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Lifetime Economic Burden of Rape Among U.S. Adults

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Abstract

Introduction—This study estimated the per-victim U.S. lifetime cost of rape.

Methods—Data from previous studies was combined with current administrative data and 2011 U.S. National Intimate Partner and Sexual Violence Survey data in a mathematical model. Rape was defined as any lifetime completed or attempted forced penetration or alcohol- or drug-facilitated penetration, measured among adults not currently institutionalized. Costs included attributable impaired health, lost productivity, and criminal justice costs from the societal perspective. Average age at first rape was assumed to be 18 years. Future costs were discounted by 3%. The main outcome measures were the average per-victim (female and male) and total population discounted lifetime cost of rape. Secondary outcome measures were marginal outcome probabilities among victims (e.g., suicide attempt) and perpetrators (e.g., incarceration) and associated costs. Analysis was conducted in 2016.

Results—The estimated lifetime cost of rape was $122,461 per victim, or a population economic burden of nearly $3.1 trillion (2014 U.S. dollars) over victims' lifetimes, based on data indicating >25 million U.S. adults have been raped. This estimate included $1.2 trillion (39% of total) in medical costs; $1.6 trillion (52%) in lost work productivity among victims and perpetrators; $234 billion (8%) in criminal justice activities; and $36 billion (1%) in other costs, including victim property loss or damage. Government sources pay an estimated $1 trillion (32%) of the lifetime economic burden.

Conclusions—Preventing sexual violence could avoid substantial costs for victims, perpetrators, healthcare payers, employers, and government payers. These findings can inform evaluations of interventions to reduce sexual violence.

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Cora Peterson led the study design and interpretation of results, conducted data analysis, drafted and edited the manuscript, and approved the final manuscript as submitted. Sarah DeGue conceptualized the study design, led a literature review to inform the analyses, assisted with interpretation of results, edited the manuscript, and approved the final manuscript as submitted. Curtis Florence assisted with the study design and interpretation of results, edited the manuscript, and approved the final manuscript as submitted. Colby Lokey assisted with the study design and interpretation of results, assisted with a literature review to inform the analyses, edited the manuscript, and approved the final manuscript as submitted.

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SUPPLEMENTAL MATERIAL

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INTRODUCTION

An estimated 19.3% of U.S. women and 1.7% of men have been raped during their lifetime.[1] Sexual violence victimization is associated with poor short- and long-term physical and mental health outcomes.[2,3]

Few studies have quantified the per-victim lifetime economic cost of sexual violence, which at a minimum includes victims' impaired health, as well as lost productivity and criminal justice activities. A per-victim cost here refers to the value of a person entirely avoiding a particular exposure. Previous studies have estimated related cost dimensions—such as cost per sexual assault incident[4–8]—but largely have not accounted for victims' long-term health. The aim of this study was to use data from previous studies with current administrative and sexual violence surveillance data to estimate the per-victim U.S. lifetime cost and total population economic burden of rape among adults not currently institutionalized.

METHODS

Study information reported according to Consolidated Health Economic Evaluation Reporting Standards.[9] Model inputs included the number of U.S. adult (aged ≥18 years) women and men with any lifetime (including childhood) and past 12–month incidence of rape; selected attributable—or marginal—health and other outcomes associated with rape from administrative data and previous studies (hereafter, reference studies); and the marginal cost of those outcomes. Marginal outcome refers to the proportion of victims with an outcome beyond the proportion among non-victims, and is used to calculate the attributable cost of rape. Medical, lost work productivity, and criminal justice costs were included. The main outcome measures were:

1. lifetime cost of rape per victim; and
2. lifetime cost of rape in the U.S. population (or economic burden) of currently non-institutionalized adults (hereafter, U.S. population), calculated as the lifetime cost per victim multiplied by the population number of victims.

This analysis used a lifetime time horizon from the societal perspective. Previous studies of lifetime per-person health costs have identified a meaningful age of inception—for example, age 6 years for nonfatal child maltreatment[10] (estimated cost: $210,012 as 2010 U.S. dollars [USD], or $225,408 as 2014 USD[11]) and age 24 years for smoking[12] (estimated cost: $220,000 for men and $106,000 for women as 2000 USD, or $292,010 and $139,119 as 2014 USD[11]). The authors did not find a robust estimated average age of first rape among victims, although it is known that the age of first completed rape was <18 years for 42% of female victims (and <25 years for 80% of female victims) and <10 years for 25% of male victims.[13] The present model assessed lifetime unit costs assuming an average age of first rape victimization of 18 years. Costs incurred after the first year were discounted by 3%[14] and presented as 2014 USD, inflated using selected indices.[11,15] The analysis was conducted in 2016 and used publicly available data.

Definition and Prevalence of Rape

The economic burden estimate is based on the estimated number of currently non-institutionalized men and women who reported having been raped at some point during their lives in the 2011 U.S. National Intimate Partner and Sexual Violence Survey (NISVS)[1] (data collection, January–December 2011) where rape was defined as completed or attempted penetration of the victim through the use or threats of physical force or when the victim was drunk, high, drugged, or passed out and unable to consent (Table 1).

Outcomes and Unit Costs

Rape outcomes, identified through a targeted literature search, were included based on reference studies' representativeness (Appendix Table 1, available online). National studies and meta-analyses addressing both male and female victims were prioritized. Outcomes had to be reported in a way that facilitated calculation of victims' marginal probability of the outcome; for example, the outcome prevalence among non-victims and an AOR of the relationship between the outcome and respondents' experience of rape.[44] Studies that assessed outcomes among adult (i.e., aged ≥18 years) respondents and aligned with the NISVS rape definition were prioritized. Unit costs represented the attributable cost of analyzed outcomes, based on direct comparison of affected and unaffected individuals (Appendix Table 2, available online). Comprehensive lifetime unit costs that included both medical care and lost work productivity were prioritized. Where only annual unit costs were available, lifetime costs were estimated by multiplying the annual cost over the age range of respondents in the cost reference study (Appendix Table 3, available online), bounded by the average assumed age at first rape victimization (i.e., 18 years) and current life expectancy (i.e., 79 years).[45] The cost of prevention efforts was excluded.

Average annual data from the 2010–2014 U.S. National Crime Victimization Survey indicated 10.9% (n = 18,012/165,034 survey weighted) of attempted or completed rape victimizations (including male and female victims) involved victim property loss or damage, valued at an average $219 per affected victim (Table 1) (U.S. Department of Justice, Bureau of Justice Statistics, personal communication, 2015).

Among attempted or completed rape victimizations (N=216,570 surveyed weighted) from annual average 1995–2014 National Crime Victimization Survey data, 5.3% of victims were treated for nonfatal injuries in a doctor's office, 12.1% in an emergency department, and 1.0% as inpatients (Table 1) (U.S. Department of Justice, Bureau of Justice Statistics, personal communication, 2015). Unit costs were estimated payment for a doctor's visit[16] and the discounted lifetime medical cost associated with an emergency department visit or hospital admission for sexual assault (Pacific Institute for Research and Evaluation, personal communication, 2016) (Table 1). In 2011, there were an estimated 18 murders associated with rape crimes (Appendix Table 1, available online).[17] Unit costs were based on an estimated lifetime cost of medical care and lost productivity due to homicide.[18]

Data from a national sample of women (N=3,031 respondents) indicated that 4.8% of completed penetration rape victims experienced rape-related pregnancy (Table 1).[19] Among a small sample of rape-related pregnancies (N=34), 11.3% resulted in spontaneous abortion, 50.0% in medically assisted abortion, 32.3% of women kept the baby, and 5.9% of women gave the baby up for adoption.[19] Unit costs were estimated payments for medical treatment for spontaneous abortion,[23] medically assisted abortion,[22] pregnancy and delivery,[20] and the public payer cost of adoption from age 0 to 18 years (i.e., social services)[21] applied to the estimated proportion of women with rape-related pregnancy by outcome among those with lifetime experience of completed penetration rape among all women victims of attempted and completed rape in 2011 NISVS (*n*=13,826,000/23,305,000, or 59%) (Table 1).[1]

Female victims of intimate partner rape aged ≥18 years (N=322,230 victimizations, survey weighted) documented in the National Violence Against Women Survey was calculated as an average 3.6 productive days missed per victim (Appendix Table 2 [available online] provides calculations).[46] This number of days was multiplied by an estimated U.S. population (aged ≥15 years) daily production value[24] to estimate the value of short-term lost productivity due to rape ($516 in 2014 USD) (Table 1).

Funding for victims' services through the criminal justice system at the federal, state, and local levels—including U.S. Department of Justice grants and Violence Against Women Act (Title IV, P.L. 103-322)[47] funding—are comprehensively included in the criminal justice estimates through a top-down accounting approach (Appendix reports calculation details, available online). This approach was deemed the best use of available data, but means the authors could not identify the cost of individual victim services (e.g., rape kit processing). Although previous studies have estimated the cost of annual victim services for two state governments,[5,8] it was determined infeasible to comprehensively and accurately assess the proportion of victims accessing services and the cost of response (as opposed to prevention) services per victim using a bottom-up accounting approach.

A meta-analysis of studies published in 1980–2008 indicated significantly higher observed prevalence of mental health outcomes—anxiety, depression, eating disorder, post-traumatic stress disorder, and suicide attempt—among adolescent and adult respondents with lifetime (primarily childhood) experience of sexual abuse (Table 1).[2] The proportion of nonfatal suicide attempts requiring medical care was estimated using data for men (59.0% of attempts) and women (31.1% of attempts) in a separate national sample study of adolescent rape victims.[29] Unit costs were estimated lost work productivity and medical costs for anxiety disorder,[25] major depressive disorder,26 eating disorders,[27] post-traumatic stress disorder,[25,28] and medically serious nonfatal suicide attempts[18,30] (Table 1).

The 2005 Behavioral Risk Factor Surveillance System survey indicated significantly higher observed prevalence of excess alcohol and tobacco use among adults (aged ≥18 years, N=115,030 respondents) with lifetime experience of unwanted attempted or completed sex (Table 1).[3] Unit costs were attributable estimated lost work productivity and medical costs for excess alcohol use[31,32] and smoking[12] (Table 1). The 1990–1992 National Comorbidity Survey documented significantly higher prevalence of drug problems among adults (aged ≥15 years, N=5,877 respondents) who were raped or molested during childhood or adolescence (Table 1),[33] supporting other research among a national sample of women.[48,49] Unit costs were estimated lost productivity and medical costs[34,35] (Table 1).

The 2005 Behavioral Risk Factor Surveillance System data indicated significantly higher observed prevalence of asthma and joint conditions among sexual violence victims (Table 1).[3] Unit costs were estimated lost work productivity and medical payments for asthma[36] and joint pain[39] (Table 1). Kentucky Women's Health Registry data indicated significantly higher observed prevalence of cervical cancer among women (aged ≥15 years, N=4,732 respondents) with lifetime forced sexual experiences (Table 1).[37] Unit costs were estimated medical payments[38] and lost productivity[38] attributable to cancer, assigned among the estimated number of women with lifetime completed penetration rape in 2011 U.S. NISVS (*n*=13,826,000) (Table 1). A U.S. health plan study indicated a higher observed prevalence of sexually transmitted infections among adults (aged ≥19 years, N=9,323 respondents) who experienced attempted or completed rape during childhood or adolescence (age ≤ 18 years)[40] (Table 1). Unit cost were estimated medical costs[41,42] and lost work productivity[43] (Table 1).

An attribution method was used to estimate the per-victim discounted lifetime average criminal justice cost associated with sexual violence among total annual U.S. government criminal justice spending (Table 2 and Appendix [available online]).[50] Lost productivity due to incarceration is the annual production value of the U.S. non-institutional population multiplied by the average estimated number of years sexual violence perpetrators are incarcerated (Tables 1 and 2, Appendix [available online]).

Analysis

The marginal probability of selected outcomes was multiplied by associated unit costs to estimate the per-person lifetime cost of rape, separately for men and women. The sex-specific, per-person estimated cost of rape was multiplied by the estimated number of men and women with lifetime experience of rape to estimate the total U.S. lifetime burden of rape. Government costs were assessed as the sum of criminal justice and adoption costs, plus the estimated government share of all medical spending (i.e., 59.8%).[63]

RESULTS

The present-value, per-victim estimated lifetime cost of rape was $122,461, or $3.1 trillion for all victims, based given new information about victim outcomes or unit on 23 million U.S. women and 2 million men with costs. Barring substantial changes to the per-victim cost lifetime experience of rape (Table 1).

DISCUSSION

The per-victim lifetime cost of rape ($122,461) can be interpreted as the cost averted for each potential victim who avoids rape. The per-victim estimate could change given new information about victim outcomes or unit costs. Barring substantial changes to the per-victim cost estimate, the lifetime economic burden of rape estimate ($3.1 trillion) will remain relatively stable; this estimate reflects the per-victim cost multiplied by the number of U.S. adults with lifetime experience of rape, and such a large population experiences modest incremental demographic changes. The estimated number of victims with rape experience in the past 12 months had a minor impact on the economic burden through the criminal justice and fatalities estimates. The economic burden represents costs over victims' lifetimes. Though the authors do not know what proportion of victims in the previous 12 months (an estimated 1,929,000 women1 and 219,000 men [unpublished data]) were first-time victimizations, applying this study's per-victim cost estimate to that annual number of victims yields an approximate annual economic burden of $263 billion.

The per-victim estimate is the minimal identifiable cost of rape. This study did not include non-monetary elements, sometimes presented as intangible costs—a monetized version of victims' pain and suffering.[4,8] Previous studies have estimated the per-offense cost of rape and sexual assault to be $87,000 (1993 USD) to $240,776 (2008 USD) (or approximately $130,775 to $263,772 as 2014 USD[11]), of which 80% to 95% were intangible costs.[4–6,8] Recognizing victims' pain and suffering is unquestionably important, but must be weighed against the conceptual and computational challenges of monetizing pain and suffering.[64] Costs to victims' and perpetrators' friends and families, and costs of other forms of sexual violence (e.g., being made to penetrate or sexual coercion) were not included. NISVS estimates do not include the currently institutionalized population, though would capture experiences among the previously institutionalized. Health outcomes that could be linked to specific attributable costs were included, though activity limitations, gastrointestinal symptoms, high cholesterol, HIV risk factors, non-specific pain, overweight, and urinary problems have higher prevalence among sexual violence victims.[3,65,66] Many lost productivity unit estimates included only employed respondents, and valued respondents' productivity using the human capital approach (i.e., lost wages). This approach, though commonly used, undervalues lost productivity overall and undervalues female losses, in particular, because women are often paid less than men. Many lost productivity estimates did not include mortality. Long-term lost productivity among rape victims not diagnosed with any of the analyzed outcomes was not included.

Discounting assumed victims' age at first rape was 18 years, which underestimates/overestimates costs among victims with first rape at age <18 years/> 18 years. If one instead applies the average age of rape victimizations among adolescents and adults—27 years[67]—the estimated cost per victim decreases modestly to $119,277, with a population economic burden still exceeding $3 trillion. Too few reference study estimates included measures of dispersion for a meaningful probabilistic sensitivity analysis (Appendix Tables 1 and 2, available online). Based on available data, the authors have not included the medical cost of follow-up visits for sexually transmitted infection testing that takes place after an initial medical visit for rape treatment. Identifiable double counting of costs includes the following: HIV costs appear in both sexually transmitted infection and illicit drug use unit costs, and some costs for anxiety and drug and alcohol dependence are included in the depression unit cost (Appendix Tables 1 and 2, available online). Substance use constitutes approximately a quarter of the per-victim cost; crime costs are a major component of contributing unit costs for substance abuse, and a small portion (<1%) of those unit costs included research and prevention activities related to alcohol and drugs.[12,31,32,34,35] Some reference studies focused on outcomes exclusively among adults who experienced childhood rape (Appendix Table 1, available online). The cost of some lifetime experiences was inferred from available annual cost data (Appendix Table 3, available online), which implicitly assumes an accurate distribution of patients at all stages of a particular outcome (i.e., acute, recurring, remission) in reference studies' annual estimates.

Limitations

This study is notably limited by inexact timelines related to rape occurrence during victims' lifetimes, number of rape incidents per victim, number of victims per perpetrator, onset of attributable health outcomes, and treatment of those outcomes. This study's estimates are per victim, rather than per victimization, which certainly underestimates consequences among some victims and the acute costs associated with victimization.[68] Another major limitation is that this study assumed that rape is the cause of victims' higher observed prevalence of health-related conditions, although the status of these conditions as risk factors for, correlates with, or outcomes of sexual violence is complex.[69] Future analysis of longitudinal data identifying sexual violence and health outcomes might address these issues, along with issues related to timing of rape exposure and the effects of multiple victimizations.

CONCLUSIONS

Despite limitations, this study's economic burden estimate included more comprehensive information on victims' lifetime mental and physical health than previous estimates. This study incorporated new national surveillance data from NISVS indicating rape affects many times more individuals than other sources have suggested previously. These findings can inform evaluations of interventions to prevent sexual violence, identifying cost-effective approaches to eliminate rape and its substantial impact on public health.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Table 1

Estimated Marginal Outcomes, Lifetime Unit Costs, Lifetime Cost Per Victim, and Economic Burden of Rape (2014 USD)

Measure	Marginal outcome among victims[a]		Marginal lifetime cost per outcome,[b] $	Lifetime cost[c]			
				Per victim, $			
	Women	Men		Women	Men	Population, $	% of total
Total							
Victims[d] (n) and total cost	23,305,000[1]	1,971,000[1]	122,461	122,278	124,631	3,095,330,073,080	100.00
Medical cost			48,029	48,180	46,235	1,213,974,631,140	39.2
Lost productivity cost			63,744	63,475	66,924	1,611,187,780,921	52.1
Criminal justice cost			9,250	9,194	9,918	233,815,164,644	7.6
Other[e]			1,438	1,428	1,554	36,352,496,375	1.2
Government cost as % of total			38,848	38,900	38,230	981,911,926,278	31.7
Acute outcomes							
Victim property loss/damage	10.9%[f]		219[f]	24	24	604,283,163	<0.1
Injuries treated by location				520	520	13,155,970,329	0.4
Doctor's office	5.3%[f]		168[16]	9	9	226,955,738	<0.1
ED treat-and- release	12.1%[f]		2,251[g]	272	272	6,866,148,670	0.2
Hospitalization	1.0%[f]		24,481[g]	240	240	6,062,865,922	0.2
Victim fatalities				14	14	359,334,461	<0.1
Medical	0.001%[17]		11,707[18]	0.10	0.10	2,517,150	<0.1
Lost productivity	0.001%[17]		1,659,520[18]	14	14	356,817,311	<0.1
Rape-related pregnancy[h]				445	0	10,367,598,401	0.3
Birth	0.9%[19]	NA	15,867[20]	147	0	3,431,432,651	0.1
Adoption	0.2%[19]	NA	168,758[21]	286	0	6,666,421,130	0.2
Medical abortion	1.4%[19]	NA	518[22]	7	0	173,312,428	0.0
Spontaneous abortion	0.3%[19]	NA	1,275[23]	4	0	96,432,192	0.0
Victim lost productivity	100.0%[i]	100.0%[i]	516[24]	516	516	13,030,592,521	0.4
Long-term outcomes							

Measure	Marginal outcome among victims[a]		Marginal lifetime cost per outcome, [b] $	Lifetime cost[c]			
				Per victim, $			
	Women	Men		Women	Men	Population, $	% of total
Victim mental health				77,665	78,861	1,965,406,362,728	63.5
Anxiety disorder	1.3%[2]		83,542	1,020	1,020	25,791,864,322	0.8
Medical			79,967[25]	904	904	22,860,475,943	0.7
Lost productivity			9,089[25]	116	116	2,931,388,379	0.1
Depression	19.7%[2]		328,788	64,647	64,647	1,634,024,259,549	52.8
Medical			153,906[26]	30,261	30,261	764,887,830,138	24.7
Lost productivity			174,882[26]	34,386	34,386	869,136,429,410	28.1
Eating disorder	9.4%[2]		32,766	3,077	3,077	77,778,861,049	2.5
Medical			32,766[27]	3,077	3,077	77,778,861,049	2.5
Lost productivity			0[27]	0	0	0	<0.1
Posttraumatic stress disorder	18.6%[2]		40,841	7,587	7,587	191,756,565,087	6.2
Medical			31,753[28]	5,898	5,898	149,083,858,363	4.8
Lost productivity			9,089[26]	1,688	1,688	42,672,706,724	1.4
Medically-serious nonfatal suicide attempt	7.7%[2,29]	14.6%[2,29]	17,362	1,333	2,529	36,054,812,721	1.2
Medical			7,872[18,30]	604	1,147	16,347,640,605	0.5
Lost productivity			9,490[18,30]	729	1,382	19,707,172,117	0.6
Victim substance use				31,485	36,224	805,146,485,847	26.0
Alcohol abuse	2.8%[3]	5.5%[3]	19,897	563	1,101	15,285,251,989	0.5
Medical			2,261[31,32]	64	125	1,736,713,691	0.1
Lost productivity			14,312[31,32]	405	792	10,994,807,039	0.4
Other			3,324	94	184	2,553,731,259	0.1
Illicit drug use	10.4%[33]	11.4%[33]	237,532	24,784	27,058	630,917,593,872	20.4
Medical			14,491[34,35]	1,512	1,651	38,491,321,100	1.2
Lost productivity			147,380[34,35]	15,378	16,788	391,463,096,543	12.6
Other			75,660[34,35]	7,894	8,619	200,963,176,229	6.5
Smoking	9.1%[3]	11.9%[3]	67,653	6,138	8,065	158,943,639,986	5.1

Measure	Marginal outcome among victims[a]		Marginal lifetime cost per outcome,[b] $	Lifetime cost[c]			
				Per victim, $			
	Women	Men		Women	Men	Population, $	% of total
Medical			4,545[12]	412	542	10,678,757,676	0.3
Lost productivity			51,816[12]	4,701	6,177	121,736,821,488	3.9
Other			11,291[12]	1,024	1,346	26,528,060,823	0.9
Victim physical health				5,435	2,298	131,181,518,249	4.2
Asthma	4.2%[3]	1.6%[3]	76,556	3,232	1,246	77,785,654,262	2.5
Medical			70,141[36]	2,961	1,142	71,267,682,087	2.3
Lost productivity			6,415[36]	271	104	6,517,972,175	0.2
Cervical cancer[j]	1.6%[37]	NA	66,589	1,086	0	25,308,935,016	0.8
Medical			47,380[38]	773	0	18,007,793,710	0.6
Lost productivity			19,210[38]	313	0	7,301,141,305	0.2
Joint conditions	7.3%[3]	6.7%[3]	14,570	1,065	972	26,733,335,689	0.9
Medical			13,614[39]	995	908	24,980,459,288	0.8
Lost productivity			955[39]	70	64	1,752,876,400	0.1
Sexually transmitted infections	4.6%[40]	7.1%[40]	1,116	51	80	1,353,593,282	<0.1
Medical			819[41,42]	38	58	993,572,740	<0.1
Lost productivity			297[43]	14	21	360,020,542	0.0
Convicted perpetrators				6,175	6,175	156,077,927,380	5.0
Criminal justice	1.4%[k]		93,105[k]	1,300	1,300	32,851,988,414	1.1
Lost productivity	1.4%[k]		349,233[24]	4,875	4,875	123,225,938,966	4.0

Note: Cited references were the basis for marginal probabilities and costs demonstrated in this table. Appendix and Appendix Tables 1–3 (available online) demonstrate how data as reported in reference studies were used to calculate data as presented in this table. Costs are 2014 USD.

[a]Combined marginal outcomes for men and women reflect estimates from studies that controlled for victim sex but did not report final results by sex (Appendix Table 1 has details, available online).

[b]Marginal costs without references are calculated from other data in the table, for example, category sums.

[c]Per victim cost is marginal probability multiplied by marginal cost. Population cost by outcome is the number of victims by sex multiplied by the per-victim cost. Total per-victim by sex and total population costs are the sum of all per-victim by sex and population costs by outcome.

[d]Details of reference studies reported in Appendix Table 1 (outcomes); Appendix Table 2 (costs); Appendix Table 3 (discounted cost calculations) (available online).

[e]Includes victim property damage/loss, adoption costs, “other” costs attributable to smoking and alcohol abuse (Appendix Table 3 has details, available online).

[f]Unpublished data from the U.S. Department of Justice.

[g]Unpublished data from Pacific Institute for Research and Evaluation.

[h]Marginal probability represents the estimated probability of each rape-related pregnancy outcome among all female victims with lifetime experience of attempted and completed rape, calculated using the proportion of female attempted and completed rape victims that experienced completed penetration rape from 2011 U.S. NISVS (survey-weighted 13,826,000/23,305,000 female victims, or 59%).[1] Marginal outcome presented in this way for consistency with other measures in this table. Supporting calculations demonstrated in Appendix Table 1 (available online).

[i]Assumed.

[j]Marginal probability represents the estimated probability of cervical cancer among all female victims with lifetime experience of attempted and completed rape, calculated as with (g).[1]

[k]See Table 2.

DOJ, U.S. Department of Justice; ED, emergency department; IFHP, International Federation of Health Plans; NA, not applicable; NISVS, U.S. National Intimate Partner and Sexual Violence Survey; SAMHSA, Substance Abuse and Mental Health Services Administration; WISQARS, Web-based Injury Statistics Query and Reporting System; USD, U.S. dollars.

Table 2

Details of Estimated Criminal Justice Costs (2012 USD)

Measure	Input	Unit cost[a]	Attributable to sexual violence		
			Proportion of total	Annual cost	Per convicted perpetrator lifetime cost
Annual rape victims, *n*					90,130[b]
Women	1,929,000[1]				
Men	219,000[c]				
Total U.S. Government justice system annual spending, $	265,160,340,000[50]			2,702,590,946[b]	
Police protection annual spending, $	126,434,125,000[50]				
Annual arrests, All offenses, *n*	11,205,833[51]	11,283[b]	0.2%[b]	237,019,565[b]	
Annual arrests, Rape offense, *n*	21,007[51]				
Judicial and legal annual spending, $	57,935,169,000[50]				
Annual arrests, All offenses, *n*	11,205,833[51]	5,170[b]	0.2%[b]	108,608,088[b]	
Annual arrests, Rape offense, *n*	21,007[51]				
Corrections annual spending, $	80,791,046,000[50]	11,641[b]		2,356,963,293 [d]	
Total corrections population, n[e]	6,940,500[5]				
Corrections spending per sexual violence perpetrator, $		78,603[f]			
Total estimated corrections duration per sexual violence perpetrator, years, M[g]	7.4[b]				
Proportion of rape perpetrators sentenced to[h]:					
Probation, %	8[53]				
Probation term served, all offenses, years, M	1.8[54]				
Jail, %	5[53]				
Jail term served, sexual assault offense, years, M	2.2[55]				
Prison, %	84[53]				
Prison term served, state and federal, years, M[i]	6.4[b]				
State prison term, rape offense, years, M	6.6[56]				
Annual state prisoners, rape offense, *n*	160,900[57]				

Measure	Input	Unit cost[a]	Attributable to sexual violence		
			Proportion of total	Annual cost	Per convicted perpetrator lifetime cost
Federal prison term, sex offense, years, M	4.5[58]				
Annual federal prisoners, sex offense, *n*	13,524[59]				
Term served on parole, all offenses, years, M[j]	1.8[60]				
Discount rate for annual spending after Year 1, %	3.0[k]				
Estimated proportion of victims that have a perpetrator convicted, %[l]	1.4[b]				
Annual offenses known to law enforcement, forcible rape, *n*	108,612[61]				
Annual offenses known, rape, as % of 2010 rape victims reported in NISVS[m]	5.4[b]				
Annual cleared offenses, rape, as % of known offenses	41[62]				
Annual offenses resulting in conviction, forcible rape, as % of annual cleared offenses	68[53]				

Note: Costs are 2012 USD.

[a] Unit cost refers to per offense or person in the corrections population.

[b] Calculated from data elsewhere in the table.

[c] Unpublished NISVS 2010–2012 data from the U.S. Centers for Disease Control and Prevention.

[d] Annual cost of corrections spending attributable to sexual violence refers to the lifetime discounted cost of convicted perpetrators that annually enter the corrections system, calculated as the discounted lifetime cost of corrections per perpetrator ($78,603) multiplied by the estimated number of sexual violence perpetrators that are convicted (1.4% of 1,929,000 + 219,000).

[e] Total corrections population refers to individuals in prison, jail, probation, parole.

[f] Corrections spending per sexual violence perpetrator calculated as average annual spending per person in the corrections population (i.e., $11,641) multiplied by the total estimated corrections duration per sexual violence perpetrator (i.e., 7.4 years), with annual costs after the first year discounted to present value by 3%.

[g] Total estimated corrections duration per sexual violence perpetrator calculated as the sum of parole, prison, and probation terms.

[h] Sentence type does not sum to 100% (excludes 3% of convicted perpetrators not sentenced to incarceration or probation; no further disposition data available).

[i] Combined state and federal prison term served calculated as the average term served in state and federal prison weighted by the number of prisoners at the state and federal level.

[j] Parole defined in source as a period of conditional supervised release in the community following a prison term.

[k] Assumed.

[l] Proportion of rape perpetrators that are convicted calculated as the estimated proportion of total rape offenses known to law enforcement annually (i.e., 5.4%) multiplied by the number of cleared forcible rape offenses annually (i.e., 41%), multiplied by the proportion of forcible rape offenses resulting in a conviction annually (i.e., 68%).

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[m] Estimated proportion of annual rape offenses known to law enforcement calculated as the number of annual forcible rape offenses known to law enforcement (i.e., 108,612) divided by the estimated annual number of rape victims (i.e., 1,929,000 + 219,000).

DOJ, U.S. Department of Justice; FBI, U.S. Federal Bureau of Investigation; NISVS, National Intimate Partner and Sexual Violence Survey; USD, U.S. dollars.