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Determinants of Noneconomic Damages in Medical Malpractice Settlements and Litigations: Evidence from Texas since 1988

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Determinants of Noneconomic Damages in Medical Malpractice Settlements and Litigations: Evidence from Texas since 1988

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There have long been claims that compensations for noneconomic damages are random because tort law does not provide clear guidance regarding these compensations. I investigate, in both settled and tried medical malpractice cases, whether noneconomic damage payments are arbitrary and what determines the probability and size of these payments. I find that payments for noneconomic damages are not completely random. They vary, in predictable ways, with observable characteristics of the case. The data suggest similar patterns in non-medical malpractice cases. I end by discussing the implications of my findings for the debate on the efficiency and rationale of noneconomic damage compensation. (*JEL* K13, K32, K41)

1 Introduction

Victims of tortious injury suffer from accidents in more than financial ways. Adequate access to justice requires that the victims be compensated fully for their losses: besides economic losses such as medical expenses and lost earnings, also noneconomic losses such as pain, suffering and loss of enjoyment of life should be compensated. A problem associated with such compensatory damages is that they are difficult to quantify. For this reason, there have long been claims that compensations for noneconomic harm are random and unpredictable. It is the purpose of this paper to investigate in medical malpractice claims whether noneconomic damages compensations are arbitrary and what determines the incidence and magnitude of noneconomic damage

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payments. This is worthwhile, because the popular beliefs that noneconomic damages compensations are capricious and unpredictable have made these compensations a contentious issue in all of the various medical malpractice reforms attempts in recent years in the United States.[1,2] My analysis provides the most recent evidence that these beliefs are unfounded. I begin with a general discussion on the rationale and problem of non-economic damage compensation.

The aim of compensatory damages is to make the victim whole and restore the victim to the position she was in before the injury, at least to the extent that monetary damages can do so.[3] Compensatory damages consist of payments for both economic damages and noneconomic damages. Whereas economic damages are designed to reimburse an accident victim's lost earnings and medical costs, noneconomic damages are intended to compensate the victim for her physical pain or mental anguish. The specific compensable elements of noneconomic damages vary by jurisdiction. But generally damages are paid for bodily harm (e.g., disfigurement, disability), emotional distress (e.g., fear, anxiety, depression, and embarrassment), and loss of enjoyment of life (e.g., limitations on one's lifestyle and resulting feelings).[4] Therefore, noneconomic damages encompass highly intertwined elements, many of which have psychological or social aspects.

In practice the components of noneconomic damage payments are defined in only general ways.[5] Jury instructions for noneconomic loss do not provide precise quantitative guidance. Because of this lack of guidance, there have long been claims that noneconomic damages are random.[6] Since randomness implies variation in damage payments for individuals who suffer identical injury, when damages are random the tort system is not horizontally fair.[7]

Empirical findings offer little support to the claims that compensations for noneconomic harm are unpredictable. In an insightful paper, Viscusi (1988a) studied over 10,000 closed product liability claims and found that noneconomic damage payments and awards vary systematically with the economic losses, the character of injuries, and liability doctrine involved in claims. Bovbjerg *et al.* (1989) studied the predictability of jury verdicts on noneconomic damages in personal injury lawsuits from Florida and Kansas City. They categorized the injury types by degrees of severity which were measured on a nine-point scale. They found that the juries award the least damages for insignificant and temporary injuries and the largest for catastrophic

[1] In 2003, the former U.S. President Bush has urged Congress at least six times to impose substantial nationwide restrictions on medical malpractice cases, including a cap on noneconomic damages of over $ 250,000. In his recent health care reform, U.S. President Obama has rejected caps on noneconomic damages in medical malpractice cases. President Obama told the American Medical Association (and the American public) that medical malpractice caps are "unfair to people who have been wrongfully harmed." See also Kinney (1995). Kinney (1995) summarizes federal efforts to reform noneconomic damages in the 90s.

[2] Proponents for restricting and eliminating non-economic damages also argue that jury awards and settlements are too high. This paper, however, focuses on the predictability of noneconomic damages. Whether these damage levels are appropriate is not of interest in this paper.

[3] See Restatement (Second) of Torts, 1979, § 901.

[4] See Restatement (Second) of Torts, 1979, § 905.

[5] This remark has been given by Wissler *et al.* (1997).

[6] See, e.g., discussions in Daniels (1989), Daniels and Martin (1995), Litan (1993), MacCoun (1993), Saks (1992), Vidmar (1994), (1995), Weiler (1991).

[7] Horizontal fairness implies that individuals suffer the same degree of injury recover the same amount of damage compensation.

permanent injuries. However, they also found considerable unexplained variability across and within categories of injury severity, raising the possibility that juries do not award damages uniformly from case to case. In the same genre, the latter research by Hans and Ermann (1989), Peterson (1984), Sloan and Hsieh (1990), Vidmar and Rice (1993), Diamond *et al.* (1998) and Hyman *et al.* (2007), (2009) has been able to account for between half and two-thirds of the variation in awards in sampled cases by using from just one to a small handful of explanatory variables.

This paper shares an obvious common thread with this earlier body of work. It departs in that, I have the unusual opportunity to analyze data on out-of-court settlements. In contrast, Bovbjerg *et al.* (1989) and others have restricted their analysis to jury awards in tried cases. The vast majority of cases are settled out-of-court in the shadow of litigation. But little is known about the pattern of compensations for noneconomic harm in out-of-court settlement. Moreover, there is usually a sample selection bias associated with using tried cases: the group of court-adjudicated cases is a highly selected sample of all cases brought for damage payment. This selection bias implies that analysis of the observed outcome – probability and size of payments at verdict cannot be generalized to the universe of cases brought for damage compensations.[8] The present study contributes to this literature by expanding the current knowledge on noneconomic damages and by overcoming the problems of selection bias that plague earlier studies. Using a novel and extensive data set from the Texas Department of Insurance (TDI) Commercial Liability Insurance Closed Claim Report, I provide a comprehensive prospective on the incidence and magnitude of medical malpractice noneconomic damage payments in pre-suit settlements, post-suit and pre-judgment settlements, and cases went through full trial. I analyze the relationship of these payments to other characteristics of the case and obtain four main findings:

(a) Consistent with the prior research, I find that noneconomic damage payments are not completely random outcomes. They vary, in predictable ways, with changes in the *observable* characteristics of the case: the level of the victim's economic damages is the single best predictor of noneconomic damages, accounting for 64 percent and 26 percent of the variance in the incidence and magnitude of noneconomic damages, respectively;

(b) The incidence of noneconomic damage payment is plausibly related to the stage at which the dispute is resolved.[9]Cases resolved in pre-suit settlements tend to receive noneconomic damages more frequently than in post-suit settlements. After reaching a verdict, a claimant's chance of receiving noneconomic damages drops by 21 percent as compared to settling prior to a verdict. These results suggest that the various aspects of the litigation process, such as litigation costs and the chances that the defendant could lose at trial, da-

[8]See Priest and Klein (1984) for discussion on sample selection bias associated with litigated cases. See Viscusi (1988b) and Danzon and Lillard (1983) for similar critiques on using court verdict as a proxy for expected settlement payment. Using data on Texas medical malpractice for the years 1988-2003, Hyman *et al.* (2007) find large and statistically significant difference between jury verdicts and actual post-verdict payouts, providing the latest evidence that information on jury verdicts is misleading for drawing conclusions about the pattern of damage payment in settlements and litigations.

mpen the defendant's bargaining position *vis-à-vis* the claimant in the damage negotiation;

(c) For the majority of cases settled out-of-court and the minority of litigated cases, the probability and size of noneconomic damage payment are higher for unemployed or self-employed victims than for employed ones; and they are higher from organizational defendants (hospitals) than from individual defendants (physicians and surgeons). Because damage negotiations take place in the shadow of litigation, we can draw inferences about the potential court verdicts with information gleaned from the settled cases: When awarding noneconomic damages the courts have objectives other than merely making whole the victims for their physical and mental anguish;

(d) The incidence and magnitude of noneconomic damages are not systematically related to injuries. Permanent and catastrophic injuries do not necessarily receive more noneconomic damages than temporary, insignificant injuries. This lack of systematic variation raises serious questions about the equity of tort system. But the possibility remains that this absence of systematical relationship could have resulted from differences among cases that I did not examine and the lack of a precise measure of the seriousness of injury that the victims have suffered as a consequence of the medical malpractice.

The analysis of noneconomic damages in non-medical malpractice cases provides further evidence of the remarkable sameness of predictability in payments across different contexts. Taken together, my analysis of this extensive data set provides a view on noneconomic damage compensation that is at odds with the public perceptions that noneconomic damages are random. However, the cries of alarm regarding the magnitudes of noneconomic damages may not be misplaced.

Although my sampling method is largely based on Hyman *et al.* (2007), (2008a), (2008b) and Black *et al.* (2005), (2008), the present study employs more timely data. In discussing the limitation of the data and determining the relevant variables for my empirical analysis, I have freely borrowed from the insightful earlier research of Hyman *et al.* (2007), (2008a), (2008b), Hersch and Viscusi (2007), Hersch *et al.* (2007) and Black *et al.* (2005), (2008). The description of the TDI data, even though only slightly different from the descriptions found in these earlier works, is given as an aid to the reader.

The paper proceeds as follows. Section 2 describes the provision of noneconomic damages in the US legal system and briefly reviews the noneconomic damages reforms. Section 3 provides an overview of the noneconomic damage payments in medical malpractice cases by injury type. Section 4 describes estimation methods. Section 5 presents empirical results on noneconomic damage payments in medical malpractice cases. Noneconomic damages vary substantially, but not completely randomly, within and among different injury types. One source of variation

[9]Viscusi (1988) finds that cases settled out-of-court tend to receive less pain and suffering payment than the expected court award. Other empirical studies that investigate the relationship between disposition and indemnity payments but not only noneconomic damages payments include Sloan and Hsieh (1990) and Danzon and Lillard (1983).

is the stage of the disposition of the case, which is the focus of Section 6. Section 7 provides evidence that the predictability of noneconomic damage compensation is not confined to medical malpractice cases, but are a robust feature across different contexts of bodily injury claims. Section 8 presents summary measures of the efficiency of the tort system for medical malpractice claims in the Texas Department of Insurance Commercial Liability Insurance Closed Claim database. I estimate that, under plausible assumptions, the legal costs share of total damage payments average about 0.59 for all claims involve noneconomic damage payments. This ratio is somewhat higher for cases without noneconomic damage payments. Furthermore, I find that the tort system is more efficient in compensating noneconomic losses for fatal injury and serious injury types than for temporary, insignificant injuries. Section 9 concludes.

2 Legal Background

2.1 Provision of Noneconomic Damages

In the US, noneconomic damages are provided extensively through the tort law system, but only moderately by insurance markets.[10] In the American tort system, noneconomic damages are estimated by the juries, influenced by the effort of the lawyers and eventually modified and approved by the courts.

Juries are often urged to "reasonably compensate" the victims for noneconomic losses.[11] However, what compensation is reasonable and the objectives that are to be promoted by this compensation have not been well defined. Standard jury instructions sometimes explicitly state that there are no objective guidelines by which the jury can follow to measure the money equivalent of noneconomic losses (see Douthwaite 1988, page 274). Furthermore, as Vidmar and Rice (1993) and others have observed, since juries are ad hoc groups of lay persons familiar only with the case at hand, they are not aware of the level of awards in similar cases with which to compare and adjust their damage assessment.

As a result, lawyers have tried to offer a number of heuristic devices to help juries quantify noneconomic losses. However, courts have often rejected these attempts. Some jurisdictions in the US forbid the jurors to use the "per diem" method, where the jury awards the victim a small amount per unit of time (such as a day or an hour) and then multiplies it by the victim's life expectancy.[12] The reasons of prohibition are that assuming the noneconomic loss suffered

[10] There are different explanations for the absence of an insurance market for noneconomic loss. For instance, Suurmond and Van Velthoven (2005) shows that there is a lack of demand for insurance for noneconomic damages: even if noneconomic losses would be fully compensated - a risk averse individual would never purchase insurance against the risk of incurring noneconomic losses. Croley and Hanson (1995) argue that there is a lack of supply of insurance. They show that market failures, such as moral hazard, would prohibit insurance companies from selling insurance for noneconomic damages.

[11] For instance, the Restatement (Second) of Torts (1979, § 912) particularly notes: "The discretion of the judge or jury determines the amount of recovery, the only standard being such an amount as a reasonable person would estimate as fair compensation."

[12] See Pearson (2005) and McCaffery *et al.* (1995).

by the victims is additive over each time interval is at best an approximation to the true value; In addition, it begs the fundamental issue of what each unit of noneconomic loss is worth.[13] Courts have similarly rejected the "Golden Rule" which asks jurors to determine the amount of compensation they need to receive (ex post) if they had to experience the victims' pain and suffering. The reason of rejection is that the courts think the "Golden rule" approach is too clearly based on nonobjective factors: it is impermissible in virtually every jurisdiction to ask jurors to imagine themselves in the circumstances of the victim and to use that visualization in determining the level of noneconomic damages (Boucher 2008, page 169). Yet some jurisdictions in the US allow jurors to use the "per diem" approach. Similarly, "day-in-the-life" videos are admissible in courts if they are carefully prepared (Varner and McGee 1999). Once the jury determines the amount of damage, the court may reduce the amount via a remittitur process,[14] or because there are statutory caps under which the court must adjust the jury award.[15]

2.2 Noneconomic Damages Reforms

The claims that noneconomic damages are random have made these damage components the subject of much legislation and continuing suggestions for further modifications of the legal system in order to limit or prohibit noneconomic damage payments. As early as in 1975, the California Legislature has enacted the Medical Injury Compensation Reform Act ("MICRA") and limited at $250,000 the amount of noneconomic damages that a plaintiff could recover at a medical malpractice trial.[16] In 1986, the U.S. Department of Justice Tort Policy Working Group reported that noneconomic damages were subjective awards and are unpredictable and that the magnitude of these awards was so substantial that a cap was needed.[17] In 2003, former US President Bush proposed a nationwide $250,000 cap on all noneconomic damages paid in medical malpractice lawsuits. Following the proposal seven states passed legislation or amended their constitutions to create caps on noneconomic damages. Texas, for instance, established a tree-tiered system for awarding noneconomic damages in medical malpractice cases in 2003 (see House Bill 4, Texas Legislature (2003)). A $250,000 cap applies to all doctors involved in a case, with a $250,000 cap against any single institution and a $500,000 cap on all health-care institutions combined.[18] By 2007, 26 states in the US have imposed caps on non-economic

[13] For discussion of this point, see Viscusi (1988a). Totaro (2006) makes a similar remark.

[14] A remittitur process is a legal process which allows a judge to reduce a jury award if the judge believes that the amount is not supported by the facts and that it is excessive.

[15] See Avraham (2010) for detailed and comprehensive review of noneconomic damages reforms in the United States between 1980 and 2008.

[16] See, e.g., Studdert *et al.* (2004) and Pace *et al.* (2004) for description of the MICRA and the effect of noneconomic damages cap.

[17] See U.S. Department of Justice Tort Policy Working Group, Report (February 1986).

[18] Reforms in the other states are as follows. Florida imposed caps on noneconomic damages for medical negligence at $500,000 for physicians and $750,000 for hospitals; West Virginia capped noneconomic damages at $250,000 per occurrence; $500,000 per occurrence for wrongful death, permanent and substantial deformity, loss of limb or bodily function; Colorado extended its pre-existing $250,000 cap on noneconomic damages for medical negligence cases to cases of physical impairment and disfigurement. Ohio capped noneconomic damages at $250,000 or three times economic damages to a maximum of $350,000 per victim or $500,000 per occurrence.

damages (Bustos and Avraham 2008, page 2). During this period, noneconomic damage caps were struck down by supreme courts in five states. In some states, such as Illinois and Ohio, caps were struck down by state supreme courts and later reenacted in amended form. Sometimes this cycle repeated itself.[19]

The above discussions lead to the following hypothesis about the predictability of noneconomic damages payments:

Hypothesis *Noneconomic damage payments are entirely random events.*

3 Descriptive Statistics

The data to be used in this study are drawn from the Texas Department of Insurance (TDI) Commercial Liability Insurance Closed Claim Report.[20] I focus primarily on medical malpractice cases. Texas requires detailed reports of all commercial claims involving damage payments by all defendants for bodily injury that are at least $10,000 in nominal dollars. A rich variety of case-specific information is recorded for the majority of claims, including payments for noneconomic damages and stages of case position which are the key variables of interest in this paper. TDI used two reporting forms: a "Short Form" for claims for which the damage payments for bodily injury are of $10,000-$25,000 (nominal), and a "Long Form" for claims for which damage payments for bodily injury are at least $25,000 (nominal). The "Long Form" contains information on the type of injury and victim's age and employment status that is omitted on the 'Short Form". I analyze data from all available years, which currently include the years 1988-2008.[21]

Sample Selection for Medical Malpractice Cases. While the TDI data is rich, it still has limitations that make necessary several restrictions on the set of cases included in my sample. First, following Black *et al.* (2005), (2008) and Hyman *et al.* (2007), (2008a), (2008b) the data were sampled to obtain only those observations that satisfy at least two of the following criteria: (i) The claim was covered by medical professional liability insurance; (ii) The claim was against a health care practitioner or institution (physician, surgeon, hospital, or nursing home); (iii) The claim was associated with injuries caused by complications or misadventures of medical or surgical care. I further exclude claims against dentists or oral surgeons from the sample. Secondly, I restrict the sample to "Long Form" reports because information on key

Oklahoma capped noneconomic damages at $300,000 in cases involving pregnancy.

[19]See Avraham (2006a) for a comprehensive survey on noneconomic damages reforms in the US. See also Bovbjerg (1989); National Conference of State Legislatures (1988); Sanders and Joyce (1990) for legislations on noneconomic damages.

[20]For a comprehensive description of the database see, e.g., Black *et al.* (2005).

[21]Unless otherwise specified, all dollar values throughout the paper are adjusted to 2008$ using standard measure of general price trends published by the Bureau of Labor Statistics, the Consumer Price Index for All Urban Consumers.

variables, such as victim's age and employment status, is missing from the "Short Form".[22] Due to this restriction, 1,571 medical malpractice claims are dropped. Duplicate reports relating to the same underlying claim and filed in the same year further reduce the number of sampled observations.[23] Because of these restrictions, the resulting sample of 18,834 medical malpractice claims contains 6,169 claims with positive noneconomic damages payments and 12,665 claims with no noneconomic damage payment. I refer to the sample of 18,834 claims as my *med mal sample*.

Data limitations. My analysis is subject to at least four important data limitations. The primary limitation of the data is that the allocations between economic and noneconomic damages in settled cases are reported allocations, not actual allocations. The allocation is recorded in the data set by the insurer rather than by a neutral party.[24] To the extent that the insurance companies might provide biased allocations, the noneconomic damage measure used here should be regarded more as a proxy for noneconomic damage payment rather than a highly refined and specific measure of it.[25] Calculations (not reported in the table) based on the med mal sample show that reported non-economic damages comprise 31 percent of total settlement amounts. This ratio is somewhat lower than that reported in Studdert *et al.*'s (2007) review of all available studies of the fraction of payment for noneconomic damages.[26] The purpose of my analysis is primarily to capture factors that drive the differences in the incidence and magnitude of noneconomic damages. My analysis could clearly be improved if data on the actual allocations between economic and noneconomic damages were available.

The second limitation is that the TDI data set does not contain information on three important variables: a refined measure of the seriousness of injury, the victim's income and gender.[27] These variables have been shown to be important determinants of noneconomic damage awards and payments (see, e.g., Peterson 1984, Viscusi 1988a, Sloan and Hsieh 1990, Vidma *et al.* 1999). They have also been shown to be associated, in significant ways, with other characteristics of the case (see, e.g., Peterson 1984, Viscusi 1986, Vidmar *et al.* 2006). Omission of these variables could well bias some of the estimated effects of other variables in my empirical analysis. To remedy at least in part the potential model misspecification bias, I include an economic loss variable and a series of injury type variables as crude measures of the seriousness of injury. Furthermore, it can be argued that income and gender are relevant variables in explaining the variations in noneconomic losses only in that people who do not work outside the home, like

[22] Numerous previous research (see, e.g., Viscusi 1988, Rodgers 1993 and Avraham 2005) has suggested that these variables are important determinants of the incidence and magnitude of noneconomic damages compensations.

[23] 737 duplicate reports filed in the same year are dropped.

[24] Black *et al.* (2010) have noted that one can rely on insurer's allocation in the TDI data.

[25] For a discussion on insurance companies' incentive to understate economic losses, see Viscusi (1988a).

[26] Studdert *et al.* (2007) review all available studies of the fraction of noneconomic damages and estimate that noneconomic damages average about 40 percent of total damages.

[27] The remark that the TDI data set lacks information on injury severity and gender first appeared in Hyman *et al.* (2008a).

women and children, tend to receive more noneconomic damage payments as a compensation for less economic damage payments. The empirical analysis includes an employment status variable to remedy at least in part the potential model misspecification bias associated with the omission of victim gender and income.

The third data limitation is related to missing observations. The TDI data set does not contain claims against self-insured providers.[28] Although most physicians carry malpractice insurance, hospitals do not. As a consequence, information on claims against the University of Texas hospital system and University of Texas employed physicians is missing from the TDI data set. Furthermore, no data source is available that would allow me to estimate how many claims are outside the TDI data set.

Finally, I do not have enough reliable information to identify and eliminate duplicate reports filed in different years. Identifying duplicate claims across different years necessarily requires information on the date of injury, victim's age, county, and claim amount paid by insurers contributing to the claim. Therefore, the success in finding all the duplicates is directly reliant on the accuracy of data provided by the insurance companies. When reports associated with the same underlying claim do not have the same injury dates, ages, or counties, it becomes difficult to ascertain the duplicates.[29]

Due to these data limitations, my results may best be interpreted with caution.

Noneconomic damage payments for different injury types. The variables and model parameters are defined in Table 1, and the corresponding descriptive statistics are presented in Tables 2 and 3. Table 2 reports the distribution of noneconomic damage payments for different injuries. Because only a small fraction of plaintiffs (3 percent) have multiple injuries, it is possible to determine, for the majority of cases, specific compensation for each injury. The results are striking in terms of the importance of noneconomic losses in total indemnity payment. Nearly one-third of all accident victims receive noneconomic damages compensation. The effect of noneconomic losses is particularly prevalent for systemic poisoning (toxic) victims, as more than half of these victims received noneconomic damage compensation.

The average amount of noneconomic damage payment, which includes cases with payments exceeding $25,000 but not necessarily a noneconomic component, ranges from a low value of $6,528 for scarring to a high value of $328,815 for brain damages. There is substantially less variation in the fraction of the payment comprised by noneconomic damages. The third column in Table 2 shows that noneconomic damages comprise from 12 percent to 31 percent of total tort damages paid for medical cases in which payments exceed $25,000. Therefore, for none of the injury categories noneconomic damages comprise a dominant share of the compensation. It

[28] This limitation was previously discussed in Hyman *et al.* (2008a).

[29] I am grateful to Vicky Knox for pointing out this difficulty in verifying the accuracy of data for identifying duplicates. Hyman *et al.* (2007), (2008) and Black *et al.* (2005), (2008) tried to identify and eliminate duplicate reports of different years in the TDI data set in their studies.

Table 1. Terms and Definitions[30]

	Definition
Claim ("case" is a synonym)	An incident that leads to bodily injury and results in a request to an insurer(s) by a policyholder(s) for coverage.
Noneconomic Damages	Damages to be paid for the purpose of compensating a victim for physical pain and suffering, mental or emotional pain or anguish, loss of consortium, disfigurement, physical impairment, loss of companionship and society, inconvenience, loss of enjoyment of life, injury to reputation, and all other nonpecuniary losses of any kind other than exemplary damages.
AMOUNT OF NONECONOMIC DAMAGE PAYMENT	It equals the total amount of noneconomic damage payments by all defendants, if the claim is resolved in pre-suit settlement, post-suit and pre-verdict settlement, or post-verdict settlement; It equals the amount of noneconomic damage awards if the claim is terminated at court verdict.
INCIDENCE OF NONECONOMIC DAMAGE PAYMENT	Indicator with value 1 if AMOUNT OF NONECONOMIC DAMAGE PAYMENT is positive, 0 otherwise.
AMOUNT OF NONECONOMIC DAMAGE AWARD	Court award on the level of noneconomic damages for cases resolved at court-verdict, settled after verdict or appeal filed.
INCIDENCE OF NONECONOMIC DAMAGE AWARD	Indicator with value 1 if AMOUNT OF NONECONOMIC DAMAGE AWARD is positive, 0 otherwise.
ECONOMIC DAMAGE PAYMENT	The total amount of economic damage payments by all defendants, if the case is resolved in pre-suit, post-suit and pre-verdict, or post-verdict settlement; It equals the amount of economic damage awards if the case is terminated at court verdict.
ECONOMIC DAMAGE AWARD	Court award on the amount of economic damages for cases resolved at court-verdict, settled after verdict or appeal filed.
EMPLOYED	Indicator with value 1 if the victim is employed outside of the home; 0 if the victim is unemployed or self-employed
AGE GROUP	Categorical variable indicating the age group to which the plaintiff belong. These age groups are children (age 0 - 18 years), adult non-elderly (age 19-64 years) and elderly (age 65+).
DISPOSITION	Categorical variable indicating the legal stage at which a claim is terminated. The stages are pre-suit settlement, post-suit and pre-verdict settlement, and full trial;
DEFENDANT TYPE	Categorical variable indicating the type of defendant. The types are physicians and surgeons, hospital, nursing home, and other defendants;
INJURY TYPE	Categorical variable indicating the type(s) of injury associated with the claim. The injury types are fatalities, nonfatal serious injuries (brain damage, spinal cord injury, and amputation) and nonfatal other injuries (injuries that are not fatal, brain damage, spinal cord injury, or amputation).

[30]The definition of noneconomic damages is from Texas Statutes Civil Practice & Remedies Code, Chapter 41: Damages, Section 41.001(12). Pre-suit settlement corresponds to "alternative dispute resolution: no suit" and "no suit filed" in the TDI data set; post-suit and pre-verdict settlement corresponds to "alternative dispute

Table 2. Descriptive Statistics: Overall distribution of noneconomic damage payment in medical malpractice claims with indemnity payments > $250,000 (nominal)[a]

	All Med Mal Claims with Bodily Injury Payments > $ 250,000 (nominal)				Med Mal Claims with Positive Noneconomic Damages Payment			
Type of Injury	Fraction of Cases with Noneconomic Damage payment	Mean Noneconomic Damages Payment	Fraction of Payment for Noneconomic Damages	Observations	Mean Noneconomic Damages Payment	Median Noneconomic Damages Payment	Fraction of Payment for Noneconomic Damages	Observations
Death	0.32	109,615	0.21	6,682	340,255	195,000	0.65	2,152
Amputation	0.33	105,527	0.19	469	319,303	120,000	0.58	155
Burns (heat)	0.44	81,670	0.28	177	187,734	53,000	0.65	77
Burns (chemical)	0.34	60,687	0.21	76	177,393	66,141	0.62	26
Systemic poisoning (toxic)	0.54	109,242	0.39	48	201,678	74,250	0.72	26
Systemic poisoning (other)	0.47	110,980	0.31	83	236,188	135,900	0.65	39
Eye injury (blindness)	0.34	85,989	0.22	509	251,009	144,000	0.63	173
Respiratory condition	0.35	76,979	0.21	212	217,593	150,000	0.59	75
Nervous condition	0.41	100,326	0.24	145	242,455	90,500	0.57	60
Hearing loss or impairment	0.33	204,496	0.21	104	625,516	146,918	0.65	34
Circulatory condition	0.37	85,284	0.21	279	228,790	100,000	0.57	104
Multiple injuries	0.32	42,604	0.18	566	133,730	60,000	0.56	180
Back injury	0.25	43,925	0.12	458	174,553	54,000	0.50	115
Skin disorder	0.36	71,737	0.21	251	19,708	90,000	0.58	91
Brain damage	0.34	328,815	0.17	1,756	97,644	405,000	0.51	591
Scarring	0.40	6,528	0.24	454	163,357	68,000	0.61	181
Spinal cord injuries	0.29	191,622	0.14	448	670,675	235,710	0.50	128
Other	0.32	67,351	0.20	7,648	207,878	75,000	0.61	2,475
All injury types	0.33	107,187	0.20	18,834	327,241	120,000	0.61	6,169

Source: Author's calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988-2008 for medical malpractice claims with indemnity payments of at least $25,000 in nominal value.

a. All dollar values are in 2008 $. Duplicate reports relating to the same incident in the same year are exclude; duplicate reports filed in different years are not identified and eliminated.

resolution: with suit", "suit filed, settled before trial" and "during trial, before court verdict" in the TDI data set; full trial corresponds to "court verdict", "settlement reached after verdict" and "settlement after appeal filed".

is noteworthy that the noneconomic portion of payments for catastrophic permanent injuries, such as amputation (19%), brain damages (17%) and spinal cord injuries (14%), are lower than those for some of the minor temporary injuries, such as skin disorder (21%).

It should be noted that my calculation of the noneconomic damage portion of payment is inconsistent with the estimates of Hersch *et al.* (2007) and Black *et al.* (2009) based on the TDI data.[31] The source of the inconsistency is that insurers allocate noneconomic damages for only about 35 percent of settled cases. I use, as Hersch *et al.* (2007) and Black *et al.* (2009) do, the insurers' allocation where it is provided. Where it is not, instead of accepting the insurers' allocation, Hersch *et al.* (2007) and Black *et al.* (2009) impute the noneconomic damages. In contrast, I accept the insurers' allocation and provide evidence that the absence of noneconomic damages is systematically related to the characteristics of the case (see Section 5).

These figures regarding the role of noneconomic damages may understate the importance of these concerns in the cases in which they arise. The statistics in the final columns of Table 2 address the noneconomic damages contribution excluding cases where noneconomic damage payments are zero, and the noneconomic portion of damage payment increases by more than 35 percent in most cases. The mean values of noneconomic damage payment now exceed $\$600,000$ in two cases – hearing loss or impairment and spinal cord injuries. In 2008 dollars these noneconomic damages amounts exceed $\$300,000$ as an average for the injury category. The levels of payment for hearing loss or impairment and spinal cord injuries should be regarded as very extreme outliers rather than the norm. In 13 out the 18 injury categories in which there is a positive payment for noneconomic damages, the level of such payment is below $\$250,000$. One may conclude therefore, based on the levels of payments observed, that noneconomic damage amounts are large in absolute terms and salient differences exist across injury categories.

A rather different perspective is provided by the statistics in the second-last column of Table 2, however. For cases in which there are positive noneconomic damage payments, the average share of compensation for noneconomic losses is about 50 percent for most of the injuries. These statistics are noteworthy for two reasons. First, the contribution of noneconomic damages to total indemnity payment is markedly high. Noneconomic damages are not a minor addendum but are an eminent component of compensation in cases where the noneconomic damage amounts are positive. Second, there is a dense clustering of the noneconomic damage share, which ranges from 0.57 to 0.65 for thirteen of the eighteen injury categories. These observations are roughly consistent with a situation in which indemnity payments are simply increased by 2.5 times in situations in which noneconomic damages are of consequence. There is no obvious legal or economic justification for scaling up payments by such a coarse rule of thumb. The analysis in the following sections investigates whether the implications of these descriptive statistics reflect

[31] Black *et al.* (2009) estimate that noneconomic damages comprise 52 percent of total damages in settled cases. Hersch *et al.* (2007) impute percentages of noneconomic damages ranging from 64 percent to 85 percent of total damages. For a debate regarding the estimation of noneconomic damage ratios, see Black *et al.* (2010) and Hersch *et al.* (2010).

the way that noneconomic damages are determined. In particular, in addition to economic losses what other factors may help to account for the variations in noneconomic damage payments?

Column 6 of Table 2 reports the median values of noneconomic damage payment for cases with positive noneconomic damages compensation. Because of the skewed distribution of the payment, for most of the injury categories the median values are below the means. For example, for all injury categories the median noneconomic damage payment is $ 120,000 as compared to the mean value of $ 327,241.

As a final note on this descriptive statistics analysis, there aren't many systemic poisoning (toxic) and systemic poisoning (toxic) cases. Conclusion about the magnitude and percentage role of noneconomic damages in these cases may be best drawn with caution. The same goes for burns (chemical) and hearing loss/impairment. It should be noted also that a high percentage of cases fall into the "other" category – 7,648 of the 18,834 cases reported in Table 2 – for which the nature of injury is unknown.

Explanatory Variables. Three sets of explanatory variables are employed in the analysis to account for possible variations in the factors that might affect the incidence and magnitude of noneconomic damages. A first set of variables captures the economic characteristics of the claim. The economic losses paid for the victim's medical expenses and lost earnings, ECONOMIC DAMAGE PAYMENT, provides a case-specific measure of the severity of injury. Obviously, more severe injuries are associated with higher medical expenses and lost working hours.[32] ECONOMIC DAMAGE PAYMENT has relatively high explanatory power in predicting the noneconomic damage payments. A regression of AMOUNT OF NONECONOMIC DAMAGE PAYMENT on ECONOMIC DAMAGE PAYMENT yields a coefficient of 0.85 (t-value = 53.37), demonstrating that on average, noneconomic losses track economic losses closely. Furthermore, the pseudo R-squared in this equation is 0.013, showing that there is a large proportion of variation across cases in the level of noneconomic damages for any given economic damages amount. Several studies have shown positive correlation between noneconomic and economic losses, which include loss of income and sometimes property damages (see, e.g., Viscusi 1988, Rodgers 1993, Croley and Hanson 1995, Avraham 2005, Hyman *et al.* 2007, 2009).

The next variable, EMPLOYED, indicates whether the victim is employed outside of the home. Employment status is often an important determinant of the incidence and level of noneconomic damages in juror's decision making. As employment income forms the basis for calculating most economic damage payments, noneconomic loss becomes an important element of compensation for people who do not work outside the home, like retired seniors, children, and homemakers. The victims are employed in 40% of the cases in my sample.

A second set of variables pertains to the disposition of the case – whether the claim was settled before filing of lawsuit, settled after filing of lawsuit but before reaching a verdict, or we-

[32] Viscusi (1988) and Rodgers (1993) made similar remarks that claims involving large economic losses are likely to be particularly severe injuries.

Table 3. Descriptive Statistics

	Mean	Std. Dev.
Economic Variables		
ECONOMIC DAMAGE PAYMENT ($)	57,728	350,983
EMPLOYED (1=yes)	0.40	0.49
	N	%
Disposition		
Pre-suit settlement	1,459	7.75
Post-suit & pre-judgment settlement	16,888	89.67
Full trial	487	2.59
Age Group		
Children	2,980	15.82
Adult non elderly	8,849	46.98
Elderly	7,005	37.19
Defendant Type		
Physicians and surgeons	14,044	74.57
Hospital	3,030	16.09
Nursing home	972	5.16
Other defendants	788	4.18
Injury Type		
Fatalities	6,602	35.05
Nonfatal Serious Injuries	2,637	14.00
Other Nonfatal Injuries	9,595	50.95
Observations	18,834	

a. all dollar values are in 2008$. The source for these values is author's calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988-2008 for claims with indemnity payments of at least $25,000 in nominal value. Duplicate reports relating to the same incident in the same year are excluded; duplicate reports filed in different years are not identified and eliminated.

nt through full trial. Danzon and Lillard (1983), Viscusi (1986) and Huang *et al.* (2009) provide evidence, based on independent data sources, that cases that proceed to verdict are not simply more severe injuries. They differ in character from settled cases as well. Using data on medical malpractice claims with payouts of at least $1,000,000, Vidmar *et al.* (2006) found statistically significant differences in the severity of injury, the level of damage payments, and the type of defendant between pre-suit and post-verdict settlements. In my med mal sample, Claims with suit filed but settled prior to a verdict make up the overwhelming majority (89.67%) of cases. It is noteworthy that 7.75 percent settlements involve payments of at least $25,000 dollars were made closed without a lawsuit being filed.

A third set of variables captures the individual characteristics of the case. I include a categorical variable, AGE GROUP, to control for the potential effect of victim's age that may be associated with both damage payment and the included variables of interest. I chose the

subsamples based on the characteristics that are likely to predict differences in the incidence and magnitude of noneconomic damages across victims' ages, while requiring the number of observations in each age category to be sufficiently large.[33]

The probability and size of noneconomic damage payment may also hinge on whether the defendant is an organization or an individual. There is a wide-spread perception that America's tort system is biased against so-called "deep-pocket" defendants – defendants such as organizations with extensive financial resources. This is reflected in the results of Chin and Peterson (1985), where Cook County juries are found to award significantly more money in cases with organizational defendants than in cases with individual defendants. DEFENDANT TYPE is a categorical variable indicating whether the defendant is a hospital, a nursing home, a physician or a surgeon, or of other types. The variable is included to control for the potential differences in the noneconomic damage payments collected from different types of defendant.

The final variables to be considered are the types of injury. They are characterized through a series of three injury categories, where the "other nonfatal injuries" group is the one excluded dummy variable.[34] Injury type is intended as a proxy for the severity of injury, on the assumption that injury types and seriousness are correlated. A drawback to this measure might arise if injury types in some cases reflect the presenting symptoms rather than the consequence of malpractice.

4 Empirical Models

Two aspects of noneconomic damage payment – the likelihood that a victim receives noneconomic damages and the amount of noneconomic damage payment – merit further empirical investigation. In particular, I will isolate compensation for particular types of injuries from effects such as differing victim characteristics (e.g., employment status and age) and differences in the size of the economic losses (e.g., earning loss, medical expenses, etc.) associated with different injury categories. Using the same empirical strategy as that in Viscusi (1988a), I estimate two equations for the case sample. The first is for the level of noneconomic damage payment, and the second is for the incidence of noneconomic damage payment. The equations include the same explanatory variables.

Let the estimated value of noneconomic losses be given by

$$[\text{Noneconomic Damages}]_i = \mathbf{x}_i'\beta + \epsilon_i, \tag{1}$$

for each observation i. $\mathbf{x}_i$ is a vector of observed explanatory variables. The parameter vector β is the vector of coefficients, measuring the influence of observed characteristics.

[33] Hyman *et al.* (2009) adopted a similar age classification when estimating the impact of noneconomic damages cap on payouts in tried and settled cases. Black *et al.* (2009) used a similar age classification when estimating the effect of a earlier offer rules on payouts in medical malpractice cases. I obtain similar results with other plausible choices of age categories in the robustness checks.

[34] Hersch *et al.* (2007) adopted the same injury type classification.

The likelihood of receiving noneconomic damage payment is given by

$$\text{Prob[Noneconomic Damages]}_i = \text{Prob}\{[\text{Noneconomic Damages}]_i - \epsilon_i > 0\} \tag{2}$$

where the observed noneconomic damages variable equals 1 if the estimated noneconomic damages are positive and 0 otherwise.

Two statistical issues immediately arise. The first statistical issue involves estimation of the equation for the amount of noneconomic damage payments. Using OLS to analyze the nonzero damage payment responses would yield biased estimates. The problem is that the dependent variable is censored from below, with no observations for it if noneconomic damage payments are not positive. In this case, the relationship defined by equation (1) can be consistently estimated using the Tobit estimator (see Maddala, 1983).

The second statistical issue is that the dependent variable estimated in (2) has a binary nature. Estimating (2) using ordinary least squares (OLS) methods could lead to biased estimates of the coefficients. Assuming that the error term follows a normal distribution, the probit estimator yield unbiased estimates of the probability response and will be used here.

5 Empirical Evidence

Columns 1 and 2 of Table 4 report the regression estimates of the incidence and magnitude of noneconomic damage payments, respectively. Our key interest is on the predictability of these payments. Column 1 of Table 4 reports the probit regression results for the incidence of noneconomic damage payments; Column 2 of Table 4 reports the tobit regression estimates for the log of noneconomic damage payment levels. The level of economic damage payment is also in terms of natural logs so that the coefficients in equation (1) equal the pertinent elasticities.

Columns 1 and 2 of Table 4 show that there are nine variables that affect or are associated with, in a significant way, the incidence of payments for noneconomic harm; and there are seven variables that affect or are associated with, in a significant way, the level of payments. The explanatory variables account for nearly two-third of the variability in the incidence of payments and more than one-quarter of the variability in the level of payments, respectively. One can therefore reject the hypothesis that noneconomic damage payments in medical malpractice cases are entirely random outcomes. These results cast doubt on the validity of the claim that payment for noneconomic harm are random and unpredictable.

The estimates in Table 4 also show that the specific factors that affect noneconomic damages compensation. Consider first the economic variables. Cases with higher economic losses are more likely to receive noneconomic damages, and if they do the amount of such compensation is

Table 4. Estimates of Noneconomic damage equations for Medical Malpractice Claims[a]

	Probit	Tobit
Independent Variable	INCIDENCE OF NONECONOMIC DAMAGE PAYMENT ($N = 18,834$)	Log(1+ AMOUNT OF NONECONOMIC DAMAGE PAYMENT) ($N = 18,834$)
Log(ECONOMIC DAMAGE PAYMENT +1)	0.315^{**}	1.681^{**}
	(0.004)	(0.014)
EMPLOYED	-0.150^{**}	-0.892^{**}
	(0.037)	(0.150)
Pre-suit settlement	0.297^{**}	0.561
	(0.107)	(0.438)
Post-suit & pre-judgment settlement	0.191^{*}	0.114
	(0.095)	(0.388)
Children	0.048	0.117
	(0.051)	(0.209)
Elderly	0.132^{**}	0.428^{**}
	(0.037)	(0.151)
Physicians and surgeons	-0.240^{**}	-1.185^{**}
	(0.074)	(0.295)
Hospital	0.427^{**}	1.578^{**}
	(0.079)	(0.316)
Nursing home	-0.070	-0.060
	(0.095)	(0.389)
Fatalities	0.080^{*}	0.615^{**}
	(0.033)	(0.138)
Nonfatal serious injuries	-0.372^{**}	-1.896^{**}
	(0.055)	(0.205)
Constant	-1.591^{**}	-6.645^{**}
	(0.123)	(0.506)
Pseudo R-Squared	0.6652	0.2661

a. Standard errors are shown in parentheses. Omitted disposition is full trial; Omitted age group is adult non-elderly; Omitted defendant type is other defendants. Omitted injury type is other nonfatal injuries. * significant at 5 percent level; ** significant at 1 percent level.
Source: Author's calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988-2008 for claims with indemnity payments of at least $25,000 in nominal value. Duplicate reports relating to the same incident in the same year are exclude; duplicate reports filed in different years are not identified and eliminated.

higher.

Claims involving large financial losses tend to be particularly severe injuries, and one would expect such injuries to receive more compensation for the nonmonetary losses associated with an injury. Furthermore, because the dependent variables were expressed as natural logarithms, the coefficient in the first model (reported in column 2 of Table 4) for ECONOMIC DAMAGE PAYMENT represents the elasticities of the level of noneconomic damage payments with respect to changes in economic damages. Thus, noneconomic damage payments increase with economic damages, as expected, and the elasticity of that is more than unity. This is plausible – more serious injuries are probably associated with higher levels of medical expenses and lost working

hours and, presumably, greater pain, suffering and loss of enjoyment of life. One caveat to this interpretation is raised by the lack of control for victim's wage: My model cannot determine whether a victim receives higher economic damages compensation because she suffers more severe injury or simply that she was hired at a higher wage rate prior to the injury.

The incidence and magnitude of noneconomic damage payments are significantly higher for unemployed or self-employed victims than for employed ones. This is consistent with the view that noneconomic compensation is more important to those who do not work outside the home, such as the elderly, children, and homemakers. That's because victims who do not work outside their homes cannot collect a lost wages portion of economic damages. The "worth" of a homemaker's work inside the home is not easily measured by a dollar amount, and would only be compensated through noneconomic damages.

The probability of receiving noneconomic damage payments is significantly related to the stage at which the dispute is resolved. Cases litigated to verdict are 35 percent ($\exp\{0.297\}-1 \approx 35\%$) less likely to receive noneconomic damages than cases resolved in pre-suit settlements; and 21 percent ($\exp\{0.191\} - 1 \approx 21\%$) less likely to receive noneconomic damages than cases with suits filed but settled before verdict. These results indicate that the various aspects of the litigation process, such as litigation costs and the chance that the defendant will lose at trial, dampen the defendant' bargaining position *vis-à-vis* the claimant and increase the frequency of noneconomic damage payment in pre-verdict settlements. Earlier stages of disposition are also associated with higher payments. However, the coefficients are not statistically significant at conventional level.

Turning to the effect of AGE GROUP, the omitted category for "adult non elderly" provides the reference point. Thus, the failure of any specific age category to exhibit a positive and significant coefficient does not imply that there is no noneconomic damages compensation for victims of that age category. Rather, it indicates that there is no differential in the compensation when compared with the omitted category. The age category receiving the highest incidence and magnitude of noneconomic damage compensation, controlling for influences such as employment status and economic loss level, is elderly individuals. This is perhaps because elderly people are expected to recover slower and therefore suffer longer from an injury than younger individuals.

The presence of some significant defendant type variables influences is consistent with the "deep pockets" hypothesis (Chin and Peterson 1985), as is the direction of the effects. An injured party are twice ($\exp\{0.427 + 0.240\} \approx 2$) more likely to succeed in claiming damages from a hospital (usually an organization with extensive financial resources) than from a physician or surgeon (an individual with typically less resources than hospitals); and when the injured does succeed, the amount of payments collected from the hospital is nearly 15 times ($\exp\{1.578 + 1.185\} \approx 15$) higher than that from the physician or surgeon.

Noneconomic damages seem to vary with an unexpected pattern with injury types, however. Permanent and catastrophic injuries such as brain damages, spinal cord injuries and amputations

are not the leading injury category receiving the largest noneconomic damages payments. The absence of systematical relationship could be due to some unmeasured difference in the type of cases that involved catastrophic injuries versus non-catastrophic injuries (e.g., differences in the severity of injuries, lawyers' bargaining skills or trial strategies).

6 Noneconomic Damages by Stages of Disposition

6.1 Noneconomic damage payments by stages of disposition

I decompose the med mal sample into three subsamples for each stage of the disposition of the case to investigate which stages are associated with higher damage payments and to account for possible differences in the pattern of damage compensation.

Table 5 summarizes the noneconomic damage payments by stages of disposition. In terms of

Table 5. Descriptive Statistics: Distribution of noneconomic damage payment in medical malpractice claims with indemnity payments > $250,000 (nominal) by stages of disposition[a]

	All Med Mal Claims with Bodily Injury Payments > $ 250,000 (nominal)			
Stage of disposition	Fraction of Cases with Noneconomic Damage Payment	Mean Noneconomic Damages Payment	Fraction of Payment for Noneconomic Damages	N
Pre-suit settlement	0.38	46,599	0.25	1,459
Post-suit & pre-verdict settlement	0.32	107,134	0.20	16,888
Full trial	0.32	290,526	0.21	487
All stages	0.33	107,187	0.20	18,834
	Med Mal Claims with Positive Noneconomic Damages Payment			
Stage of disposition	Mean Noneconomic Damages Payment	Median Noneconomic Damages Payment	Fraction of Payment for Noneconomic Damages	N
Pre-suit settlement	121,625	50,000	0.65	559
Post-suit & pre-verdict settlement	331,855	130,000	0.61	5,452
Full trial	895,481	300,410	0.64	559
All stages	327,241	120,000	0.61	6,169

Source: Author's calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988-2008 for medical malpractice claims with indemnity payments of at least $25,000 in nominal value.
a. All dollar values are in 2008 $. Duplicate reports relating to the same incident in the same year are exclude; duplicate reports filed in different years are not identified and eliminated.

the fraction with noneconomic damages and the percentage role of noneconomic damages, pre-suit settlement represents the leading category. But post-suit and pre-verdict settlement and full trial are not far behind. In terms of absolute dollar amounts, full trial represents by far the most extreme outlier.

Because post-suit and pre-verdict settlements represent nearly 90 percent of the cases in the med mal sample reported in Table 4, the regression results (Table 6) for this subsample are consistent with those described earlier. The results for pre-suit settlements and full trial are similar to the earlier findings, but the overall results are much weaker due to sample size limitations. The economic loss variable has a significant positive effect across all six regressions. For cases went through full trial fatalities display a significantly negative effect on the probability of receiving noneconomic damages and on their level, whereas in earlier stages of disposition fatalities have a positive effect.

6.2 Court awards

Various aspects of the litigation process, such as trial and appeal costs, litigants' risk aversion, and asymmetric information about trial and appeal outcomes, influence the plaintiff's bargaining position *vis-à-vis* the defendant in pretrial and post-verdict negotiations and induce the settlement amount (pretrial or post-verdict) to deviate from the court award.[35] In this section, I investigate the pattern of variation in court awards for cases taken to verdict and assess the extent to which the determinants of awards are similar to those of actual payments in the med mal sample.

Table 7 reports the distribution of noneconomic damage awards for the mix of cases that went through full trial. Together with the statistics in Table 2, the data suggest that noneconomic damage awards are, on average, considerable higher than the actual payments. For all injury categories the mean noneconomic damages awards is $984,370, as compared to the mean payout of $107,187. The third column of statistics in Table 7 shows that for all injury categories noneconomic damages awards comprise 43 percent of total damage awards in plaintiff verdict cases, as compared to the mean fraction of payment of 20 percent. The differences between the median awards and the median payments are similar to those between the means.

Tables 8 reports regression results. The explanatory variables are the same as before except that the economic and noneconomic damages variables are awards rather than payouts. The regression results are similar to the earlier findings in that the economic damages variable and elderly age are consequential. But the other coefficients are not statistically significant, in part because of the dramatically reduced sample size (487). As a final note on this regression, the

[35] See supra note 9. Other factors that bring about gaps between court award and post-verdict payout may include high-low agreements, damage caps, insurance policy limits and remittitur. See Hyman *et al.* (2007) for an empirical analysis on the influences of some of these factors. See Spier *et al.* (2009) for a description of high-low agreements and theoretical analysis of its effect on the difference between court award and post-verdict payout.

Table 6. Estimates of noneconomic damage payment equations for medical malpractice claims by stages of disposition[a]

	Pre-suit Settlement ($N = 1,459$)		Post-suit & Pre-verdict Settlement ($N = 16,888$)		Full Trial ($N = 487$)	
Variable	INCIDENCE OF NONECONOMIC DAMAGE PAYMENT	Log(AMOUNT OF NONECONOMIC DAMAGE PAYMENT+1)	INCIDENCE OF NONECONOMIC DAMAGE PAYMENT	Log(AMOUNT OF NONECONOMIC DAMAGE PAYMENT + 1)	INCIDENCE OF NONECONOMIC DAMAGE PAYMENT	Log(AMOUNT OF NONECONOMIC DAMAGE PAYMENT + 1)
Log(ECONOMIC DAMAGE PAYMENT +1)	0.347^{**}	1.575^{**}	0.320^{**}	1.687^{**}	0.209^{**}	1.688^{**}
	(0.015)	(0.047)	(0.004)	(0.015)	(0.014)	(0.113)
EMPLOYED	0.017	−0.150	-0.170^{**}	-0.953^{**}	−0.169	−1.499
	(0.131)	(0.480)	(0.040)	(0.158)	(0.185)	(1.289)
Children	0.227	0.575	0.032	0.050	0.049	0.519
	(0.192)	(0.729)	(0.054)	(0.218)	(0.264)	(1.800)
Elderly	0.474^{**}	1.756^{**}	0.099^{*}	0.260	0.231	1.556
	(0.129)	(0.483)	(0.039)	(0.159)	(0.185)	(1.283)
Physicians and surgeons	−0.230	−1.170	-0.244^{**}	-1.207^{**}	−0.338	−1.261
	(0.254)	(0.930)	(0.079)	(0.310)	(0.467)	(2.854)
Hospital	0.332	1.141	0.458^{**}	1.608^{**}	−0.102	0.584
	(0.255)	(0.942)	(0.084)	(0.334)	(0.496)	(3.039)
Nursing home	−0.247	−0.920	−0.067	−0.004	−0.051	0.462
	(0.302)	(1.129)	(0.102)	(0.412)	(0.591)	(3.852)
Fatalities	0.049	0.298	0.106^{**}	0.717^{**}	-0.399^{*}	$-2.466^{\dagger}$
	(0.128)	(0.486)	(0.035)	(0.144)	(0.187)	(1.312)
Nonfatal serious injuries	-0.593^{*}	-2.345^{*}	-0.360^{**}	-1.845^{**}	−0.234	−2.211
	(0.295)	(1.009)	(0.057)	(0.211)	(0.252)	(1.632)
Constant	-1.519^{**}	-5.834^{**}	-1.403^{**}	-6.458^{**}	$-0.930^{\dagger}$	-7.803^{*}
	(0.267)	(1.017)	(0.084)	(0.354)	(0.489)	(3.131)
Pseudo R-Squared	0.6493	0.2394	0.6752	0.2721	0.4853	0.1866

a. Standard errors are shown in parentheses. Omitted age group is adult non-elderly; Omitted defendant type is other defendants. Omitted injury type is other non-fatal injuries. † significant at 10 percent level; * significant at 5 percent level; ** significant at 1 percent level.

Source: Author's calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988-2008 for medical malpractice claims with indemnity payments of at least $25,000 in nominal value. Duplicate reports relating to the same incident in the same year are exclude; duplicate reports filed in different years are not identified and eliminated.

Table 7. Descriptive Statistics: Overall distribution of noneconomic damages awards in medical malpractice cases went through full trial[a]

	All Court-Adjudicated Cases with Bodily Injury Payments > $ 250,000 (nominal)				Court-Adjudicated Cases with Positive Noneconomic Damages Awards			
Type of Injury	Fraction of Cases with Noneconomic Damages Awards	Mean Noneconomic Damages Awards	Fraction of Payment for Noneconomic Damages	Observations	Mean Noneconomic Damages Awards	Median Noneconomic Damages Awards	Fraction of Payment for Noneconomic Damages	Observations
Death	0.84	1,200,683	0.51	126	1,427,228	621,214	0.61	106
Amputation	0.83	3,051,703	0.49	12	3,662,044	894,614	0.59	10
Burns (heat)	0.56	109,055	0.36	9	196,300	185,000	0.65	5
Burns (chemical)	0.83	170,376	0.42	6	204,452	132,290	0.51	5
Systemic poisoning (toxic)	-	-	-	0	-	-	-	0
Systemic poisoning (other)	1.00	4,961	0.07	1	4,961	4,961	0.07	1
Eye injury (blindness)	0.95	596,762	0.54	19	629,916	564,990	0.57	18
Respiratory condition	0.75	562,280	0.21	4	749,707	352,959	0.29	3
Nervous condition	0.80	1,474,385	0.59	5	1,842,981	674,791	0.74	4
Hearing loss or impairment	1.00	2,990,389	0.38	6	2,990,389	3,511,897	0.38	6
Circulatory condition	0.78	393,151	0.45	9	505,480	488,372	0.57	7
Multiple injuries	0.86	263,088	0.45	14	306,936	123,195	0.53	12
Back injury	0.83	490,164	0.32	18	588,197	161,072	0.38	15
Skin disorder	0.40	114,072	0.25	5	285,180	285,180	0.63	2
Brain damage	0.83	2,014,420	0.24	47	2,427,635	1,708,751	0.29	39
Scarring	0.87	609,932	0.46	23	701,422	178,244	0.53	20
Spinal cord injuries	0.90	992,124	0.29	10	1,102,360	508,216	0.32	9
Other	0.80	830,732	0.42	194	1,033,090	286,784	0.52	156
All injury types	0.82	984,370	0.43	487	1,206,994	390,257	0.53	367

a. All dollar values are in 2008$. Duplicate reports relating to the same incident in the same year are exclude; duplicate reports filed in different years are not identified and eliminated. -: no cases in this cell

Source: Author's calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988-2008 for claims with indemnity payments of at least $25,000 in nominal value. Duplicate reports relating to the same incident in the same year are exclude; duplicate reports filed in different years are not identified and eliminated.

Table 8. Estimates of noneconomic damages awards equations for med mal cases went through full trial[a]

	Probit	Tobit
Independent Variable	INCIDENCE OF NONECONOMIC DAMAGE AWARD ($N = 487$)	Log(1+ AMOUNT OF NONECONOMIC DAMAGE AWARD) ($N = 487$)
Log(ECONOMIC DAMAGE AWARD +1)	0.072**	0.449**
	(0.012)	(0.064)
EMPLOYED	−0.117	−0.902
	(0.155)	(0.776)
Children	−0.199	−1.049
	(0.213)	(1.109)
Elderly	0.318*	1.628*
	(0.158)	(0.774)
Physicians and surgeons	−0.291	−0.432
	(0.408)	(1.835)
Hospital	−0.379	−0.876
	(0.433)	(1.973)
Nursing home	0.718	1.837
	(0.646)	(2.414)
Fatalities	0.041	0.672
	(0.153)	(0.763)
Nonfatal serious injuries	0.030	0.719
	(0.209)	(1.007)
Constant	0.331	5.017*
	(0.429)	(1.986)
Pseudo R-Squared	0.0899	0.0213

a. Standard errors are shown in parentheses. Omitted age group is adult non-elderly; Omitted defendant type is other defendants. Omitted injury type is non-fatal serious injuries. * significant at 5 percent level; ** significant at 1 percent level.
Source: Author's calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988-2008 for court-adjudicated medical malpractice claims with indemnity payments of at least $25,000 in nominal value. Duplicate reports relating to the same incident in the same year are exclude; duplicate reports filed in different years are not identified and eliminated.

Log(ECONOMIC DAMAGE AWARD +1) coefficient in the noneconomic damage awards level equation is only 0.45 so that the elasticity of noneconomic damage award with economic damage award levels is less than one. This is at odds with the earlier results where payment for noneconomic losses increases more than proportionally with payment for economic losses (Tables 4 and 6). To the extent that economic damage award reflects the severity of injury, this result might suggest that courts tend to under-compensate victims with more severe injuries for their noneconomic harm.

7 Compensation for Different Types of Insurance Claims

The context in which an injury occurs may influence the emotional distress that a victim experiences and therefore the compensation that she commands and receives. For instance, being

injured in a special relationship (e.g., doctor-patient) might bring about more pain and suffering than being injured by a stranger (e.g., a pedestrian being injured by a driver).[36] In this section, I briefly describe the exercises that I conducted to examine the extent to which the determinants of noneconomic damages are similar across different contexts of bodily injury.

The TDI database includes closed claim reports for bodily injury covered by five lines of commercial insurance: Besides medical malpractice liability, general liability, auto liability, multiperil, and other professional liability are also reported. For the non-medical malpractice cases, I rely on the insurance type to identify the type of claim, except that (i) I remove any medical malpractice cases; and (ii) following Black *et al.* (2008), I treat cases that are paid under medical professional liability insurance but are not medical malpractice cases (e.g., cases against dentists and oral surgeons) as "other professional liability" cases. Furthermore, in a similar way as in the case of medical malpractice claims I restrict to "Long Form" reports and eliminate duplicate reports of the same year.[37] Because of these restrictions, the resulting sample of 97,447 claims contains 25,722 general liability claims, 53,380 auto liability claims, 16,473 multiperil liability claims and 1,872 other professional liability claims. I refer to the sample of 97,447 non-medical malpractice claims and 18,834 medical malpractice claims as my *all areas* sample.

Table 9 provides summary statistics for each area. For claims for which there was an indemnity payment of at least $25,000 but not necessarily a noneconomic damage component, general liability represents the leading category in terms of the fraction with noneconomic damage payments and percentage role of noneconomic damage payments. Medical malpractice and auto liability are not far behind in terms of the share of the payments comprised by noneconomic damages. In terms of absolute dollar amounts, medical malpractice represents by far the most extreme outlier.

The statistics in the final columns of Table 9 present the noneconomic damages contribution excluding cases where noneconomic damage payments are zero. Medical malpractice received nearly double the mean level of noneconomic damages received by product liability and more than double the mean levels of noneconomic damages received by the other insurance categories. Results for median noneconomic damages are similar. One may conclude therefore, based on the magnitudes of payments observed, that noneconomic damages for medical malpractice are much larger, in absolute terms, than for non-medical malpractice claims.

However, a quite different perspective is offered by the statistics in the second-last column of Table 9. With an average share of noneconomic damages of 61 percent, medical malpractice continues to represent the leading claim type in situations in which noneconomic damage payments are positive. The other areas are not far behind, however, as for the non-medical malpractice cases noneconomic damages comprise from 55 to 57 percent of all payments in situations in which there is positive noneconomic damage compensation. One may conclude therefore, based

[36] Avraham (2006) makes a similar argument.

[37] Black *et al.* (2008) estimated that for non-medical malpractice claims only 2% of the reports are duplicates.

Table 9. Descriptive Statistics: Overall distribution of noneconomic damage payment in claims with indemnity payments > $250,000 (nominal)[a]

	All Claims with Bodily Injury Payments > $ 250,000 (nominal)				Claims with Positive Noneconomic Damages Payment			
Type of Injury	Fraction of Cases with Noneconomic Damage payment	Mean Noneconomic Damages Payment	Fraction of Payment for Noneconomic Damages	Observations	Mean Noneconomic Damages Payment	Median Noneconomic Damages Payment	Fraction of Payment for Noneconomic Damages	Observations
General Liability	0.37	66,648	0.21	25,722	180,720	55,918	0.57	9,486
Auto Liability	0.27	36,095	0.15	53,380	131,959	38,000	0.55	14,601
Multiperil Liability	0.36	57,246	0.20	16,473	160,322	44,097	0.55	5,882
Other Professional Liability	0.29	42,676	0.16	1,872	145,517	43,000	0.56	549
Medical Malpractice	0.33	107,187	0.20	18,834	327,241	120,000	0.61	6,169
All Areas	0.32	57,470	0.18	116,282	182,154	43,000	0.57	36,687

a. All dollar values are in 2008 $.

Source: Author's calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988-2008 for claims with indemnity payments of at least $25,000 in nominal value. Duplicate reports relating to the same incident in the same year are exclude; duplicate reports filed in different years are not identified and eliminated.

on the shares of payments observed, that the percentage role of noneconomic damage payment in medical malpractice claims is similar to that in non-medical malpractice claims.

Tables 10 and 11 report regression results for particular claim type subsamples and for the all areas sample. The explanatory variables are the same as before except for the absence of defendant types.

The regression results show a marked similarity in predictability of noneconomic damage payments across the different claim types: The explanatory variables account for 63 to 88 percent of the variability in the probability of receiving noneconomic damage compensation and 25 to 49 percent of the variability in its level, respectively.

The estimates in Tables 10 and 11 also illuminate the specific factors that influence noneconomic damage compensation. The effects of the individual factors are roughly consistent with the findings in medical malpractice cases. But for multiperil liability and other professional liability claims fewer coefficients are statistically significant, in part because of the smaller sample sizes. The two most consistently influential variables are ECONOMIC DAMAGE PAYMENT and EMPLOYED where higher incidence and magnitude of noneconomic damages are significantly associated with higher economic damages and unemployment across all the liability types. The primary variables of interest are the stages of case disposition. Similar to the case for medical malpractice, for auto liability, multiperil and, other professional liability higher incidence and magnitude of noneconomic damages are related to earlier stages of dispute resolution. The exception is for general liability where cases resolved in pre-suit settlements received less noneconomic damages than cases went through full trial. However, the coefficient is not statistically significant at conventional level.

Consistent with the findings for medical malpractice, for product liability claims the age group with the highest incidence and magnitude of noneconomic damages, controlling for the effects of other factors, is elderly individuals. In contrast, in other non-medical malpractice cases children are more likely to receive noneconomic damages than non-elderly adults and elderly individuals, and if they do the level of such compensation is higher.

The final columns of Tables 10 and 11 show that the incidence and magnitude of noneconomic damages are higher in general liability cases and lower in auto liability, multiperil liability and other professional liability cases as compared to medical malpractice cases.

8 Measures of The Efficiency of Noneconomic Loss Compensation

Parties to a legal dispute generally gain by devoting resources toward proof of damages, leading often to socially inefficient private incentives to establish damages. It is the aim of this section to assess the efficiency in damage compensation for cases involve noneconomic losses.

Table 10. Regression Results Explaining the Incidences of Noneconomic Damage Payment for General Liability, Auto Liability, Multiperil, Other Professional Liability Claims and All Areas[a]

	INCIDENCE OF NONECONOMIC DAMAGE PAYMENT (*Probit*)				
	General Liability ($N = 25,722$)	Auto Liability ($N = 53,380$)	Multiperil Liability ($N = 16,473$)	Other Professional Liability ($N = 1,872$)	All Areas ($N = 116,281$)
Log(ECONOMIC DAMAGE PAYMENT +1)	0.331**	0.449**	0.395**	0.376**	0.380**
	(0.003)	(0.003)	(0.005)	(0.014)	(0.002)
EMPLOYED	−0.416**	−0.256**	−0.305**	−0.013	−0.299**
	(0.031)	(0.035)	(0.052)	(0.128)	(0.017)
Pre-suit settlement	0.115	1.081**	0.238	0.569	0.471**
	(0.103)	(0.111)	(0.148)	(0.385)	(0.056)
Post-suit & pre-judgment settlement	0.750**	0.951**	0.294*	0.649†	0.595**
	(0.098)	(0.109)	(0.143)	(0.360)	(0.055)
Children	−0.263**	0.349**	0.090	0.383†	0.023
	(0.055)	(0.058)	(0.074)	(0.201)	(0.028)
Elderly	0.273**	−0.068†	−0.056	−0.026	0.137**
	(0.031)	(0.039)	(0.057)	(0.136)	(0.018)
Fatalities	−0.553**	0.519**	0.068	0.171	−0.033
	(0.044)	(0.047)	(0.065)	(0.143)	(0.021)
Nonfatal serious injuries	−0.624**	−0.320**	−0.230*	−0.650	−0.480**
	(0.063)	(0.088)	(0.100)	(0.397)	(0.035)
General Liability					0.230**
					(0.022)
Auto Liability					−0.429**
					(0.023)
Multiperil Liability					−0.308**
					(0.027)
Other Professional Liability					−0.171**
					(0.057)
Constant	−1.737**	−3.316**	−2.140**	−2.438**	−2.060**
	(0.101)	(0.115)	(0.149)	(0.367)	(0.058)
Pseudo R-Squared	0.6389	0.8888	0.8308	0.7455	0.7678

a. Standard errors are shown in parentheses. Omitted disposition is full trial; Omitted age group is adult non elderly; Omitted injury type is other nonfatal injuries; Omitted insurance category for the regression in the last column is medical malpractice. †significant at 10 percent level; * significant at 5 percent level; ** significant at 1 percent level.

Source: Author's calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988-2008 for claims with indemnity payments of at least $25,000 in nominal value. Duplicate reports relating to the same incident in the same year are exclude; duplicate reports filed in different years are not identified and eliminated.

Table 11. Regression Results Explaining the Levels of Noneconomic Damage Payment for General Liability, Auto Liability, Multiperil, Other Professional Liability Claims and All Areas[a]

	Log(1+ AMOUNT OF NONECONOMIC DAMAGE PAYMENT) (*Tobit*)				
	General Liability ($N = 25,722$)	Auto Liability ($N = 53,380$)	Multiperil Liability ($N = 16,473$)	Other Professional Liability ($N = 1,872$)	All Areas ($N = 116,281$)
Log(ECONOMIC DAMAGE PAYMENT +1 +1)	1.617**	1.581**	1.570**	1.745**	1.662**
	(0.011)	(0.006)	(0.011)	(0.045)	(0.005)
EMPLOYED	−2.092**	−0.644**	−0.836**	−0.295	−1.158**
	(0.122)	(0.048)	(0.095)	(0.403)	(0.046)
Pre-suit settlement	−0.202	1.419**	0.233	1.026	0.817**
	(0.373)	(0.174)	(0.279)	(1.192)	(0.148)
Post-suit & pre-judgment settlement	2.439**	1.154**	0.342	1.501	1.204**
	(0.351)	(0.172)	(0.268)	(1.102)	(0.143)
Children	−0.881**	0.780**	0.752**	1.234†	0.252**
	(0.212)	(0.085)	(0.139)	(0.647)	(0.076)
Elderly	1.515**	−0.281**	−0.291**	−0.294	0.407**
	(0.126)	(0.053)	(0.106)	(0.440)	(0.049)
Fatalities	−1.646**	1.549**	0.884**	0.857†	0.371**
	(0.158)	(0.070)	(0.122)	(0.469)	(0.059)
Nonfatal serious injuries	−2.166**	−0.578**	−0.669**	−2.526**	−1.562**
	(0.201)	(0.104)	(0.157)	(0.955)	(0.083)
General Liability					0.840**
					(0.063)
Auto Liability					−1.028**
					(0.061)
Multiperil Liability					−0.636**
					(0.071)
Other Professional Liability					−0.295†
					(0.161)
Constant	−6.718**	−6.516**	−5.442**	−8.417**	−6.720**
	(0.374)	(0.185)	(0.291)	(1.185)	(0.159)
Pseudo R-Squared	0.2457	0.4902	0.4078	0.3337	0.3405

a. Standard errors are shown in parentheses. Omitted disposition is full trial; Omitted age group is adult non elderly; Omitted injury type is other nonfatal injuries; Omitted insurance category for the regression in the last column is medical malpractice. †significant at 10 percent level; * significant at 5 percent level; ** significant at 1 percent level.

Source: Author's calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988-2008 for claims with indemnity payments of at least $25,000 in nominal value. Duplicate reports relating to the same incident in the same year are exclude; duplicate reports filed in different years are not identified and eliminated.

For the sample of 18,834 medical malpractice claims in the TDI database, there is information on whether the plaintiff retained an attorney as well as on the defendant's legal costs. With reasonable assumptions it is possible to calculate the role of legal costs relative to the net payment amount received by claimants. Analysis of all claims, not simply those in which a suit was filed, might lead to a lower estimate of the magnitude of transactions costs. For purposes of these calculations, I assume that for plaintiffs who retained an attorney the plaintiff's legal costs are one-third of the total damage payment she receives, which is consistent with available empirical evidence.[38] 98% of plaintiffs in the med mal sample retained an attorney. For plaintiffs who did not retain an attorney I assume that the plaintiff's legal costs are zero. These cost estimates might understate the actual costs as they do not include and out-of-pocket expenses and the value of plaintiff's time.

Let π denote the level of *insurer payment*. Let c^p (resp. c^d) denote the *legal costs* incurred by the plaintiff (resp. defendant). The first measure of efficiency is given by the damage payments share of total legal costs:

$$r_1 = \frac{c^p + c^d}{\pi}.$$

This measure adopts the same formulation of rate-of-rent-dissipation which is a measure for intensity of rent-seeking activities that is commonly used in the rent-seeking literature (see, e.g., Tullock 1980).

The second measure of efficiency is given by the damage payments share of defense expenses:

$$r_2 = \frac{c^d}{\pi}.$$

Both share calculations are similar to the formulations used by Kakalik and Pace (1986), Hensler *et al.* (1987), Carroll *et al.* (2005), Hersch and Viscusi (2007) and Black *et al.* (2005), (2008). These authors have used either $c^d/(c^d + \pi)$ or $(c^d + c^p)/(2/3)\pi$ or both as measures of cost efficiency.

Table 12 reports the efficiency measures by different types of injury for medical malpractice claims with noneconomic damage payments. Efficiency measures for claims without noneconomic damage payments are included for comparison. The legal costs per net damage payment amount for all cases with noneconomic damage payments average 0.59 and range from 0.50 to 0.71. That is, on average, for cases involve positive noneconomic damage payments the tort system generates transactions costs more than half of the value of the net payment received by the plaintiff. The injury types with the lowest degree of efficiency are other injuries and spinal cord injuries, for which the values of legal costs average 0.71 and 0.69 relative to the total damage payment to

[38] Hensler *et al.*'s (1987) study of tort litigation costs in Cook County and San Francisco notes that contingency fees were typically one-third of the damage payment. See Hensler *et al.* (1987), pp. 25-26. Hersch and Viscusi (2007) make the same assumption about the plaintiff's legal costs when measuring the efficiency of tort liability litigation.

Table 12. Efficiency in Noneconomic Damages Payment by Type of Injury[a]

	Claims with Positive Noneconomic Damages Payment			Claims with No Noneconomic Damages Payment		
	Total Legal Costs/Payment	Defense Expenses/Payment	Observations	Total Legal Costs/Payment	Defense Expenses/Payment	Observations
Death	0.57	0.24	2,152	0.63	0.30	4,528
Amputation	0.62	0.30	155	0.63	0.30	314
Burns (heat)	0.62	0.31	77	0.66	0.34	100
Burns (chemical)	0.54	0.22	26	0.51	0.24	50
Systemic poisoning (toxic)	0.54	0.21	26	0.79	0.47	22
Systemic poisoning (other)	0.51	0.20	39	0.73	0.39	44
Eye injury (blindness)	0.57	0.25	173	0.57	0.24	332
Respiratory condition	0.58	0.25	75	0.74	0.41	137
Nervous condition	0.66	0.34	60	0.86	0.53	85
Hearing loss or impairment	0.59	0.25	34	0.61	0.28	70
Circulatory condition	0.71	0.38	104	0.72	0.39	175
Multiple injuries	0.58	0.26	180	0.61	0.28	385
Back injury	0.69	0.35	115	0.73	0.41	342
Skin disorder	0.59	0.28	91	0.70	0.38	159
Brain damage	0.52	0.19	591	0.57	0.24	1,164
Scarring	0.62	0.30	181	0.73	0.40	272
Spinal cord injuries	0.50	0.17	128	0.60	0.28	320
Other	0.60	0.28	2,475	0.70	0.37	5,164
All Types	0.60	0.27	5,800	0.68	0.36	11,875

a. For claims in which the plaintiff retained an attorney, total legal costs/payment equal (defendant expenses + (1/3) total damage payments)/(total payments from defendant(s) to plaintiff(s)), defense expenses/payment equal (defendant expenses)/(total payments from defendant(s) to plaintiff(s)). For claims in which no plaintiff lawyer was used, total legal costs/payment equal transaction costs/payment and defense expenses/payment both equal (defendant expenses)/(total payments from defendant(s) to plaintiff(s)).

Source: Author's calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988-2008 for claims with indemnity payments of at least $25,000 in nominal value. Duplicate reports relating to the same incident in the same year are exclude; duplicate reports filed in different years are not identified and eliminated. 1,159 cases are dropped from the med mal sample due to lack of information on the defendants payments to in-house counsel.

plaintiffs, respectively. These values are much higher than fatalities (0.50) and other types of permanent, catastrophic injuries such as amputation (0.51) and brain damages (0.62).

Since only 2 percent of the plaintiffs do not retain a lawyer, the values of the damage payments share of defense expenses are almost identical to subtracting one-third from the damage payments shares of total legal costs.

Finally, the total legal costs for each dollar received by plaintiffs average 0.68 for claims where noneconomic damage is not an element of compensation. The damage payments share of defense costs averages 0.36 for claims where noneconomic damage payments are zero. These ratios are higher than those in the cases in which noneconomic damages arise.

9 Conclusion

My results provide but a limited test of the rationality of the process by which noneconomic damages are determined. The tort law provides no clear guidelines for the calculation of noneconomic damages. Many of the noneconomic damage cap reforms have been based on a belief that these damage compensations are entirely random. Using Texas Department of Insurance Commercial Liability Insurance Closed Claim data for the 1988-2008 period, I provide evidence that the tort system providing noneconomic damages is far from random. Abstracting from the potential omitted variable bias, my evidence shows a reasonably stable and predictable relationship between the characteristics of the claim and the actual outcome in the great majority of cases that are settled informally out of court. The critiques on noneconomic damages are not supported by the evidence.

In particular, my main finding has been that noneconomic damage payments vary quite systematically with observable characteristics of the case. These characteristics include the amount of economic losses, whether the victim is employed, the age group to which the victim belongs, and the type of defendant. These information are usually available at the initial stage of a damage claim and can be used by the parties and the jury to aid the calculation of noneconomic losses. Moreover, I have shown that the likelihood of noneconomic damage payment is significantly higher in cases resolved in earlier stages of litigation. I also provide evidence that the determinants of noneconomic damages are remarkably similar between medical malpractice and non-medical malpractice claims.

However, this systematic variation does not imply that no reform efforts are needed. For instance, I have shown that the probability and size of noneconomic damage payments are higher from "deep pocket" defendants (e.g., hospitals) than from individual defendants (e.g., physicians and surgeons) while controlling for other characteristics of the case. Because damage payment in out-of-court settlement reflects the court outcome, these results suggest that when awarding noneconomic damages the courts have objectives other than merely making whole the victims for their physical and mental anguish.

Furthermore, I have shown that on average, the total legal costs for each dollar received by plaintiffs are 0.59 for claims where noneconomic damages is an element of compensation. For cases involve noneconomic damage payments, the tort system is more efficient in awarding damages for permanent and catastrophic injuries than for temporary, insignificant injuries. The damage payments share of legal costs is lower for cases receiving noneconomic damages payments than for cases receiving only economic damage payments.

Many important issues have been sidestepped, including the effects of victim's income and gender on the incidence and magnitude of noneconomic damages, and whether compensation with economic damages alone could provide a simple solution to the various problems related to noneconomic damage compensation. It would be interesting, for example, to see whether more objective measures could be developed to reduce the uncertainty and costs associated with noneconomic loss compensation and how policies can be designed to encourage this. Finally, it is needed to point out that the omission of variables reflecting the victim's income, gender and seriousness of injury could well bias estimated coefficients on some of the variables included in the models.

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