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Research Article

Noneconomic damages due to physical and sexual assault: estimates from civil jury awards

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Abstract

This paper presents a detailed study of jury awards for compensatory damages to victims of crime. Such awards typically result when victims sue third parties who are responsible for some form of negligence such as inadequate security or alcohol over-service. We obtained nationwide data on jury awards to crime victims and examined the relationship between physical losses, medical costs, offender and victim characteristics, and the ultimate compensatory jury award. Despite the large variability in jury awards, we were able to explain 45%-50% of the variation in the natural log of jury awards for physical assault. The awards systematically vary with the severity of physical injuries sustained by the victim. Considerably more variation is found in the case of sexual assault. We use our regressions to construct estimates of noneconomic damages – the pain, suffering and reduced quality of life endured by the average victim of violent crime in the U.S.

Introduction

Despite the ongoing interest in tort reform, with many states having adopted reforms such as caps on noneconomic or punitive damages, surprisingly few empirical studies analyze U.S. jury awards [1]. Too much of what we know about jury awards is through anecdotal evidence in the popular media. In particular, jury awards are often characterized as being out of control [2], partly due to some multi-million dollar awards that make headlines, even if they are subsequently reduced by the court. The lack of strong empirical research is especially telling if one focuses on the more judgmental aspect of compensatory damages – "noneconomic damages" that compensate pain, suffering and lost quality of life. Leaving aside studies of medical malpractice and of punitive damages, only a handful of studies used large samples of jury awards and modeled factors that explained the size of noneconomic damage awards [1-8].

Several previous studies have looked at civil jury awards related to intentional criminal behavior. Although Cohen [9] used jury awards to estimate "pain and suffering" to crime victims, it based its estimates on regression coefficients by type of injury in automobile crash cases. Rajkumar and French [10] and McCollister et al. [11] followed Cohen's methods and underlying automobile crash jury award data to estimate updated "intangible losses" for various crimes. Miller et al. [12] improved on this approach by analyzing 1,106 jury awards for physical assaults and 361 cases of sexual assault to estimate "pain and suffering" of victims based on actual criminal victimizations. Cohen and Miller [13] analyzed 514 of the 1,106 jury awards for physical assault (and separately 728 for product liability) with a focus on estimating how much juries were willing to award for a lifetime of quality of life. They focused on predicting noneconomic damage awards from functional capacity losses typically associated with physical injuries comparable to the plaintiff's, as well as characteristics of the plaintiff, defendant, and injury event. Smith et al. [14] applied a similar model to 323 drunken driving awards and settlements. Roman [15] estimated noneconomic losses for a range of crimes by combining data on 603 jury awards during 1985-1999 for violent and property crimes with 2003 National Incidence-Based Reporting System data on the distributions of physical injuries and property losses by type of crime. In addition, several authors outside the U.S. context have used jury awards to estimate the cost of crime in other countries – notably Australia [16] where jury awards in transport cases were used as a benchmark, and Canada [17] where average civil awards to crime victims of assault and sexual assault were used to benchmark awards for other crimes based on the length of prison sentences meted out for each crime type.

This paper reports on a detailed analysis of jury awards for compensatory damages to victims of crime. Victims may sue perpetrators and/or third parties who are responsible for some form of negligence that contributed to the criminal act. Although the underlying injury was an intentional crime, compensation is made through civil tort actions. Third party liability may be assessed, for example, to hotel or apartment buildings for inadequate security or lighting, or to employers whose workers commit a violent crime while working [18].

For the U.S., the most recent noneconomic damage estimates for crime are based on a 2003 crime profile. This study's purpose is to characterize noneconomic damages in typical jury awards for intentional injury, excluding wage and medical losses. In part, this paper moves the unpublished methods and data underlying the noneconomic loss estimates reported in ref. [12] into the peer-reviewed literature. We focus on the extent to which noneconomic damage

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awards can be predicted by past and future wage and medical losses and other characteristics of the victim and offender. We then combine these data with current national incidence data to construct estimates of the pain, suffering and reduced quality of life endured by the average victim of violent crime in the U.S.

Methods

Jury verdict data for intentional injuries

The primary source of data used in this study was Jury Verdict Research (JVR), now owned by Thomson Reuters. JVR attempts to obtain all awards - whether small or large. They relied on a variety of sources including attorneys who subscribe to their services, plus court officers and students who routinely provide information to the firm. Their data base contains hundreds of thousands of jury awards and settlements from around the country.

We purchased and manually coded a data set from one paragraph summaries of 1,467 jury awards and settlements between 1980-1991 involving physical or sexual assault (excluding cases of wrongful death). We classified about 75% (1,106) of the cases as physical assaults, and the remaining 361 cases as sexual assault. We coded data about the plaintiff, defendant, event, and injuries, as well as past medical expenses, past wage losses, and noneconomic damages. We converted all dollar amounts to 1990 dollars, using a medical price adjuster for medical expenses and a wage adjuster for all other losses. After we developed an equation for predicting noneconomic damages, following [12,19,20], we applied it to the 2010-2015 national profile of crime victimizations, then used a wage adjuster to restate the damages in 2015 dollars.

About 72% of the JVR cases contained information on the state and/or county in which the trial was held. These JVR cases represented 313 different counties - only about 10% of the counties in the U.S. However, FBI Uniform Crime Report data show these 313 counties accounted for 71.4% of the reported violent crime in the U.S.

Inspecting the coded data revealed the jury awards were not normally distributed, with mean awards of 3-10 times median awards. The data included a few very large awards and many smaller ones. A normal probability plot confirmed the non-normality of both total awards and compensatory awards. A lognormal distribution fit the data quite well, although a few outliers still existed after this transformation. Our analyses, therefore, used log-linear regression.

Representativeness of JVR data

JVR data are reported voluntarily, which limits the range of their application and raises concerns about their representativeness. They largely exclude verdicts for the defense and settlements, which means they cannot be used to look at settlement rates or tort liability disposition patterns. Because reporting became more complete and more representative over time, they also cannot be used to examine trends in jury awards. Although JVR data are often used by trial lawyers and insurance adjusters to estimate the "value" of particular cases, they are suspected of capturing large awards more frequently than small awards. For these reasons, some analysts of tort liability issues are dismissive of JVR analyses [21-23].

JVR data, however, are appropriate for our purposes. There is no reason to think that the relationship between past losses and noneconomic losses in JVR data would be atypical or that it would differ from the relationship in settlements. Notably, Vidmar [3] concludes JVR data are appropriate for analyzing the relationship between injury severity and jury award. Where JVR data are questionable is in the severity distribution of the assaults they capture. We dealt with that problem by substituting average medical and work loss data from a national study of crime incidence and costs [12] into the regression equation predicting noneconomic damages.

Several studies have examined if JVR data are biased empirically by comparing JVR summary data to sources that are 100% inclusive for a selected jurisdiction. A good deal of the criticism in that regard may not apply to the time period covered by most of our data [22,23]. For example, in a widely cited criticism of the JVR data, Localio [23] reported that JVR's mean malpractice award of $962,258 in 1982 was considerably higher than the $257,222 mean award reported by other sources in California. In response, JVR data changed considerably starting in the mid-1980s, reflecting a concerted attempt to be comprehensive. By 1991, the company collected approximately 18,000 jury verdicts annually from around the country, on the order of half of all tort liability verdicts. Tabarrok and Helland [24] reported on several statistical tests that they felt justified using JVR data as nationally representative. Similarly, Bovbjerg, Sloan and Blumstein's [25] comparison of JVR data to all personal injury jury awards in Florida and Kansas City from 1973-1987 indicated JVR cases were typical. The median award of $82,000 and mean award of $490,000 (in 1987 dollars) in the comprehensive data were similar to the JVR median of $75,000 and mean of $514,339 in 1989. A related study [26] calculated the mean award in 1985 for medical malpractice cases was $1.5 million (in 1990 dollars) compared to JVR's $1.43 million. Kritzer [21], however, found that the JVR mean tort award in 2001 probably far exceeded the all-verdict mean.

Regression analysis of jury awards

One problem with the JVR dataset is that past and future losses are only sporadically reported. Among the 1106 assault cases we analyzed, past and future medical and wage losses were reported in 60% (n=670) of the cases. Many cases do report zero medical and/or wage losses, so failure to report does not necessarily mean zero loss. Indeed, many cases without reported monetary losses involved serious injuries. In order to maintain the richness of the full dataset (which includes many different types of injuries), we estimated past and future losses for the 40% with missing data. To do this, we estimated a regression equation where the sum of past and future monetary loss was the dependent variable, and the independent variables were primarily the types of injuries. We included settlements in this part of the analysis. By multiplying each coefficient by its corresponding case-specific value, we estimated the "predicted" past and future losses for jury verdicts where this information was missing.

In the enhanced data, we hypothesized that jury awards for pain and suffering would be positively related to medical and wage losses. In addition, other factors are likely to influence the ultimate jury award. One possibility is that juries will take into account who is paying - the "deep pocket" effect. They may also be more sympathetic to victims who did not know their attackers, and less sympathetic to those who somehow precipitated the assault. We used multiple lognormal regression to control for some of these factors and to determine the relationship between medical and wage losses and pain and suffering.

Incorporating representative crime data

Even if JVR's crime data were representative of the cases brought to trial, there is no reason to believe they are representative of criminal victimizations in general. First, few victimizations lend themselves to civil suits. The ability to sue for damages depends on whether a liable

party has adequate assets to warrant suit. This may vary by state, as legal precedents concerning the liability of third parties may vary considerably [18,27]. Differences in legal definitions of compensable damages and tort reform efforts that limit damages also cause jury awards to vary by state [28-32].

We therefore estimated average non-economic losses for physical and sexual assaults by entering national average demographics and estimates of medical costs and wage losses resulting from victimization [12] into the regression equations. We made these estimates by diagnosis group and place of treatment as reported in the NCVS and whether the victimization represented intimate partner violence (IPV). The 10 diagnosis groups used in these calculations were gunshot wound, broken bones plus internal injury, internal injury without broken bones, broken bones without internal injury, knife wound, knocked unconscious, bruises and cuts only, rape only, other specified injury, and not specified. The four places of treatment used were hospital overnight, other medical provider, home, and no medical care received. The medical costs by category in these computations came from cause-coded discharge censuses pooled across multiple jurisdictions.

Since the typical crime victim is not the same as the typical crime victim who goes to court to recover damages, these calculations used the demographics for the average crime victim rather than the average from the jury award data. We made separate estimates for subcategories of assault including assault without physical injury and robbery. As appropriate, we varied the losses with victim demographics. For example, by setting the "age 12 and under" variable and the "perpetrator a relative" variables equal to one and variables for other ages and relationships to 0 and using wage losses specific to someone under age 12, we estimated non-economic loss for maltreatment of children under age 12. Similarly, we examined awards for gunshot victims by setting the gunshot variable equal to 1.

Roman [15] incorrectly reports some aspects of these computations. Notably he did not recognize that the distribution of injuries by nature and place of treatment and associated costs which are entered into the regression equation vary by age group, sex, whether the event was intimate partner violence, and for sexual assault versus robbery versus other assault. Each violent crime estimate in Table 1 requires applying the regression equation to 40 different nature-place combinations, then

Table 1. Estimated non-economic damages and victim demographics by criminal victimization category (in 2015 dollars).

Victimization	Non-Economic Damages	Female	Age 0-11	Age 12-17	Age 18 -64	Age 65 & Over
Homicide [Cohen & Miller, 13]*	$5,021,909	21.0%	4.9%	4.2%		90.9%
Rape	$204,576	82.6%	27.6%	18.9%		53.5%
Ages 0-11	$266,098	75.4%	100%			
Ages 12-17	$169,047	85.4%		100%		
Ages 18 & Over	$185,423	85.4%				100%
Domestic	$170,658	86.6%	0.0%	6.5%	93.5%	0.0%
Robbery	$10,628	54,2%	3.9%	10.8%	81.9%	3.4%
No Injury	$2,560	51.2%	3.9%	10.8%	81.9%	3.4%
With Injury	$25,286	58.0%	3.9%	10.8%	81.9%	3.4%
Domestic	$25,480	58.0%	0.6%	27.0%	72.4%	0.0%
Assault	$19,627		3.9%	13.8%	77.0%	5.3%
No Injury	$3,478	56.0%	3.9%	13.8%	77.0%	5.3%
With Injury	$35,349	57.6%	3.9%	13.8%	77.0%	5.3%
Ages 0-11	$25,502	34.6%	100%			
Ages 12-17	$21,253	57.6%		100%		
Ages 18 & Over	$39,074	57.6%			93.6%	6.4%
Non-Domestic	$41,453	57.6%	3.9%	13.8%	77.0%	5.3%
Domestic, Ages 18 & Over	$34,382	57.6%	0.0%	17.3%	82.5%	0.2%
Non-NCVS Domestic	$24,261	N/A	N/A	N/A	N/A	N/A
Medically Treated Non-serial**	$66,626	58.0%	3.9%	10.8%	81.9%	3.4%
Medically Treated**, from Miller *et al.'s* [34] Impairment Scores	$66,282					
Gunshot, Medically Treated*	$334,449	51.7%	3.9%	13.8%	77.0%	5.3%
Stabbing, Medically Treated*	$150,060	51.9%	3.9%	13.8%	77.0%	5.3%
Child Maltreatment	$38,846	50.9%	69.1%	30.9%		
Sexual Abuse	$229,722	78.6%	62.5%	37.5%		
Physical Abuse	$93,888	47.1%	64.1%	35.2%		
Emotional Abuse	$15,334	50.8%	61.9%	38.1%		
Educational Neglect	$788	48.4%	51.8%	48.2%		
Other Neglect	$15,971	49.8%	72.3%	27.7%		
Larceny	$550	53.0%	1.8%	12.8%	79.8%	5.6%
Burglary	$543	55.4%	0.2%	4.8%	76.6%	18.4%
Motor Vehicle Theft	$494	52.1%	0.0%	4.2%	90.6%	5.2%
Arson, No Injury	$1,078	50.0%	1.9%	5.3%	90.5%	2.3%
Impaired Driving, No Injury	$2,833	50.0%	7.0%	14.3%	72.7%	6.0%

* This estimate is the implied value of life that juries used in valuing nonfatal assaults calculated using the regression equation in [13], net of lifetime work loss and the average medical cost per homicide.

** Live discharge from hospital emergency or inpatient department.

N/A = not available.

Demographics from 2015 National Crime Victimization Survey (NCVS), 2010-2014 CDC WISQARS online query system (for medically treated assault counts), and Sedlak [50], with some detailed breakdowns proportioned from recent totals using 1987-1990 NCVS data [12].

weighting those combinations together based on the incidence profile for the crime type and age group.

This calculation process generated a series of award estimates corresponding to NCVS injury categories. We subtracted the medical and wage losses from those estimates to arrive at the non-economic loss by injury type. For example, the estimated non-economic loss for a rape victim over age 12 with broken bones or internal injuries is $154,202. A similar rape victim who requires no medical care and whose only injury is the rape itself, has an estimated non-economic loss of $75,330. We combined these individual estimates with NCVS population proportions (e.g., the percentage of IPV rape victims who require medical care for broken bones or internal injuries) to arrive at an average non-economic loss estimate over all victims. We drew the necessary data on frequency of injury, age of victim, etc., from the 2015 NCVS plus older NCVS data [12] for some detailed breakdowns by injury type, We used the WISQARS online data analysis tool provided by CDC (https://www.cdc.gov/injury/wisqars/) to get 2011-2014 data by age group on medically treated physical assault and on gunshot and knife wounds; the 2010 National Incidence Survey on Child Abuse and Neglect (the most recent available) for data on child maltreatment; and an injury distribution drawn from medical discharge data [12] for the children under 12 not covered by NCVS. We averaged four years of WISQARS data because the sample is thin.

Results

Table 2 contains summary statistics on the jury verdict cases. While about 10% of the assault cases were against minors, 35% of sexual assault victims were minors. Most of the physical assault victims were male (76%), while most sexual assault victims were female (83%). Nearly all offenders (95-99%) were male. In most instances, we were able to identify the relationship between the offender and victim. The largest percentage were either complete strangers (72% for physical and 59% for sexual assaults) or non-strangers who were not related in any way to the victim (23-33%). Few cases involved a spouse, parent or other relative.

Weapons were used in about 39% of assault cases, with 23% being gunshots, 8% knives, and 8% hit by other objects. In contrast, only 5 cases (less than 1%) of sexual assault involved any form of weapons. Multiple offenders were involved in about 11% of the physical assault cases and 7% of sexual assaults. The plaintiff had some form of involvement in 42% of physical assault cases - ranging from allegations by the defendant that the plaintiff was somehow involved to plaintiff precipitation, compared to about 10% for sexual assaults. About half the sexual assault cases (54%) involved completed rape, with the remaining 46% being attempted rape or other forms of sexual assault.

Table 3 presents summary statistics for past and future dollar losses alleged by the plaintiff, as well as the respective jury awards for physical assaults. Detailed information on the size of compensatory damage awards (as distinct from punitive damage or loss of consortium awards) was available in 956 of 976 cases. The mean jury award (in 1990 dollars) was $682,629, while the median award was $59,276. The largest component of the mean and median award was for compensatory damages. In theory, compensatory damages are designed to compensate the victim for out-of-pocket losses plus non-economic losses. They are not designed to punish the offender or compensate third parties. The mean compensatory jury award was $545,683, while the median compensatory award was $49,449.

Although more than 97% of tort lawsuits in the U.S. that are not dropped are settled out-of-court [28,29], only 11.8% of JVR cases involve settlements. Unlike jury awards, JVR does not attempt to systematically collect out-of-court settlements. Indeed, settlement data are not included in their published handbooks. Thus, they are much less likely to be representative, and more likely to be biased in favor of more significant or interesting cases. Settlements for the 130 assault cases were actually smaller than jury awards, with the average settlement being $184,061, while the median was $30,000 (in 1990 dollars).

Table 4 contains similar information for rape and sexual assault cases. Both the mean and median jury award for rape and sexual assault were considerably higher than for physical assault. The mean

Table 2. Descriptive statistics: physical and sexual assault cases.

	Physical Assault (n=1106)		Sexual Assault (n=361)	
Category: Item	Number	Fraction of Category	Number	Fraction of Category
Verdict Type: Trial	976	0.882	277	0.767
Settlement	130	0.118	84	0.233
Age of Victim: Under 13	27	0.033	64	0.211
Age 13-18	54	0.065	44	0.145
Age 19-35	450	0.543	139	0.457
Age 36-55	221	0.267	49	0.161
Age 56-65	45	0.054	3	0.01
Over Age 65	25	0.03	5	0.016
Sex of Victim: Male	831	0.763	61	0.172
Female	258	0.237	293	0.828
Employment Status of Victim:				
Unemployed	33	0.051	25	0.129
Student	93	0.143	84	0.433
Homemaker	12	0.018	5	0.026
Retired	25	0.038	4	0.021
Employed	487	0.749	76	0.392
Relationship of Offender/Victim:				
Complete Stranger	770	0.716	211	0.591
Spouse/Ex-Spouse	27	0.025	3	0.008
Parent/Step-Parent	8	0.007	19	0.053
Other Relative	6	0.006	2	0.006
Boy/Girlfriend	18	0.017	3	0.08
Other Known Nonrelative	248	0.231	119	0.333
Type of Attack: No Physical Contact	36	0.033	6	0.017
Body Contact Only	625	0.566	350	0.97
Shot at w/Gun	255	0.231	3	0.008
Stabbed/Cut with Knife	89	0.081	0	0
Hit by Other Object	88	0.08	2	0.006
Other	11	0.01	0	0
Completed Rape	-	--	195	0.54
Other Sexual Assault	--	--	166	0.46
Number of Offenders: One	865	0.89	303	0.927
Two	72	0.074	13	0.04
Three or More	35	0.036	11	0.033
Sex of Offender: Male	856	0.951	340	0.991
Female	44	0.049	3	0.009
Plaintiff/Offender Involvement				
Passive/No Involvement	664	0.582	325	0.9
Alleged Plaintiff Involvement	266	0.241	34	0.094
Parties Arguing	134	0.121	0	0
Plaintiff Precipitated	12	0.011	0	0
Other	50	0.045	2	0.006
Type of Defendant: Individual Offender Only	462	0.418	100	0.279
Individual Third Party Only	23	0.021	15	0.042
Business Only	275	0.249	139	0.387
Government Only	61	0.055	28	0.078
Other/Combination of Above	284	0.257	77	0.214

Table 3. Victim losses, jury awards and settlements: physical assaults, in 1990 dollars.

	# Cases	Mean*	Median*	Maximum
JURY AWARDS (N=976)				
Alleged Victim Losses				
Total Past Losses	593	$37,029	$7,498	$ 2,632,055
- Past medical	528	20,328	5,400	11,32,803
- Past wages	271	34,423	3,432	19,24,803
Total Future Losses	82	4,29,718	98,173	56,41,632
- Future medical	64	3,21,450	20,016	43,45,562
- Future wages	40	3,79,853	2,09,967	55,79,065
Jury Award to Victim				
Total Award	976	6,82,629	59,276	9,72,42,537
-Compensatory	956	5,45,683	49,449	4,74,91,294
-Punitive	248	5,09,096	22,564	4,97,51,244
-Loss of Consortium	51	1,82,755	29,104	15,57,549
-Other "specials"	32	1,18,949	20,923	18,23,318
Reduction in Awards Due to Contributory Negligence	106	1,83,669	23,864	55,11,706
SETTLEMENTS (N=130)				
Alleged Victim Losses				
Total Past Losses	77	$13,740	$3,483	$ 353,043
- Past medical	67	13,432	3,336	3,53,043
- Past wages	32	3,115	1,249	22,316
Total Future Losses	10	3,97,047	30,985	21,70,000
- Future medical	9	4,39,256	35,391	21,70,000
- Future wages	2	8,585	85857	17,170
Settlement Amount				
Total Settlement	130	$184,061	$30,000	$3,000,000

*Mean and Median figures are based on the sample of cases shown in that row. For example, the median punitive damage award was $22,564 for the 248 cases in which punitive damages were awarded out of 976 total awards. Thus, the median punitive damage award over all eases was zero.

Table 4. Victim losses and jury awards: rape and sexual assault, in 1990 dollars.

	# Cases	Mean*	Median*	Maximum
Alleged Victim Losses				
Total Past Losses	107	$59,392	$ 7,138	$1,407,640
- Past medical	87	24,885	5,286	283,201
- Past wages	28	126,310	18,025	1,124,439
Total Future Losses	35	200,715	50,000	1,405,244
- Future medical	30	96,598	40,286	814,560
- Future wages	14	294,793	235,724	1,080,756
Jury Award to Victim				
Total Award	276	1,525,626	430,285	47,468,354
-Compensatory	267	1,040,623	373,134	23,734,177
-Punitive	80	1,644,973	170,700	23,734,177
-Loss of Consortium	26	305,783	96,947	2,167,414
-Other "specials"	9	541,533	35,000	1,478,463
Reduction in Awards Due to Contributory Negligence	21	336,475	161,464	2,206,636

*Mean and Median figures are based on the sample of cases shown in that row. For example, the median punitive damage award was $170,700 for the 80 cases in which punitive damages were awarded out of 276 total awards. Thus, the median punitive damage award over all eases was zero.

compensatory award for rape and sexual assault cases was $1,040,623, with the median being $373,124 (in 1990 dollars).

Another way to examine the representativeness of the JVR data is to compare the characteristics of the typical plaintiff in JVR to the typical crime victim in the U.S. We compared JVR data with contemporaneous National Crime Victimization Survey (NCVS) data (http://www.bjs.gov/index.cfm?ty=nvat). NCVS is the government's nationally representative household survey designed to estimate the extent and nature of criminal victimization. Although the NCVS and JVR data had many similarities, JVR cases generally involved more serious injuries. For example, JVR victims of physical (nonsexual) assault were more likely than NCVS victims to have been shot (23% versus 0.2%), more likely to have broken bones (27% versus 2%), and less likely to have experienced only minor cuts or bruises or no physical injury at all (15% versus 55%). Similarly, JVR victims had higher medical costs than Miller et al.'s estimated NCVS victims [13].

Estimation of past and future losses

Table 5 reports the regression results for past and future losses; the dependent variable is the natural log of past and future medical and wage losses (in constant 1990 dollars). In the case of physical assaults, the results were quite encouraging, as the independent variables were able to explain 45%-50% of the variance in the natural log of past and future losses.

In the case of sexual assaults, the regression equations were only able to explain 15% of the variance in the natural log of past and future losses. One reason may be lack of complete reporting. Unlike physical assaults in which about 60% of the cases reported monetary losses, only about 35% of sexual assault cases reported monetary losses. Another

Table 5. Estimation of past and future wage and medical losses dependent variable = Ln (in 1990 Dollars).

Independent Variables	Physical Assault	t-statistic	Sexual Assault/ Rape	t-statistic
Constant	7.493	38.1**	6.89	11.08**
Plaintiff Employed	0.111	0.66	0.92	2.65**
Aggravation of Existing Condition	0.473	1.17	-1.81	-1.74
Serious Multiple Injuries	1.726	1.19	5.56	2.50*
Loss of Finger(s) or Toe(s)	2.515	1.74	--	--
Amputation of Limb(s)	3.268	2.26*	--	--
Burn	0.273	0.32	--	--
Paralyzed	4.199	10.86**	--	--
Leg or Foot Fracture	1.716	6.02**	--	--
Arm or Hand Fracture	0.788	1.82	0.69	0.41
Slight Injury to Senses	-0.667	-2.04	-0.06	-0.03
Moderate to Severe Brain Damage	2.948	8.42**	--	--
Back Injury (except fractures)	0.908	3.31**	--	--
Facial Scarring	0.835	2.10*	--	--
Sexual Impairment	0.446	0.43	-1.16	-0.68
Loss of Sight or Hearing	1.466	5.94**	-1.28	-0.66
Head, Neck or Jaw Fracture	1.405	4.90**	4.69	2.47**
Nerve Injury	0.963	3.20**	0.27	0.15
Injury to Limbs	0.602	2.24*	--	--
Mental Health Injury/PTSD	-0.099	-0.54	1.41	2.48**
Fracture Back, Hip, Chest, etc.	-0.130	-0.37	--	--
Dental Injury	-0.025	-0.11	--	--
Internal Injury	1.735	7.72**	--	--
Puncture except Brain/Internal	0.754	3.38**	--	--
Minor Injury (abrasion, cut, etc)	-0.182	-1.27	-0.85	-1.1
Facial Fracture	0.813	4.57**	3.43	3.74**
Gunshot Wound	0.858	4.58**	3.47	1.95*
Minor Brain Injury or Concussion	0.534	1.77	--	--
Unknown Injury	0.538	1.73	1.55	1.37
Adjusted R-squared		0.39		0.15
Sample Size	661		128	

possible reason for this modest explanatory power is that sexual assault victimizations are more likely to involve psychological counseling. In the case of long-term psychological counseling, the amount of past losses will crucially depend on the time between the crime and the lawsuit – and future losses are discounted into the future and are more likely to be challenged by defense counsel than past losses that are observable. In fact, in our sample, the length of time between the crime and lawsuit is larger and more variable for sexual assault cases than for physical assault cases. For the 677 assault cases where the year of crime and year of disposition both are available, the mean number of years is 3.30 with standard deviation 2.00. For the 180 sexual assault cases with both years available, the mean was 4.24 and standard deviation 2.76.

Regressions predicting damages

Table 6 reports on two ordinary least squares regressions estimating compensatory damage awards for physical assault cases as a function of predicted past and future medical and wage losses as well as other variables. Settlement data are not included in Table 6. Both compensatory awards and past and future losses are transformed into natural logs. The first equation in Table 6 is based on the full sample of 976 jury awards, while the second one is based on a restricted sample of 956 cases. That smaller sample was obtained by deleting outliers from the first equation. These outliers were observations where the residuals were more than three standard deviations from the mean. Of the 20 cases eliminated, 17 involved minimum compensation - usually $1 to $100 - where there was an allegation of some involvement by the plaintiff. Usually, these cases were barroom brawls or other fights involving little criminal intent and a high degree of plaintiff involvement if not precipitation. The remaining three cases were clear outliers on the high end -- awards of several million dollars each.

Most coefficients in the two equations are similar. Noteworthy differences are when the offense occurs following an argument between the two parties, when the victim precipitated the offense, and when the two parties had no actual physical contact (i.e., there is only a threat of or attempt at assault). In both cases, eliminating outliers significantly decreases the magnitude of their respective negative coefficients. This is not surprising, since the "outliers" are likely to be cases in which the jury agreed there was an assault, but refused to award large damages due to the circumstances of the offense. The model is an excellent fit, explaining almost half of the variation in awards.

Table 7 reports on a similar analysis of sexual assault and rape cases. Elimination of seven outliers improved the explanatory power of this model, but it still is modest.

Prediction of pain and suffering for crime victims

Table 1 shows estimated non-economic losses for a range of victimizations including both violent and property crimes. These

Table 6. Estimation of compensatory awards for physical assaults (in 1990 dollars).

Variable	Mean of Variable (full sample)	Coefficient (full sample)	Standard Error	Mean of Variable (w/o outliers)	Coefficient W/o outliers	Standard Error
Constant		10.99	1.91**		9.800	1.635**
Year of Disposition	87.3	-0.062	0.021**	87.3	-0.047	0.018**
Ln(Past + Future Losses)	8.79	0.627	0.036**	8.08	0.609	0.031**
OFFENSE-SPECIFIC						
Parties were Arguing	0.125	-0.885	0.198**	0.120	-0.542	0.171**
Series Victimization	0.004	0.209	1.006	0.004	0.168	0.855
Multiple Offenders	0.099	0.179	0.221	0.100	0.189	0.430
Offender Alcohol/Drug Impaired	0.058	0.041	0.271	0.060	-0.061	0.231
Victim Alcohol/Drug Impaired	0.038	-0.507	0.333	0.037	-0.311	0.290
Offender Relative or Lover	0.053	0.287	0.323	0.052	0.350	0.280
Offender A Stranger	0.688	-0.031	0.152	0.688	0.048	0.131
INJURY SPECIFIC						
Stabbing	0.08	0.785	0.242**	0.081	0.606	0.207**
Gunshot Wound	0.24	0.841	0.171**	0.243	0.751	0.146**
No Physical Contact	0.035	-1.093	0.347**	0.033	-0.766	0.304**
Facial Scarring	0.025	0.660	0.416	0.025	0.609	0.353
Aggravate Existing Condition	0.018	-0.318	0.470	0.019	-0.373	0.399
VICTIM SPECIFIC						
Female	0.23	0.500	0.162**	0.233	0.285	0.139*
Age 12 or Under	0.018	0.470	0.469	0.019	0.428	0.398
Age 13-18	0.053	-0.026	0.283	0.053	0.022	0.242
Age 65 or Older	0.024	0.283	0.419	0.023	0.628	0.364
DEFENDANT SPECIFIC						
Only Individual Offender	0.441	-0.807	0.167**	0.435	-0.649	0.144**
Only Third Party Individual	0.019	0.552	0.470	0.020	0.663	0.399
Only Third Party Government	0.232	0.560	0.310	0.052	0.643	0.264*
Only Third Party Business	0.232	0.416	0.183*	0.233	0.521	0.156**
Adjusted R-squared		0.444			0.485	
Mean of Dependent Variable	10.62			10.764		
Standard Error		1.945			1.651	
Sample Size	976	976		956	956	

* t significant at $p < 0.05$; ** t significant at $p < 0.01$, In NCVS 2015, means are 0.221 for offender relative or lover (0.372 with injury, 0.150 without), 0.315 for offender a stranger (0.243 with injury, 0.423 without), 0.564 for female (0.588 with injury; 0.560 without), 0.138 for age 13-18, 0.053 for age 65 or older (0.062 with injury; 0.50 without); in multi-year NCVS [49], means are .088 for series victimization (0.0.63 with injury; 0.099 without). US mean for age 0-12 is 0.034 [12].

Table 7. Estimation of compensatory awards for sexual assault (in 1990 dollars).

Variable	Mean of Variable (full sample)	Coefficient (full sample)	Standard Error	Mean of Variable (w/o outliers)	Coefficient W/o outliers	Standard Error
Constant		21.74	4.97**		16.971	3.721**
Year of Disposition	87.3	-0.151	0.055**	87.3	-0.076	0.041
Ln(Past + Future Losses)	8.626	0.340	0.102**	9.048	0.249	0.074**
OFFENSE-SPECIFIC						
Parties were Arguing	0.516	0.788	0.378*	0.519	0.757	0.275**
Series Victimization	0.119	0.904	0.589	0.122	0.398	0.424
Multiple Offenders	0.076	0.120	0.593	0.074	0.281	0.434
Offender Alcohol/Drug Impaired	0.011	0.245	1.50	0.011	-0.003	1.079
Victim Alcohol/Drug Impaired	0.007	-1.64	1.842	0.007	-2.848	1.333*
Offender Relative or Lover	0.079	-0.017	0.706	0.081	-0.192	0.508
Offender A Stranger	0.556	0.213	0.422	0.556	0.123	0.309
INJURY SPECIFIC						
Stabbing	0.004	0.787	2.533	0.004	1.378	1.820
Gunshot Wound	0.004	0.411	2.535	0.004	0.201	1.823
No Physical Contact	0.018	1.435	1.116	0.019	0.738	0.833
Facial Scarring	0.014	-0.603	1.272	0.019	-0.722	0.914
Aggravate Existing Condition	0.018	-0.318	0.470	0.019	-0.373	0.399
VICTIM SPECIFIC						
Female	0.794	0.595	0.419	0.800	0.088	0.313
Age 12 or Under	0.181	0.347	0.458	0.178	0.339	0.332
Age 13-18	0.112	0.325	0.533	0.115	-0.116	0.387
Age 65 or Older	0.011	-4.83	1.489**	0.007	-0.632	1.300
DEFENDANT SPECIFIC						
Only Individual Offender	0.310	-1.273	0.459**	0.307	-1.112	0.335**
Only Third Party Individual	0.025	-0.576	1.036	0.026	-1.024	0.747
Only Third Party Government	0.076	-0.537	0.654	0.074	-0.475	0.481
Only Third Party Business	0.350	-0.355	0.431	0.359	-0.809	0.315**
Adjusted R-squared		0.112			0.132	
Mean of Dependent Variable	12.238			12.527		
Standard Error		2.497			1.793	
Sample Size	277	277		270	270	

* t significant at $p < 0.05$ ** t significant at $p < 0.0$ In NCVS 2015, means are 0.323 for offender relative or lover, 0.210 for offender a stranger, 0.854 for female, 0.092 for age 13-18, and 0.022 for age 65 or older.

figures are combined for attempted and completed crimes. Applying 2010-2015 incidence data and inflating to 2015 dollars, we estimate the highest average non-economic losses are $334,449 for a hospital-admitted gunshot victim, $204,576 for sexual assault/rape, $150,060 for a hospital-admitted knife wound, $93,888 for child physical abuse, $35,349 for a victim injured in a physical assault, and $25,286 for an injured robbery victim. For those without any physical injury, the estimated monetary value of noneconomic losses is $3,478 for assault and $2,560 for robbery. Since less than half of assault (including attempted assault) and robbery victims actually are physically injured [15], the average non-economic loss is $19,627 over all physical assault victims and $10,628 over all robbery victims.

We compared the regression-based estimates of non-economic damages for medically treated assaults (including in robberies) to estimates derived directly from physician estimates of the impairment these injuries typically cause (the impairment fractions analyzed by Cohen and Miller [13]). The two estimates are virtually identical, $66,587 from the JVR data and $66,926 from the impairment data. That agreement at the mean, however, masks very substantial variations in individual values, with the impairment-based estimates generally exceeding the jury award estimates for admitted victims and below them for victims treated in the emergency department and released. In these calculations, gunshot and cut/stab wounds always came from the jury awards since mechanism-specific impairment ratings were not available for penetrating wounds.

Factors affecting jury awards

As expected, juries tend to award larger monetary amounts to victims when the injuries they sustain are more severe, and award less when there is little or no physical contact. Tables 5 and 6 contain other findings, however, that likely have little to do with severity of injury. Expressed in constant dollars, mean JVR-reported physical assault and sexual assault victim awards both decreased from 1980 to 1990. This downward trend probably resulted from more representative JVR coverage of jury awards in the later years, prompting us to set the year to 1990 when using the equations to estimate typical damages. We also found evidence consistent with a "deep pocket effect," since lawsuits involving only the perpetrator as a defendant had significantly lower awards than lawsuits where a business or government agency was a third party defendant. In estimating average losses for crime victims, we removed this effect by relying exclusively on the individual perpetrator coefficient.

Juries are generally instructed to award damages based on the notion of making the victim whole. Victims who shared culpability for the assault - either through an argument leading up to the assault or by somehow precipitating the event itself - were awarded significantly lower damages. This result has several possible explanations. Juries implicitly might be reducing the award to take into account comparative

fault or negligence. If this were the case, it would be outside the scope of their charge. Some states explicitly allow juries to specify a percentage that represents the amount of comparative fault of each party to such a dispute, and reduce the award accordingly. We analyzed only the gross award, ignoring any such reduction. Regardless of the state law on this point, however, the jury instructions do not include an explicit reduction in the gross award to account for victim involvement. An alternative explanation that is consistent with economic theory is that juries reason that victims who had some degree of comparative fault display a higher tolerance for risk and a lower value of their own quality of life by their actions. Thus, an individual who provokes a fight in a bar requires a lower amount of compensation (all else equal) than someone who is mugged on the street by a stranger. This is also consistent with the well-known finding that individuals are willing to accept a higher degree of self-imposed risk than risk that is forced upon them involuntarily [33].

Fear of injury or death

A crime victim may not be physically harmed and yet suffer from emotional trauma as a result of the fear of injury or death. Although the emotional trauma may be transitory for some victims, to others it may be debilitating. From the data, we could estimate the non-economic loss associated with pure 'fear' or 'risk of death' in the absence of any physical harm in two ways. Our first method was to recalculate the pain and suffering estimates by setting the variables that indicate actual physical harm equal to zero and the variable indicating 'no physical contact' equal to 1. Out-of-pocket dollar losses were set to $15, a value for assaults without physical injury that excluded all physical injury-related costs, but included mental health care costs and associated lost productivity as well as lost productivity due to dealing with the legal system. For an assault victim, this results in a pain and suffering estimate of $1,609.

Another method is to examine the court cases that did not involve physical injury. Out of the 976 assault cases with jury verdicts, 39 cases were identified where the victim experienced minimal or no physical injury. Seven awards compensated witnesses to assaults or murders. Their mean award was $72,772 and the median $31,094, with a range from $21,000 to $180,000. These awards are reportedly only to compensate for the emotional pain and suffering - not for "loss of consortium" which is reported separately. The four lowest awards ($21,795 to $31,094) involved sons, daughters or brothers who witnessed an assault against their sibling or parent. Two awards compensated parents who witnessed their children being killed and one a wife who witnessed an assault against her husband; they ranged from $76,183 to $181,962, with a mean of $136,048.

The remaining 32 cases involved plaintiffs who were personally attacked but no physical contact resulted. Eighteen involved psychological trauma that was not described as severe (i.e., PTSD and "severe" emotional trauma were not mentioned). These cases were comparable to Cohen's [9] fear estimates from ten Louisiana cases involving transitory fear and no physical injury. However, two of these cases involved arguments where there were allegations of assault by both parties to the dispute and awards were less than actual out of pocket costs. Those cases were eliminated. The resulting 16 cases had a mean award of $10,404 and median of $4,170.

The final 14 cases involved significant psychological trauma or PTSD (in some cases they also involved some minor physical injury). Compensatory damage awards varied considerably, from $472 to $669,014. The mean award was $167,972 and the median $77,500.

The standard errors on this small collection of cases are so large that the estimates are not very useful. Moreover, the cases are not representative of crime victims overall, and we cannot adjust them for population characteristics of crime victims. Thus, for purposes of making inferences about large samples or national estimates of the cost of fear and risk of death, the first regression-based methodology is preferable.

Discussion and limitations

The largest limitations of this analysis are the questionable representativeness and age of the JVR data. The data do come primarily from a sweet-spot period when JVR was trying to achieve representativeness. More importantly, we used NCVS data and national data on medical and wage losses rather than JVR data in estimating average losses. The incomplete breakdown of damages awarded in some JVR cases also is problematic. Our ability to predict damages well also was higher for physical than sexual assault. In addition, if juries have changed their assessment of the monetary value of noneconomic damages significantly over the years, the use of jury award data that are now 25-30 years old might be problematic.

Although this paper is new, NCVS-based estimates using its regression equations are not. Without journal publication, they have been used in the main estimates of criminal victimization costs in the U.S. since 1996 [12,34,35].

Comparing our estimates to other estimates, our ratio of values for sexual to medically treated physical assault (3.1) is close to the ratio of 3.4 in [36] based on a survey about willingness to pay for crime reduction. The physical assault estimate of the percentage of quality of life lost also is within 1% of an estimate based on the widely cited impairment fractions used in Cohen and Miller's regressions [12,37-39]. All of those estimates, however, are out of sync with Roman's jury award analysis [15] which estimated the damages from a physical assault with injury exceeded those from a sexual assault. Its sexual assault award estimates (including medical, work loss, and non-economic damages), however, were similar to ours, $171,000 [13] versus our $209,400, both well below Cohen et al's $319,000 estimate [36] (all stated in 2015 dollars).

It is hard to judge why Roman's estimates differ from ours because neither the dissertation [15] nor a book-chapter summary [40] tabulate mean award by crime type in the raw data. However, a few reasons are apparent. First, Roman used National Incident-Based Reporting System (NIBRS) data for criminal victimization details that are based on 10 states (Colorado, Idaho, Iowa, Massachusetts, Michigan, North Dakota, South Carolina, Utah, Vermont, and Virginia); while jury awards were predominantly based on two large states (California and New York, representing 2/3 of their sample) and four large cities (Chicago, Houston, Seattle, and St. Louis). Neither of these samples is nationally representative. He also reports an overall mean award of $1.2 million and median of $147,00 – substantially higher than our sample. Second, the use of NIBRS data means the assault estimates are based on the 60% of assaults with injury that NCVS estimates are police-reported, including 75% of the aggravated assaults with injury and 55% of the simple assaults with injury. Our estimates from NCVS also include cases not reported to the police, which more often are the less severe and less costly simple assaults. Third, our assault estimates exclude fatal assaults, but Roman's include them. We estimate that excluding them would reduce Roman's estimated damages per assault with injury by roughly 25%. Fourth, Roman's injury type classification does not include "sexual penetration." Rather, rapes are priced just on

their associated physical injuries. NCVS estimates that at least 54% of rapes would have the injury variable coded as none, with the likely coding questionable for another 19% who said they were bruised but received no treatment, even at home.

Conclusion

This paper examined over 1,250 jury awards compensating survivors of intentional assaults. We included compensatory damages designed to make victims whole but excluded punitive damages ostensibly designed to punish defendants. We found that jury awards are predictable, although they are highly variable. Nevertheless, one can empirically identify the factors that lead to higher or lower awards and the relationship between such factors as physical injuries, medical costs, lost wages, and the ultimate jury award. We also found some evidence of a deep-pocket effect and that comparative fault is taken into account when awarding damages.

Economists have devised several indirect techniques to estimate the monetary value of noneconomic losses resulting from nonfatal injury. Most studies have focused on estimating what consumers are willing to pay (and actually pay) to reduce injury risk [42]. These techniques have been applied by several authors to criminal victimization [36]; see [42] for a review of this technique and other studies using willingness-to-pay and a comparison of other methods to estimate crime costs. An alternative approach is to examine the jury system itself, which is the method that society uses to compensate for noneconomic harms. The jury award approach has a following in both the academic and policy arenas. Estimates from it are built into the values used in regulatory analysis by the Consumer Product Safety Commission [19-20], and recently by the U.S. Department of Justice in regulations designed to reduce prison rape [43]. Although the underlying theoretical foundations of jury awards and willingness to pay are not necessarily the same, some analysts believe "jury damage awards can be a proxy for the value of lost life or functioning [44]." Some theorists, however, have questioned the advisability of awarding noneconomic damages based on both the perverse incentives created and the fact that ex ante, individuals might not prefer to have such compensation schemes [45]. Jury awards are designed for ex post compensation, not ex ante willingness-to-pay. In theory, willingness-to-pay should be smaller than willingness-to-accept, as it is bounded by a wealth constraint [46]. However, jury awards are not measuring willingness-to-accept directly; they are a measure of society's willingness to compensate victims. As discussed in ref. [42], willingness-to-pay estimates based on public surveys include not only losses to victims, but also the "fear of crime" to non-victims, as well as costly avoidance behavior that non-victims might take. Thus, it is not surprising that the jury award method yields lower crime cost estimates than the willingness-to-pay approach –where the former is one piece of a "bottoms up approach" to estimating the social cost of crime and the latter is a "top down" approach that attempts to fully estimate social costs [42]. Further comparisons of these approaches and some of the main critiques in the context of estimating the cost of crime can be found in Dominguez and Raphael [47] and Cohen [48]. Regardless, the study of jury awards provides useful insights into the value that society places on social ills such as crime.

In addition to being of interest to academics and policy analysts, the study of jury awards can be of value to forensic economists. Although it is doubtful that a jury would be permitted to hear evidence on what typical jury awards are in cases similar to the one they are hearing, jury award data can be used to help educate an attorney, plaintiff, or defendant on the expected value of their case. This can be particularly useful in mitigating unrealistic plaintiff expectations or in the process of settling a case. Many insurance company adjusters use JVR data routinely and a plaintiff can similarly use the data to check their demands are appropriate. This can be particularly useful in unusual cases that do not involve very large out-of-pocket dollar losses - such as rape or sexual assault or other incidents where the primary injury is psychological. Although we do not know if this would be allowed in many courts, in one instance, one author of this article was called upon to provide testimony in a case involving a rape victim. The economist provided testimony that psychological trauma in rape cases is common, juries routinely award damages far in excess of dollar losses in these cases, and that academic research has used these jury award values to place dollar values on rape. Whether or not the judge would have allowed such testimony, both attorneys indicated that the economist report was instrumental in settling the case.

Finally, jury award research has proven valuable in some instances where a judge or appeals court is considering whether or not to reduce a jury award. In several cases, one author of this article has provided an affidavit to a court comparing the award in the case at issue to awards around the country with similar facts. This information was then part of the record the judge could use in determining whether a jury's award was unreasonable.

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References

1. Kritzer HM, Liu G, Vidmar N (2014) An exploration of noneconomic damages in civil jury awards. *William & Mary Law Review* 53: 971-1027,
2. Vidmar N (1998) The performance of the American civil jury: An empirical perspective. *Arizona Law Review* 40: 849-899.
3. Kakalik JS, Pace NM (1986) Costs and compensation in tort litigation. Santa Monica, CA: Rand Corporation.
4. Daniels S, Martin J (1995) Civil juries and the politics of reform. Chicago, IL: Northwestern University Press.
5. Viscusi WK (1988) Pain and suffering in product liability cases: Systematic compensation or capricious awards? *International Review of Law and Economics 8*: 203-207.
6. Viscusi WK (1991) Reforming products liability. Cambridge MA: Harvard University Press.
7. Wissler RL, Evans D, Hart AJ, Morry MM, Saks MJ (1997) Explaining 'pain and suffering'awards: The role of injury characteristics and fault attributions. *Law & Human Behavior* 21: 181.
8. Diamond SS, Saks MJ, Landsman S (1998) Juror judgments about liability and damages: Sources of variability and ways to increase consistency. *DePaul Law Review 48*: 301-326.
9. Cohen MA (1988) Pain, suffering and jury awards: A study of the cost of crime to victims. *Law and Society Review 22*: 237-255.
10. Rajkumar AS, French MT (1997) Drug abuse, crime costs, and the economic benefits of treatment. *Journal of Quantitative Criminology* 13: 291-323.

11. McCollister KE, French MT, Fang H (2010) The cost of crime to society: New crime-specific estimates for policy and program evaluation. *Drug and Alcohol Dependence* 108: 98-109.

12. Miller TR, Cohen MA, Wiersema B (1996) Victim costs and consequences: A new look. Research Report NCJ-155282. Washington DC: National Institute of Justice.

13. Cohen M, Miller TR (2003) Willingness to award non-monetary damages and the implied value of life from jury awards. *International Review of Law and Economics* 23: 165-181.

14. Smith S, Zaloshnja E, Miller TR, Smith D, Spicer RS (2008) Jury verdicts in drunken driving cases. *Review of Law and Economics*, 4:1, article 22.

15. Roman JK (2009) What is the price of crime? New estimates of the cost of criminal victimization. PhD Dissertation, University of Maryland School of Public Policy.

16. Mayhew P (2003) Counting the costs of crime in Australia. Australian Institute of Criminology, available at: http://www.aic.gov.au/media_library/publications/tandi_pdf/tandi247.pdf.

17. Easton S, Furness FH, Brantingham P (2014) The cost of crime in Canada. Simon Fraser Institute, available at: https://www.fraserinstitute.org/sites/default/files/cost-of-crime-in-canada.pdf.

18. Carrington F, Rapp JA (1989) Victims' rights: law and litigation. New York: Matthew Bender & Co.

19. Lawrence BA, Spicer RS, Miller TR (2015) A fresh look at the costs of non-fatal consumer-product injuries. *Injury Prevention* 21: 23-29.

20. Lawrence BA, Miller TR, Jensen AF, Fisher DA, Zamula W (2004) Estimating the costs of non-fatal consumer product injuries in the United States. *Injury Control and Safety Promotion* 7(2): 97-113.

21. Kritzer H (2004) Advocacy and rhetoric vs. scholarship and evidence in the debate over contingency fees: A reply to Professor Brickman. *Washington University Law Quarterly* 82: 477-507.

22. Daniels S, Martin J (1986) Jury verdicts and the "crisis" in civil justice. *Justice Systems Journal* 11: 321-327.

23. Localio AR (1985) Variations on $962,258: The misuse of data on medical malpractice. *Law, Medicine and Health Care* 13: 126-128.

24. Tabarrok A, Helland E (1999) Court politics: The political economy of tort awards. *Journal of Law and Economics* 42: 157-188.

25. Bovbjerg RR, Sloan FA, Blumstein JF (1989) Valuing life and limb in tort: Scheduling 'pain and suffering.' 83 *Northwestern University. Law Review* 83: 908-976.

26. Bovbjerg RR, Sloan FS, Dor A, Hsieh CR (1991) Juries and justice: Are malpractice and other personal injuries created equal? *Law and Contemporary Problems* 54: 5-42.

27. Rabin RL (2011) The pervasive role of uncertainty in tort law: Rights and remedies. *DePaul Law Review* 60(2): 431-452, available at: http://via.library.depaul.edu/law-review/vol60/iss2/9

28. Litan RE, Winston C (1988) Policy options. Liability: Perspectives and Policy. In: Litan R, Winston C (eds.) Washington, D.C.: Brookings Institution, 223-241.

29. Abel R (2006) General damages are incoherent, incalculable, incommensurable, and inegalitarian (but otherwise a great idea). *DePaul Law Review* 55: 253-329.

30. Special Section: Assessing economic damages in personal injury and wrongful death litigation: articles by state. *Journal of Forensic Economics*, various years.

31. Barkai J, Kent E, Martin P (2006) A profile of settlement. *Court Review* 42: 34-39.

32. US Supreme Court (1994) McDermott, Inc. v. AmClyde, 511 U.S. 202, 216.

33. Kunreuther H, Easterling G (1992) Gaining acceptance for noxious facilities with economic incentives. In: Bromley D, Segersen K (eds.), The Social Response to Environmental Risks.

34. Yang J, Miller TR, Zhang N, LeHew B, Peek-Asa C (2014) Incidence and cost of sexual violence in Iowa. American *Journal of Preventive Medicine* 47: 198-202.

35. Miller T, Fisher D, Cohen M (2001) Costs of juvenile violence: Policy implications. Pediatrics 107(1), electronic edition, e3: 1-7.

36. Cohen MA, Rust R, Steen S, Tidd S (2004) Willingness-to-pay for crime control programs. *Criminology* 42: 86-106.

37. Miller TR, Pindus N, Douglass J, Rossman S (1995) Databook on nonfatal injury -- incidence, costs, and consequences. Washington DC: The Urban Institute Press.

38. Zaloshnja E, Miller TR, Romano E, Spicer R (2004) Crash costs by body part injured, fracture involvement, and threat-to-life severity, United States, 2000. *Accident Analysis & Prevention* 36: 415-427.

39. Spicer RS, Miller TR, Hendrie D, Blincoe LA (2011) Quality-adjusted life years lost to road crash injury: Updating the Injury Impairment Index. *Annals of Advances in Automotive Medicine* 55: 365-377.

40. Roman JK (2011) How do we measure the severity of crime? New estimates of the cost of criminal victimization. Measuring Crime and Criminality: Advances in Criminological Theory, 17. In: MacDonald J (ed.) Piscataway, NJ: Rutgers University Press, 30-77.

41. Viscusi WK, Aldy JE (2003) The value of statistical life: A critical review of market estimates throughout the world. *Journal of Risk and Uncertainty* 27: 5-76.

42. Cohen MA (2010) Valuing Crime Control Benefits Using Stated Preference Approaches. Chapter 4 (pp. 73-118) in Cost-Benefit Analysis and Crime Control. In: Roman JK, Dunworth T, Marsh K (eds.) Washington, DC: Urban Institute Press. Draft chapter available at: http://ssrn.com/abstract=1091456.

43. U.S. Department of Justice (2012) Prison Rape Elimination Act, Regulatory Impact Assessment, available at: http://ojp.gov/programs/pdfs/prea_ria.pdf.

44. Crowley DM, Jones DE (2016) Financing prevention: opportunities for economic analysis across the translational research cycle. *Translational Behavioral Medicine* 6: 145-152.

45. Viscusi WK (2008) The flawed hedonic damages measure of compensation for wrongful death and personal injury. *Journal of Forensic Economics* 20: 113-135.

46. Cook PJ, Graham DA (1977) The demand for insurance and protection: The case of irreplaceable commodities. Quarterly *Journal of Economics* 91: 143-56.

47. Dominguez P, Raphael R (2015) The role of the cost-of-crime literature in bridging the gap between social science research and policy making. *Criminology & Public Policy* 14: 589-632.

48. Cohen MA (2016) The "cost of crime" and benefit-cost analysis of criminal justice policy: understanding and improving upon the state-of-the-art. Available at http://ssrn.com/abstract=2832944.

49. Lauritsen J (2012) Transcript of "Violent repeat victimization: Prospects and challenges for research and practice". Washington DC: National Institute of Justice.

50. Sedlak AJ, Mettenburg J, Basena M, Petta I, McPherson K, Greene A, Li S (2010) Fourth national incidence study of child abuse and neglect (NIS–4): Report to Congress. Washington DC: Administration for Children and Families.