,000	1,960,000	2,287,000
Roberry or Assault	40,000	40,000	48,000
Total	2,300,000	2,300,000	2,700,000

Annual Losses

	Medical	Other Tangible	Quality of Life	Total
Fatal Crime, No Arson/DWI	85 M	4,000 M	7,700 M	12,000 M
Rape	389 M	400 M	24,000 M	25,000 M
Other Assault or Attempt	1,322 M	2,700 M	26,000 M	30,000 M
Total	**1,800 M**	**7,000 M**	**58,000 M**	**67,000 M**

Notes:
(1) All of the incidents and costs reported here are included in tables 1 and 4.
(2) The series = r rape count is tenuous and may be low. It assumes the NCVS average rapes per victim applies to domestic rapes. This does not affect total costs for rape, however.
(3) Totals were computed before rounding.

Child neglect. As mentioned above, although some preliminary estimates of child neglect were made, they were excluded from total crime estimates due to definitional and consistency concerns. Following the same methodology as for child abuse, the researchers estimated the cost per child neglect case and the aggregate cost of child neglect. The estimated total cost of educational neglect is $3 billion, while the annual cost of other forms of child neglect is $12 billion. These are very tentative estimates.

Special breakdown of cost estimates: domestic crime and crimes against children.

Table 6 provides more details on the incidence and cost of domestic crimes against adults—all of which were also included in the previous tables. Domestic crime against adults accounts for almost 15 percent of total crime costs—$67 billion per year. Table 7 provides more details about child abuse (ages 0 through 17). Children under age 18 suffer at least 4.9 million personal crimes annually. Losses due to these crimes exceed $164 billion, of which about 40 percent results from domestic crime.

Who pays the crime bill?

As table 8 shows, insurers pay $45 billion annually due to crime. That's $265 per American adult. Government pays $8 billion annually for restorative and emergency services to victims, plus perhaps one-fourth of the $11 billion in health insurance payments.

Crime victims and their families pay the bill for some crimes, while the public largely pays the bill for others. Taxpayers and insurance purchasers cover almost all the tangible victim costs of arson and drunk driving. They cover $9 billion of the $19 billion in tangible nonservice costs of larceny, burglary, and motor vehicle theft. They cover few of the tangible expenses of other crimes.

Victims pay about $44 billion of the $57 billion in tangible nonservice expenses for traditional crimes of violence— murder, rape, robbery, assault, and abuse and neglect. Employers pay almost $5 billion because of these crimes, primarily in their health insurance bills. (This estimate excludes sick leave and disability insurance costs other than workers' compensation.) Government bears the remaining costs through lost tax revenues and Medicare and Medicaid payments.

Uncertainty of the estimates and sensitivity analysis

This section explores the uncertainty in the study's estimates but cannot provide confidence intervals. Since this study relies on a wide range of disparate sources of data, the data are not in a format that would support a systematic study of the confidence interval around the estimates. Although the researchers attempted to be conservative, the estimates have a high degree of uncertainty. Some of the key problems are discussed below.

Number of victimizations

Confidence intervals for NCVS. The NCVS is based on a complex sampling design. Although this research team does not have adequate information to be able to compute standard errors for all its derived estimates, the NCVS series=1 victimization estimates can be examined over the 4-year period (for which this study took the average). These standard errors are relatively small, implying that the NCVS estimates are generally within 5-10 percent of the true population. Although standard errors are low, NCVS estimates are only as good as the survey design and respondents' ability to recall and be truthful. For example, these confidence intervals tell nothing about the true underlying population of rape victims if

women are reluctant to volunteer information about rape incidents. Moreover, these confidence intervals apply only to the aggregate victimization count estimates, not for the various breakouts used in this research. For example, although there is a high degree of confidence about the number of robbery victims reported in NCVS, there can be less confidence in the estimated proportion of robbery victims who were hospitalized for broken bones.

Series victimization. Few researchers have used the series victimization counts in the NCVS. This study's team carefully analyzed the raw sample data and checked the series victims for outliers and reasonableness. Although a few of the outliers were obvious miscodings (and thrown out of the sample for purposes of analysis), this study found that these observations generally were quite plausible. Ultimately, when presenting national cost estimates, the researchers decided to truncate the few remaining possible outliers at 10 victimizations in a 6-month period.

Table 7
Incidence and Annual Losses Due to Personal Crime Against Children Under Age 18, by Age Group (in 1993 dollars)

Incidence	AGES 0-11 Victimizations		AGES 12-17 Victimizations	
	Series = 1	Series = r	Series = 1	Series = r
Fatal, No Arson/ DWI/Abuse/Neglect	**265**	**1,991**	**265**	**1,991**
Child Abuse & Neglect	**397,000**	**487,000**	**482,000**	**562,000+**
Fatal	1,180	1,180	75	75
Sexual Abuse	97,000	187,000	80,000	168,000
Physical Abuse	194,000	194,000+	161,000	161,000+
Emotional Abuse	105,000	105,000+	233,000	233,000+
Rape, Omitting Sex Abuse	**250,000**	**315,000**	**204,000**	**257,000**
Other Assault or Attempt	**289,000**	**450,000**	**1,167,000**	**2,261,000**
With Injury	116,000	139,000	468,000	698,000
No Injury	173,000	311,000	699,000	1,562,000
Robbery or Attempt	**Unknown**	**Unknown**	**219,000**	**261,000**
Drunk Driving	**125,000**	**125,000**	**224,000**	**224,000**
Arson With Injury	**2,000**	**2,000**	**1,000**	**1,000**
Total	**1,060,000**	**1,380,000**	**2,300,000**	**3,570,000**
Annual Losses				
		Other		**Other**

	Medical	Tangible	Total	Medical	Tangible	*Total*
Fatal, No Arson/DWI	**6 M**	**250 M**	**900 M**	**40 M**	**2,400 M**	**7,600 M**
Child Abuse	**1,800 M**	**2,900 M**	**32,000 M**	**1,900 M**	**2,000 M**	**28,500 M**
Fatal	25 M	1,100 M	4,200 M	2 M	90 M	290 M
Sexual Abuse	780 M	400 M	12,000 M	690 M	360 M	11,000 M
Physical Abuse	670 M	1,100 M	13,000 M	560 M	890 M	11,000 M
Emotional Abuse	280 M	300 M	2,800 M	620 M	690 M	6,200 M
Rape, Omitting Sex Abuse	**1,600 M**	**890 M**	**35,000 M**	**1,300 M**	**760 M**	**23,000 M**
Other Assault or Attempt	**240 M**	**470 M**	**5,100 M**	**1,200 M**	**2,500 M**	**20,100 M**
Injury	220 M	420 M	4,500 M	1,079 M	2,290 M	17,000 M
No Injury	20 M	50 M	600 M	101 M	250 M	3,100 M
Drunk Driving	**200 M**	**860 M**	**3,400 M**	**350 M**	**1,520 M**	**5,700 M**
Roberry or Attempt	**Unknown**	**Unknown**	**Unknown**	**110 M**	**480 M**	**2,100 M**
Arson With Injury	**24 M**	**190 M**	**900 M**	**11 M**	**110 M**	**400 M**
Total	**3,800 M**	**5,500 M**	**77,300 M**	**4,900 M**	**9,800 M**	**87,000 M**

Note: Tables 1 and 4 also include all child victimization. Totals computed before rounding. The drunk driving and arson victimization counts and costs with injury include associated with fatalities.

Table 8
Insurance Payments Due to Attempted and Completed Crimes Against Individuals
(B = billions, in 1993 dollars)

Type of Crime	
Murder	$1.2 B
Child Sex Abuse	0.6 B
Other Child Abuse	0.8 B
Rape, Omitting Sex Abuse	1.7 B
Other Assault or Attempt	3.3 B
Roberry or Attempt	0.5 B
Drunk Driving	25.1 B
Arson	2.4 B
Larceny or Attempt	2.1 B
Burglary or Attempt	3.5 B
Motor Vehicle Theft or Attempt	3.6 B
Total	**45 B**

Type of Insurance	Payments	% of Annual Payments
Health	$11.0 B	1.8
Life	1.5 B	2.2
Worker's Compensation	1.0 B	2.2
Auto	23.5 B	28.9
Homeowner's/Fire/Theft	7.9 B	37.9
Total	**45 B**	**5.4**

Note: Drunk driving payments are restricted to crashes with a BAC above 0.1% and are net of alcohol-involved crashes not attributable to alcohol. U.S. insurance premiums, loss ratios, and loss adjustment expense ratios from Best's Review and Preview and U.S. Statistical Abstract, inflated to 1993 dollars. Auto includes commercial auto. Fire includes commercial fire. Payments include loss adjustment expenses. Annual life insurance payments were estimated as 85% of annual premiums. Excludes $12 billion in medical payments that insurers do not pay directly but ultimately may absorb due to cost shifting. Excludes long-term disability insurance.

However, since this approach is novel, a sensitivity analysis on the aggregate national crime victimization costs was conducted. Weighting the data with series victimizations without imposing the maximum of 10 victimizations in 6 months would raise the estimated tangible crime costs by 7.5 percent, quality of life costs

by 12 percent, and total costs by 11 percent. Weighting the data with the most recent victimization in a series counted as the only victimization would lower tangible costs by 4 percent, quality of life costs by 8 percent, and total costs by 7 percent. Thus, aggregate cost estimates are not overly sensitive to decisions about how to handle series victimizations.

The costs per rape are quite sensitive to choice of weighting for series victimizations since the quality of life losses for rape are computed per victim, then allocated across victimizations. The cost of a rape victimization is estimated to be $87,000, while the cost of being a rape victim is $110,000. The latter figure is probably a more useful estimate, since the quality of life losses (the largest component of rape costs) are estimated from jury awards to victims (not victimizations). Conversely, because of this study's methodology using jury awards for victims, the national quality of life losses due to rape are unaffected by the decision about how to weight series crimes.

Monetary valuation of intangible losses

Quality of life losses for fatal crimes. The largest cost element for all violent crimes is lost quality of life and related fear, pain, and suffering. It may also be the cost item with the highest degree of uncertainty. For fatalities, the study estimated lost quality of life using a $2.7 million value of saving an anonymous life derived from a synthesis of almost 50 published values (Miller, 1990), adjusted for the difference in expected lifespan of crime victims (by crime type) versus the average injury fatality. Miller (1990) finds the standard deviation of the quality of life values across studies is 30 percent of the mean value for a statistical life. Although one cannot use this information directly to estimate the standard errors of the composite samples, if one assumes that each of the 50 studies used to generate the $2.7 million estimate were actual samples from the population of values, it would imply a 95 percent confidence interval of + $1.3 million.

Viscusi (1993) reviews the same literature but does not adjust the values for obvious sources of variation (e.g., differences in the discount rates used in calculations). He favors a larger value of $3 million to $7 million. Using a $5 million value would raise the estimated quality of life lost due to fatalities and the estimated total

cost of fatal crime by $93 billion (to $184 billion).

Alternatively, one could argue that the typical crime victim is not the same as the typical individual used to generate the lost quality of life estimate for fatal injuries. Although estimates are generally based on nationally representative samples of workers or consumers, it is known that murder victims are disproportionately young, nonwhite, and in the lowest income classes (National Research Council, 1993). They may also be more likely to display high tolerance for risk taking (which might reduce their implied valuation of

future quality of life), as demonstrated by higher rates of alcoholism, drug abuse, drug trafficking, and other forms of criminal behavior. On the other hand, more than half of all murders are domestic or involve children; society also might decide for equity reasons that differences in value of life estimates across individuals should not be used for policy analysis. Regardless of which lost quality of life value is determined to be appropriate, a sensitivity analysis can be conducted to determine the effect of varying this parameter. For example, if one values lost quality of life at the lower bound of the 95 percent confidence interval (about $500,000 instead of $1.9 million), the estimated total cost of fatal crime would fall from $91 billion to $54 billion.

Quality of life losses for nonfatal crimes. The nonfatal quality of life estimates come from regression analysis of jury verdicts. For nonfatal injuries, the standard error range around the log-linear regression estimates is +39 percent for assault and +29 percent for rape. Translating back to linear estimates of the quality of life yields extremely large confidence intervals.

As an alternative method of checking this study's quality of life estimates, they were compared to a completely different methodology described in Miller, Pindus et al. (1995). This alternative method is based on physician ratings of the loss of functioning that typically results from different injuries and surveys that reveal how people rate different functional losses relative to death. These ratings are then applied to the same $2.7 million statistical value of life used above to arrive at a monetary

equivalent for the nonfatal injury. Using the values derived from physician judgments would lower the estimated quality of life losses by just 6 percent. This close match masks substantial disagreement over the losses by treatment status, with the jury verdict estimates lower than the physician judgment estimates for hospitalized cases and higher for other medically treated cases.

The concern that the fatal victim population might not have the same risk tolerance or income as the U.S. population as a whole is not as relevant for nonfatal injuries. This study used estimates of wage rates directly from NCVS, and there is less reason to believe that victims who sue for damages are different from the population of victims in general.

Until there is a larger data base on jury awards or more confidence in alternative methodologies, this is the best this study is able to do. Based on the size and uncertainty of the estimates, further research on the lost quality of life due to crime victimization appears to be a priority.

Lifestyle changes due to victimization. The psychological effects of victimization may result in lifestyle changes such as moving to a new neighborhood, switching jobs or occupations, buying more protective devices, changing daily routines, and simply enjoying life less. In some instances, victims may subsequently attempt suicide. Since this study already estimated pain, suffering, and lost quality of life, many of these lifestyle effects were incorporated into the estimates. Juries presumably take such effects into account when awarding damages for pain, suffering, and lost quality of life; and individuals also take them into account in making decisions on which risk-reducing actions to take.

Of course, it is impossible to know empirically whether or not juries take all of these costs into account. One sensitivity analysis was conducted to look at the maximum medical costs associated with suicide attempts precipitated by criminal victimization. The order-of-magnitude of these losses can be bounded for sexual assaults using excess suicide attempt rates from Golding and George (1993) and Kilpatrick et al. (1992) and for other child abuse using rates from the literature review in Daro (1988). With the costs per suicide and per hospitalization for suicide attempts from Miller, Pindus et al. (1995), suicide-related medical costs would be $107 per rape and

$165 per child abuse case. Although this equates to $300 million annually, it is a very small percentage of estimated costs. Because the associations between crime and suicide are uncertain and these costs might already be implicitly taken into account in this study's quality of life costs, they are excluded from the estimates in this document.

Comparison with prior estimates

Estimates of the cost of crime have a long history, dating back as early as the 1931 Wickersham Commission. A review of some of these studies is contained in Gray (1979). These earlier studies tended to report broad aggregates and focus on direct costs such as victims' out-of-pocket costs, the criminal justice system, the cost of private security, and the value of illegal wagers. Most of the earlier studies did not go beyond tangible costs. Beginning with Thaler (1978), there have been several attempts to include indirect costs. Thaler (1978) and subsequent studies estimated the difference in housing prices that can be attributed to differential crime rates, thus inferring homeowners' willingness to pay for reduced crime. Although in theory these approaches

can yield estimates of the cost of different types of crime, the data requirements for such a project appear to be too onerous, and the property value studies to date have only estimated the cost of a generic "index crime" (rape, robbery, assault, motor vehicle theft, burglary, and larceny). Phillips and Votey (1981) took a different approach by combining estimates of the value of a statistical life with crime seriousness rankings from the public surveys of Sellin and Wolfgang (1964). Their approach was the first that attempted to account for the intangible costs of individual crimes, but it still was not able to account for many of those intangible costs.

Cohen (1988) was the first study to explicitly attempt to place monetary values on pain, suffering, and lost quality of life to victims of different crimes. Although that study had numerous data limitations (including using short-term losses in the absence of long-term data and relying primarily on NCVS incidence estimates), it used a similar methodology to that used in this study by combining jury awards and the statistical value of life to estimate intangible losses. Cohen (1990) compared these estimates to the earlier

property value studies and found that the two different approaches yielded very similar estimates of the cost of an "index crime." Several followup studies have updated these estimates by adding more comprehensive information, including Cohen, Miller, and Rossman (1994); and Miller, Cohen, and Rossman (1993).

Table 9 compares both the individual crime cost estimates and the aggregate United States costs estimated here to several earlier studies. For individual crimes, this study has estimated significantly higher costs for rape than previous studies. For example, the average cost of a rape (including attempts) is estimated to be $87,000, whereas previous estimates ranged from $55,000 to $70,000. This difference is primarily due to the fact that jury awards in rape cases were analyzed to determine estimates of pain, suffering, and lost quality of life, whereas earlier studies employed even more indirect methods of estimation (such as jury awards in more generic cases of emotional distress). Further, earlier studies did not make clear distinctions between victims and victimizations. They often used victim counts even though they estimated costs on the basis of victimizations. This study's estimate of the cost per rape victim is $110,000.

This study's estimates are substantially higher than Government estimates published from the NCVS. For example, the medical, mental health care, public services, and productivity costs are more than 10 times the short-term loss components captured in the NCVS for rape and assault and 5 times the costs captured for robbery. This is primarily because this study's methodology included long-term medical and wage costs, mental health care, valuation of lost household and school hours, and the administrative (insurance and Government) costs of reimbursement for many of these losses. Nor did the researchers follow the extremely conservative approach of ignoring costs acknowledged to be real though not directly supplied by NCVS survey respondents. For example, some NCVS survey respondents reported that they did incur costs (medical, property loss, etc.) but were unsure of the dollar amount. Klaus (1994) treats these responses as a zero-cost, whereas this study assigned these cases the mean cost among similar cases with known costs.

The quality of life and mental health care costs are lower than in earlier studies. Both the quality of life costs and mental health care

costs in the earlier studies were based on jury awards for auto crashes and tort cases; but data on jury awards for pain and suffering in criminal victimization cases are now available. For mental health care costs, survey data on victim use from mental health care providers are now also available.

Aggregate cost estimates have also increased significantly for some crimes. The largest increase is for rape, since the cost per incident is higher and this study's estimate of the number of rapes has increased tenfold. For example, Cohen, Miller, and Rossman (1994) estimated the aggregate cost to be $10 billion (in 1993 dollars), based on 147,000 NCVS rape victims (excluding series victims) and $68,800 per victim. This figure was subsequently updated to include series victimizations (with series=1), reported in Miller, Cohen, and Rossman (1993). The latter estimate resulted in aggregate costs of $16 billion (in 1993 dollars), based on 229,000 rape victims and $68,800 per victim. This study estimates the aggregate cost of a rape to be $127 billion, based on 1,467,000 victimizations and a cost per victimization of $87,000.

Table 9
Comparison of This Study's Cost Estimates With Prior Estimates

	Philips&Votey (1981)	Cohen Cohen (1988)	NAS* (1994)	This Study	Klaus (1994)
(a) Total Cost Per Victimization					
Rape	$55,600	$68,500	$68,800	$87,000	----
Robbery	$10,800[b]	$16,900	$24,400	$13,000	----
Assault	$13,800[c]	$16,100	$21,000	$15,000	----
MV Theft	----	$4,200	----	$4,000	----
Burglary	----	$1,800	----	$1,500	----
Larceny	----	$240	----	$370	----
Rape	----	$6,200	$8,000	$5,100	$240
Robbery	----	$1,500	$2,400	$2,300	$580
Assault	----	$570	$1,100	$1,550	$130
MV Theft	----	$4,100	----	$3,500	$4,200
Burglary	----	$1,800	----	$1,100	$870
Larceny	----	$240	----	$370	$230

Aggregate Estimates of Victim Costs (billions, in 1993 dollars)	U.S. News (1976)	Cohen (1988)	Cohen Miller & Rossman (1994)	Miller, Cohen & Rossman (1994)	This Study
Fatal Crimes[d]	[e]	$50	$56	$56	$93
Rape	[e]	$12	$10	$16	$127
Robbery	[e]	$13	$19	$27	$11
Assault	[e]	$33	$57	$112	$93

Subtotal Personal Crimes	**$27**	**$108**	**$142**	**$211**	**$324**
MV Theft	[e]	$5	----	----	$7
Burglary	[e]	$6	----	----	$9
Larceny	[e]	$2	----	----	$9
Arson	[e]	----	----	$1	$5
Vandalism, Shoplifting, Fraud, Embezzlement	[e]	----	----	----	----
Subtotal Crimes Against Property	**$63**	**$13**	**----**	**$1**	**$30**
Child Physical/Sexual Abuse	----	----	----	----	$56
Drunk Driving	----	----	----	----	$41
Total	**$90**	**$121**	**$142**	**$212**	**$451**

Notes: All estimates have been updated to 1993 dollars based on the consumer price index.
(a) Costs per victimization estimates taken from Cohen, Miller, and Rossman (1994), and are very similar to estimates reported in Miller, Cohen, and Rossman (1993). Aggregate estimates from the latter source are slightly higher due to adjustments that were made to account for series victimization.(b) Assumes weapon used. If no weapon, $3,500.
(c) Assumes hospitalized, otherwise $3,150.
(d) This study includes fatal crimes of drunk driving, child abuse, and arson not included in previous studies.
(e) *U.S. News* (1976) did not provide crime specific estimates. These crimes are included in totals.

Future Research

No single research project can hope to fill all of the gaps in our knowledge of the incidence, consequences, and costs of crime. This research has taken a comprehensive look at both incidence and victim costs, summarized the best estimates currently available, and, in some instances, provided new estimates where major gaps existed. Along the way, this project identified a host of future research issues. These fall into three general categories: improving estimated incidence, improving cost estimates, and applying the costs in benefit-cost and demographic analyses.

Improving incidence estimates. For many Americans, crime is a secret. Consequently, crime statistics are prone to undercounting. That is especially true of rape and domestic violence. Recent surveys show that Americans are increasingly willing to talk about these problems. Partly from a lack of data, various researchers and organizations have undertaken surveys to estimate the incidence of crimes such as rape, domestic violence, and child abuse. Unfortunately, these surveys suffer from lack of consistent definitions and often are discredited for including incidents that are not criminal or not deemed criminal in the minds of the victims. It is particularly difficult to compare various estimates because of methodological differences. For example, one survey might ask for all victimizations that occurred during the past year, while another

asks for the "most serious" that occurred during the past 6 months. Even if they had consistent victimization definitions, these two surveys would differ due to response error (e.g., "telescoping" the timeframe so that an event that happened 7 months ago is included in a study measuring the crime over a 6-month period). They would also differ because of victims' subjective answers to the "most serious" question. A new version of the NCVS incorporates a more probing approach to these issues and begins to address this undercounting problem in a systematic way that can be analyzed over time.

We still know very little about the true extent and consequences of violence, abuse, and neglect of children. This study's preliminary estimates of nondomestic assaults against children under age 12, for example, indicate that more than 500,000 children under age 12 may be assaulted or raped annually. Although these estimates are based on reasonable and conservative assumptions, they are not based on direct survey or other direct measurement techniques. We know even less about the severity of injury for these child victims and about social service utilization. Thus, further research in this area should be a priority.

Improving cost estimates. A particular research priority seems to be the long-term impact on earnings potential for victims of domestic violence and child maltreatment. The frequency of physical injury due to different types of child maltreatment, as well as recent data on social/victim service intensity and cost, also is lacking.

The cost estimates for domestic assault and especially for child abuse and neglect are probably incomplete. They do not fully capture the effects of these crimes. Repeated victimization can shatter lives, reducing the earning capacity of victims who lack the self-confidence to pursue educational opportunities they might have in the absence of the abuse. Child abuse may also lead to intergenerational violent abuse. For example, Widom (1992) finds abused and neglected children are 1.38 times as likely as other children to commit violent acts. Using this number, the study's estimated rate of child maltreatment would imply that 13 percent of all violence can be linked to earlier child maltreatment. In theory, the costs of these induced crimes, including the incarceration costs, could properly be added to costs of the original crime. Doing so

would substantially raise the costs per maltreated child. In practice, however, adequate data on the causal connection between child abuse and subsequent violence is not yet available.

A serious gap in this research effort stemmed from the lack of nationally representative contextual and demographic data about murder victims. For example, lack of data about income levels of murder victims forced this study to use national average earnings by age and sex to estimate earnings lost to murder. The first fledgling attempt to fill the murder data gap was the 1986 National Mortality Follow-Back study. That study covered all deaths. A more focused study is needed that captures NCVS-like data for murder victims.

This study's work on mental health care costs is preliminary in nature and merits followup with a larger sample and more extensive pretesting. A victim service agency survey should be coordinated with this survey. Challenges in that related

survey will be to avoid double counting with the provider survey, to count volunteer time, and to track compensation for victimization (which affects who pays rather than the total cost) separately from resource costs.

Most wage losses due to crime result from the occasional injury that causes permanent disability. The NCVS questions the same respondent in six time periods. Since permanent disability is rare, the NCVS might collect these rare but important costs for crimes described in prior surveys. NCVS estimates also probably would improve if respondents reported medical and mental health care costs, rather than just medical costs (which some respondents may interpret as including psychiatric care).

This study dealt only peripherally with costs to third-party victims (e.g., fear of crime among the general population or crime victims' families, post-traumatic stress disorders of emergency service personnel). These costs merit focused study. This study also barely touched on crime-induced suicide, crime-induced criminality, or AIDS transmission through rape. These events could potentially be large contributors to victimization costs. Conversely, explicit suicide costs easily could double count since both pain and suffering and

mental health treatment already are incorporated in this study's framework.

Lost quality of life is the largest cost component. It also is the least easily measured. Research should continue on measurement methods. A National Highway Traffic Safety Administration project (MacKenzie et al., 1994) has produced new physician estimates of impairment following injury that will improve the willingness-to-pay approach. A regression analysis of published values of statistical life estimates could better separate out modeling effects, potentially yielding more credible fatal risk reduction values.

In a rapidly growing number of States, cause-coded hospital discharge data represent a rich source for data on the most serious injuries resulting from crime. In the States analyzed for this study, the health care system appeared to capture data on many more victimizations than the NCVS. These data lack details about crime context, but that information might be added by linking them with police crime reports. A demonstration is needed to assess the value of linked data and the difficulty/cost of linkage.

Applying the cost estimates. Criminologists and public policy researchers are beginning to use crime cost estimates in many new ways to help shed light on the desirability of various policy options. A next step would be to compute cost estimates for defined populations--the elderly, youthful offenders, women, low-income people, minorities, and police-reported victimizations. Although these breakouts might prove useful, care must be taken in deriving them from existing data sets. For example, although it might be reasonable to estimate the percentage of victims who are Hispanic and their age distribution, at some point the sample cells become too low to make meaningful estimates. It might not be reasonable to estimate the number of Hispanic females from the ages of 18 to 24 who suffer from broken bones due to physical nondomestic assaults, for example.

Costs per police-reported crime are higher than costs of the average crime. These costs can be derived with this study's costing system and data. For analyses of police resource allocation, they would be more appropriate than this study's cost estimates. Conversely, the costs here are most appropriate to use in assessing the wisdom of early offender release and diversion programs.

The recent health care reform debate emphasized proven interventions, ones that had benefits exceeding their costs. Data on proven violence prevention approaches were notably lacking in the debate. These costs provide a basis for such analyses.

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