ISSN 1045-6333

HARVARD

JOHN M. OLIN CENTER FOR LAW, ECONOMICS, AND BUSINESS

PUNITIVE DAMAGES: HOW JUDGES AND JURIES PERFORM

Joni Hersch
W. Kip Viscusi

Discussion Paper No. 362

05/2002

Harvard Law School
Cambridge, MA 02138

JEL Class: K00, K13, K41

Punitive Damages: How Judges and Juries Perform

Joni Hersch*
and
W. Kip Viscusi**

Abstract

A substantial recent literature has documented the inability of jurors to make sound decisions with respect to punitive damages, particularly for health, safety, and environmental torts. Included in this literature are experimental studies documenting the better performance of judges than jurors for the same case scenarios. Recent research by Eisenberg et al. (2002) has suggested, however, that there is no significant difference between the performance of judges and jurors with respect to punitive damages. Our paper provides a critical assessment of this finding as well as a detailed statistical analysis of the state court data upon which the Eisenberg et al. claim is based.

Our analysis starts with a review of very large punitive damages awards. We found that 98 percent of the large punitive damages awards were made by juries and only two percent by judges. The jury awards in these large cases were highly unpredictable and were weakly correlated with compensatory damages.

We then analyze data from the Civil Justice Survey of State Courts, 1996, which is the data set used by Eisenberg et al. Our analysis of the state court data set contradicts Eisenberg et al.'s analysis. We find that juries are significantly more likely to award punitive damages than are judges; juries award higher levels of punitive damages; and juries are largely responsible for extremely large punitive damages awards. Juries also tend to award higher compensatory damages, which in turn will often boost the punitive damages award. This paper also discusses the reasons why our results contradict the findings by Eisenberg et al.

* Lecturer on Law, Harvard Law School.
** Cogan Professor of Law and Economics, Harvard Law School.

Punitive Damages: How Judges and Juries Perform

Joni Hersch*
and
W. Kip Viscusi**

I. Introduction

Runaway liability costs and highly publicized punitive damages awards led to a call among policy makers and legal scholars for tort reform in the 1980s. Critics of punitive damages argue that juries are unable to understand the complex legal issues and use large punitive damages awards to penalize corporations as an emotional response rather than as a reasoned response to the actual damages incurred. If so, judges with their legal training and greater experience would make better decisions. Punitive damages caps likewise would serve to impose discipline on jury behavior. In response to such concerns, most states enacted some form of tort reform that often limited the permissible amount of punitive damages.

Notwithstanding these changes in the legal landscape, punitive damages awards continue to have substantial prominence. Among the most noteworthy recent awards have been multi-billion dollar verdicts against large corporations. A 1999 Los Angeles County jury awarded $4.8 billion in punitive damages against General Motors to a group

* Lecturer on Law, Harvard Law School, 1575 Massachusetts Avenue, Lewis 425, Cambridge, MA, 02138. Phone: (617) 495-2832, E-mail: jhersch@law.harvard.edu.
** Cogan Professor of Law and Economics, Harvard Law School, 1575 Massachusetts Avenue, Hauser 302, Cambridge, MA, 02138. Phone: (617) 496-0019; E-mail: kip@law.harvard.edu. Professor Viscusi's research is supported by the Harvard Olin Center for Law, Business, and Economics, the Sheldon Seevak Research Fund, and a grant to the author from the Exxon Corporation.

DeYett Law, Jonathan Patchen, and Brian Himot provided excellent research assistance.

of six burn victims whose Chevrolet Malibu was rear ended, causing it to catch fire.[1] In the 2000 Florida class action case involving the tobacco industry, the Dade County Florida jury awarded $145 billion in punitive damages.[2]

Casual observation suggests that judges may exhibit more restraint than juries in awarding punitive damages. Very large punitive damages awards are typically reduced on appeal.[3] Indeed, defenders of punitive damages often note that the appeals process greatly diminishes the influence of awards that may be regarded as outliers.

Experimental research documents the comparatively better and more restrained performance of judges than jurors when confronting the same experimental case scenario. These studies establish controlled experimental conditions in which respondents consider one or more hypothetical court cases.[4] By systematically varying aspects of the cases across different respondent groups it is possible to distinguish how the characteristics of the case affect punitive damages awards. Mock juries often display an inability to set punitive damages in a sensible manner.

---

[1] See Patricia Anderson, Jo Tigner, and Kiontra Broadnax, Alisha Parker, and Ty-Shon Haney by and through their Guardian ad litem Mary Bell Seward v. General Motors Corporation and Karl Chevrolet, case number BC116-926, July 9, 1999. Also see Andrew Pollack, "4.9 Billion Jury Verdict in G.M. Fuel Tank Case: Penalty Highlights Cracks in Legal System," New York Times, July 10, 1999, p. A7, and Ann W. O'Neill et al., "G.M. Ordered to Pay $4.9 Billion in Crash Verdict Liability," Los Angeles Times, July 10, 1999, p. A1.

[2] Engle et al. v. R.J. Reynolds Tobacco Company et. al. (case number 94-08273).

[3] As noted below in Section II, Table 1, many of the blockbuster punitive awards have been reduced through the appeals process.

[4] The participants in these experiments have included thousands of jury-eligible subjects. While many of these studies have focused on responses by individuals, there has also been an analysis of the behavior of groups and whether group behavior mutes these concerns or exacerbates them. These studies include, among others, David Schkade, Cass R. Sunstein, and Daniel Kahneman, "Deliberating About Dollars: The Severity Shift," 100 *Columbia Law Review* 1139 (2000); Cass R. Sunstein, Daniel Kahneman, and David Schkade, "Assessing Punitive Damages (With Notes on Cognition and Valuation in Law)," 107 *Yale Law Journal* 2071 (1998); Daniel Kahneman, David Schkade, and Cass R. Sunstein, "Shared Outrage and Erratic Awards: The Psychology of Punitive Damages," 16 *Journal of Risk and Uncertainty* 47 (1998). For a review of many of these studies, see Cass Sunstein, Reid Hastie, John Payne, David Schkade, and W. Kip Viscusi, *Punitive Damages: How Juries Decide* (Chicago: University of Chicago Press, 2002).

Some of these studies have compared the performance of judges with that of jurors.[5] In general, judges are less prone to suffering from various forms of hindsight bias, and their awards of punitive damages are highly correlated with the degree to which the defendant's behavior is reckless in economic terms, whereby the safety action that was not undertaken offered considerable benefits at low cost. The critical advantage of these experimental studies is that they are *controlled* experiments. Judges and jurors consider identical cases and answer the same questions about these cases. Comparisons between judges and jurors for a given case scenario consequently isolate the incremental effect of having a bench trial rather than an assessment by jurors.

Whether jurors and judges indeed differ systematically in awarding punitive damages in actual trials has recently been the subject of a challenge by Eisenberg et al.[6] Based on a large sample of trials in state courts, Eisenberg et al.'s article in the 2002 *Cornell Law Review* made the dramatic claim that juries were no more likely than were judges to make a punitive damages award and that the levels of these awards by juries were not significantly different than those by judges. Moreover, they maintained that the punitive awards were highly predictable from compensatory awards and were not the random penalties that critics of punitive damages assert is the case. These surprising conclusions received national press attention.[7]

---

[5] The particular studies that provide a comparison of judges and juries are W. Kip Viscusi, "How Do Judges Think about Risk?" 1 *American Law and Economics Review* 26 (1999), W. Kip Viscusi, "Jurors, Judges, and the Mistreatment of Risk by the Courts," 30 *Journal of Legal Studies* 107 (2001), and Reid Hastie and W. Kip Viscusi, "What Juries Can't Do Well: The Jury's Performance as a Risk Manager," 40 *Arizona Law Review* 901 (1998). The judges were state court judges who enrolled in a course offered by the University of Kansas Law, Organization, and Economics Center. The judges returned their completed survey before the course started.

[6] Theodore Eisenberg, Neil LaFountain, Brian Ostrom, David Rottman, and Martin T. Wells, "Juries, Judges, and Punitive Damages: An Empirical Study," 87 *Cornell Law Review* 743 (2002).

[7] William Glaberson, "A Study's Verdict: Jury Awards Are Not Out of Control," *NY Times*, Aug. 6, 2001, p. A9.

To explore whether juries and judges differ in their treatment of punitive damages awards, we began with a systematic search for punitive damages awards of at least $100 million. We found 53 such awards over the period 1985 – 2002. All but one of these blockbuster awards is the outcome of a jury decision rather than the result of a bench trial. This tendency of large awards to be the result of jury decisions is consistent with the experimental evidence as well as popular belief that juries are responsible for extremely large punitive damages awards. Analysis of these very large awards also indicates that they are very unpredictable and bear little relation to the compensatory awards.

We follow this analysis of extremely large awards with empirical evidence from the Civil Justice Survey of State Courts, 1996. This data set is the same as that used in Eisenberg et al. and provides information on over 9,000 cases tried to a verdict in 45 state courts in 1996. This data set provides a representative sample of trial outcomes rather than a selection of trials resulting in extreme awards. After summarizing the data available on this survey, we first consider the basic question of whether punitive awards are predictable from compensatory awards in typical cases.[8] Our results show that unlike the results for blockbuster awards, there is such a linkage for the state court data. The strength of this linkage is much stronger for damages awards made by judges than by juries.

We then examine the determinants of the decision to award punitive damages and the magnitude of any such awards. Unlike controlled experiments in which one can pose the same hypothetical case scenario both to judges and jurors, cases in the sample were

decided by either a judge or by a jury. Consequently, one must undertake a statistical analysis to control for differences in case mix and other factors in order to assess the respective role of judges and jurors in awarding punitive damages. To examine whether there are differences by judges and jurors in the punitive awards decision we take into account the joint probability that a punitive damages award is made as well as the magnitude of any such award, and test for differences between judges and juries. In direct contrast to Eisenberg et al., we find that, controlling for case mix and other characteristics, juries are more likely to make awards and make larger damages awards. These findings are robust with respective to alternative empirical specifications.

A significant driver of the level of punitive awards is the magnitude of the compensatory damages award. If juries award greater compensatory damages than do judges for any given case type, then that higher award will boost punitive damages as well. This analysis indicates that juries generate higher compensatory damages as well as higher punitive damages controlling for compensatory damages.

We then explore the reasons why our findings strongly contradict those in Eisenberg et al. Based on a detailed exploration of possible sources of the different inferences, we identified two pivotal differences. First, their study undermined the potential influence of the jury effect by including two jury-related variables in their analysis, thus inducing multicollinearity. Second, differences across counties in judge and jury performance were ignored in their analysis but are significant influences that must be taken into account. All other variations between the two studies lead to results that are consistent

[8] In their 1997 paper, Eisenberg et al. provide a simple formula to calculate punitive awards from compensatory awards. See Theodore Eisenberg, John Goerdt, Brian Ostrom, David Rottman, and Martin T. Wells, "The Predictability of Punitive Damages," 26 *Journal of Legal Studies* 623 (1997).

with our general finding that juries have a greater tendency to award punitive damages than do judges.

These results are of fundamental importance for understanding the determinants of punitive damages and the effect of possible reforms. Based on the Eisenberg et al. results, if juries and judges do not differ in their current behavior with respect to punitive damages, reforms to transfer greater authority over punitive damages from juries to judges would be completely inconsequential. Our results strongly contradict this conclusion. Transferring greater authority to judges would reduce the likelihood of extreme punitive damages awards.

II. Blockbuster Awards

To examine whether juries and judges differ in their tendency to make extremely large punitive damages awards, we undertook a detailed search to identify all cases in which there were punitive damages of at least $100 million. The search included Lexis Combined Jury Verdicts and Settlements (which includes bench trials as well as jury trials), several Westlaw databases, the Google search engine, all major newspapers, and articles in *American Lawyer*. We identified 53 such awards for the period from 1985 to 2002. Although the resulting list may not be complete, it is an extensive and systematically compiled list of extremely consequential punitive damages awards in U.S. court cases.

This compilation is not meant to be a substitute for formal statistical analysis. Our statistical analysis using the 1996 state courts trials data begins in the next section. However, this state court sample is limited to trials in 45 counties, and does not include

trials in counties not in the sample, federal court trials, or trials in other years. To provide a more global starting point for the analysis we sought to identify the extremely large awards that are among those that have commanded attention in the punitive damages debate. Such punitive awards in excess of $100 million are quite rare. The huge stakes involved make these awards of real consequence for firms, and they also figure prominently in discussions of civil justice reform. But given their rarity, any statistically-based sample of trials, such as the state court data, is unlikely to include a large number of large number of cases awarding large punitive damages awards.

Table 1 summarizes these punitive damages awards. The table is divided into bench trials and jury trials. Within each category, cases are listed in order of increasing size of the punitive damages amount. Notice that only one bench trial appears in the table. That case involved financing fraud and resulted in a punitive damages award of $167 million.

The remaining 52 trials resulting in punitive awards of at least $100 million were jury trials. Eight of these awards are in the billions of dollars. The largest punitive damages award is $145 billion awarded for the Florida tobacco class action, Engle et al. v. R.J. Reynolds Tobacco Company et al. The environmental contamination suit for the Exxon Valdez oil spill led to $5 billion in punitive damages, while the GM products liability burn case had a $4.8 billion award. Four awards were in the $3 billion range: a royalty payments fraud case against Exxon, a New Orleans tank car leakage products liability case, a products liability case against Texaco, and a cigarette products liability case against Philip Morris. At the $1 billion level were an environmental contamination suit against Alpha Technical Services, Inc. and a products liability case against Johnson Kart Manufacturing.

That juries account for over 98 percent of these blockbuster awards is a striking statistic. Jury trials account for about 68 percent of all civil cases tried to verdict in state courts and federal district courts.[9] The difference between the observed 98 percent share of blockbuster awards by juries and the expected share of 68 percent jury awards is statistically significant, indicating that juries awarded a disproportionate share of the blockbuster awards.[10]

As the notes to Table 1 indicate, many of these awards led to out-of-court settlements after the verdict. In many instances, the awards were appealed, leading to the award being remitted or reversed. For instance, the Florida tobacco class action is now under appeal. However, whether these awards are reduced on appeal by a judge is a quite separate issue from whether at the time of the initial trial juries are more likely to award a large punitive damages amount than are judges. Indeed, the likelihood that judges will reduce extremely large awards only attests to the difference in judge and jury behavior with respect to making large awards.

The last column of the table reports the ratio of punitive damage awards to compensatory awards. This ratio has often been used as a barometer of whether a punitive damages award is out of line. The relationship of punitive to compensatory

[9] See *Bureau of Justice Statistics Bulletin: Civil Justice Survey of State Courts, 1996: Civil Trial Cases and Verdicts in Large Counties, 1996* (September 1999), page 1 [reporting that 10,616 of 15,638 cases disposed of by trial in 1996 in the 75 most populous counties were jury trials.] Federal statistics on civil cases in which there was a court action during or after trial in U.S. District Courts for the year ending June 30, 2001 indicate there were 3,747 jury trials out of a total of 5,593 trials, or a jury share of 0.67. See www.uscourts.gov/judiciary2001/tables/c04jun01.pdf, Table C-4.

[10] The z value is 4.70, indicating the probability that the observed disparity occurred by chance is miniscule. There may, of course, be differences in case mix, as we address below using the state court data.

damages has been a matter of concern in U.S. Supreme Court decisions, but the Court has not offered any definitive guidance on what maximum ratio is acceptable.[11]

As Table 1 demonstrates, the ratio of punitive damages to compensatory damages varies considerably. Punitive damages are not always larger than compensatory damages. Sometimes, however, the ratio is extremely high. A noteworthy recent outlier is the 2002 case by the lung cancer victim against Philip Morris. The $150 million punitive damages amount awarded by that jury was 890 times the size of the compensatory damages amount of $168,514.

There is no apparent pattern involving the ratio of punitive damages to compensatory damages. The degree of randomness in jury awards can be assessed by examining the relation between punitive damages and compensatory damages for the 52 jury awards in Table 1. A simple regression of the punitive damages amount against the compensatory damages value indicates that these amounts have no statistically significant relation.[12] Using the logarithm of both punitive damages and compensatory damages greatly compresses the range of values, particularly for large awards. There is a statistically significant relation between the log values of punitive damages and the log value of compensatory damages, but it is fairly weak, with an adjusted R-squared of 0.12.[13] The

[11] Law and economic theory suggest that from the standpoint of optimal deterrence, if compensatory damages reflect the value of the financial harm, then total damages including the punitive award should equal this value divided by the probability that the wrongful conduct will be detected. A recent theoretical review of the underpinnings for punitive damages is A. Mitchell Polinsky and Steven Shavell, "Punitive Damages: An Economic Analysis," 111 *Harvard Law Review* 869 (1998).

[12] The regression results for the levels of punitive damages and compensatory damages are:

Variable	Coefficient	Standard Error
Compensatory damages	-0.141	2.65
Constant	3.48×10^9	2.87×10^9
R-squared	0.00	
Adjusted R-squared	-0.021	

[13] The regression results for log punitive damages against log of compensatory damages are:

Variable	Coefficient	Standard Error

results imply that a 10 percent increase in the compensatory award will result in a 2.6 percent increase in the punitive award. For the blockbuster award sample, punitive damages cannot be reliably predicted based on the value of the compensatory award.

III. Description of the Civil Justice Survey of State Courts, 1996 Data Set

Our statistical analysis uses data from the Civil Justice Survey of State Courts, 1996. This survey is a sample of tort, contract, and real property rights cases that were disposed of by trial in calendar year 1996 and were drawn from 45 of the 75 most populous counties in the U.S.[14] The 1996 survey used the same sampling frame as a similar 1992 survey of jury trial cases but expanded the study to include both bench and jury trials. The information reported for each trial includes type of trial (jury, judge, or other), type of case (motor vehicle accident, fraud, employment discrimination and so forth), type of litigant (individual, hospital, business, and so forth), the amount of compensatory and punitive damages if awarded, and county.

The sampling procedure was a two-stage stratified sample. In the first stage, 45 counties were selected from the 75 most populous counties, with the selection rates varying by the number of civil cases in that county in 1990. If there were fewer than approximately 300 bench or 300 jury trials in the county, all trials meeting the study

Log compensatory damages	0.264	0.094
Constant	15.102	1.607
R-squared	0.14	
Adjusted R-squared	0.12	

[14] U.S. Dept. of Justice, Bureau of Justice Statistics. CIVIL JUSTICE SURVEY OF STATE COURTS, 1996: [UNITED STATES] [Computer file]. Conducted by National Center for State Courts. 2nd ICPSR ed. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 2001. The data were collected by the National Center for State Courts under a grant from the U.S. Department of Justice, Bureau of Justice Statistics. Information on the data collection procedure and variable availability is provided in the computer file documentation.

criteria were included in the study. In 36 counties, all trials were included in the dataset. When there were more than 300 trials of either kind, a random sample of 275 cases of that trial type was selected. Any remaining cases of medical malpractice, professional malpractice, or products liability that were not in the initial random sample were also included in the sample. The number of trials varied considerably among the counties. At the low end, Honolulu, HI contributed only 25 jury trials and 21 bench trials to the sample, while Allegheny, PA contributed 201 jury trials and 202 bench trials. There were 10 or fewer bench trials in 6 of the counties.

The 1996 survey reports information on 9,025 trials in 45 state trial courts. Not all of the 9,025 cases are used in the analyses, mainly because of missing data. One case omitted from our analyses is a jury-awarded compensatory damages award of over $40 billion, with no punitive damages, against Ferdinand and Imelda Marcos, which was reversed by the Hawaii Supreme Court.[15] Of the remaining 9,024 trials, 227 were neither jury nor bench trials,[16] 216 were missing data on the compensatory damages award,[17] and 85 had missing information on either case type or litigant pair. Thus the full sample for the analysis is comprised of 8,496 observations. Of these 8,496 observations, the plaintiff prevailed in 4,336 trials.[18]

Figure 1 summarizes the overall structure of the trials in the sample. Roughly three-fourths of the sample consists of jury trials, and one-fourth are bench trials. The probability of plaintiff success is 0.62 for bench trials and 0.47 for jury trials. These

[15] See *Bureau of Justice Statistics Bulletin: Civil Justice Survey of State Courts, 1996: Civil Trial Cases and Verdicts in Large Counties, 1996* (September 1999), page 8 *supra note* 9.
[16] These included directed verdicts, judgments notwithstanding the verdict, and jury trials for defaulted defendants.
[17] There are no cases in which compensatory damages are missing but punitive damages are reported, so there is no additional loss of observations due to missing data on the value of punitive damages.

plaintiff success rates do not necessarily imply that judges are more plaintiff-oriented than are juries. The mix of cases heard in each venue will depend both on the routing of cases to judges and juries as well as on which cases are settled and which are not. [19]

On average, jury awards are higher than bench awards. The average compensatory damages award is $423,528 for jury trials and $152,344 for bench trials. While judges and juries each have a 0.04 probability of awarding punitive damages, the mean punitive damages award is $1,816,031 for juries and $557,292 for judges.

Table 2 presents more detailed information on punitive damages. Within the sample of 4,336 trials in which the plaintiff won, juries decided 68.5 percent of these trials, with judges deciding the remaining 31.5 percent. Compensatory damages were awarded in almost all trials in which the plaintiff prevailed (although there are 5 exceptions in which compensatory damages were zero). Punitive damages were awarded in 173 of the 4,336 trials in which the plaintiff won. Of these 173 trials, 119 were jury trials and the remaining 54 were bench trials.

As Table 2 demonstrates, the mean punitive damages award level for juries is 3.3 times the mean level for judges, while the median award level for juries is 1.5 times the median award level for judges. The ratio of the mean of the log values is 1.05.[20] The larger disparity in mean values between jury and bench trials compared to the median and to the log values suggests that jury trials result in more punitive damages awards with

[18] There are 14 cases in the sample in which the defendant received a punitive damages award. These cases are not analyzed in this paper.

[19] Some case selection models with symmetric stakes for both plaintiffs and defendants imply a 50 – 50 split of decisions. If the jurisdiction has a particular bias, parties will take these influences into account at the settlement stage. Even in case selection models, however, results other than a 50 – 50 split can be observed if, for example, stakes are not identical or there is a difference in information. See George L. Priest and Benjamin Klein, "The Selection of Disputes for Litigation," 13 *Journal of Legal Studies* 1 (1984).

high values. But such disparities are muted by the nonlinearity of the log function which compresses the high awards values.

Another indicator that juries have a higher tendency to award large and variable punitive damages awards is given by the ratio of punitive-to-compensatory awards in cases in which a punitive award and compensatory award was made. The mean of this ratio for juries is 4.6, far larger than the corresponding ratio for judges of 1.25. The standard deviation of this ratio for juries is 8.5 times the standard deviation for judges. But the median of this ratio is actually lower for juries, attesting to the great skewness in which juries award large punitive damages relative to compensatory damages more frequently than do judges.

Much of the concern with respect to punitive damages pertains to the large award outliers that are in the hundreds of millions or even in the billions of dollars. It is useful to obtain an overview of the punitive damages awards for the state court data to see the extent to which these data capture these blockbuster awards.

The distribution of awards reported in the bottom of Table 2 and illustrated in Figure 2 demonstrates that there are fairly few dramatic awards in this state court sample. Most of the punitive damages awards were small. Twenty-three percent of the awards were for less than $10,000, with judges and juries almost equally likely to make awards of this size. When legal reformers express alarm regarding punitive damages, these are not the awards that have generated concern.[21]

---

[20] Here and throughout the paper we add $1 to damages amounts before calculating the logarithm. The log of zero is undefined and the log of values between zero and one are negative.

[21] See George L. Priest, "Punitive Damages Reform: The Case of Alabama," 56 *Louisiana Law Review* 825 (1996).

Consider the upper end of the awards spectrum. Of the cases in which the plaintiffs received punitive damages awards ranging from $300,000 to $999,999, 19 percent of the jury cases awarded punitive damages in this range, while only 2 percent of the judges' punitive damages awards were at this level. Similarly, 8 percent of punitive damages awards awarded by juries were for at least $1 million, as compared to 4 percent for judges. The largest punitive damages award in the state court sample is a jury verdict for $138 million.[22] Thus, at the high end of awards, which are the main matter of concern, jury trials play a dominant role.

In the following analyses we control for litigant pairs, case type, and county. Table 3 presents summary statistics. The columns present statistics for jury trials and bench trials for two groups: the set of cases that the plaintiffs won, and the set of cases that the plaintiffs won and received a punitive damages award.

Compensatory damages awarded by juries have a higher mean value and a greater standard deviation than awards by judges for the set of cases in which plaintiffs won. This pattern for compensatory damages is reversed if one considers only those cases for which there was a punitive damages award. A large compensatory award appears to be a more critical determinant of whether a judge makes a punitive damages award than it is for a jury, as the mean compensatory damages amount is $914,111 for bench trials with punitive damages and $598,497 for jury trials with punitive damages.

The survey reports very narrowly defined litigant types for both plaintiffs and defendants, allowing 12 options each for plaintiff and defendant type, for up to eight

[22] This is the financing fraud case that took place in San Antonio, TX and reported in Table 1.

plaintiffs and eight defendants.[23] Most pairs of litigant types have few observations, so we group cases into four major categories of individual v. individual; individual v. hospital, corporation, or government; individual and nonindividual v. hospital, corporation, government, or individual; and nonindividual v. hospital, corporation, government, or individual. As Table 3 indicates for the sample of cases in which the plaintiff won, 38 percent of cases heard by a jury involved individual plaintiffs suing other individuals and 52 percent involved individuals suing hospitals, corporations, or government. In contrast, only 26 percent of bench trials involve individuals suing individuals and 28 percent involved individuals suing hospitals, corporations, or government. While 7 percent of jury cases had lawsuits on behalf of nonindividuals, 41 percent of judges' cases involved disputes with nonindividual plaintiffs. Few cases had both individual and nonindividuals as plaintiffs and defendants for either bench or jury trials.

The survey allows reporting of 22 case type codes, grouped under the broader categories of tort, contract and commercial, and real property. As with litigant pairs, several of the codes have few observations, so we group cases into 12 broader categories.

[23] The 12 codes are individual; insurance company; bank/credit company/brokerage company; hospital/clinic; construction company; real estate development company or agency; business: other seller of services; business: seller of goods; manufacturer; other business; government agency or institution; other organization. For consistency with the computer documentation we use the term "corporation" to refer to businesses of any kind whether or not incorporated. The data set includes a variable that recodes litigant types into 12 pairs based on a hierarchy. The plaintiff litigant type assigned to the case was one of three types: individuals only, individuals and nonindividuals, or nonindividuals. Nonindividuals include hospital/medical company, corporate/business, and government. The defendant litigant type assigned to the case was the type appearing first on the following list: hospital/medical company; corporate/business; government; individuals. If ANY of the eight defendants were hospitals or medical companies, the case would be assigned a defendant litigant type of hospital/medical company. If none of the eight defendants were hospitals or medical companies, and there were both business and individual defendants, the case would be assigned a defendant litigant type of corporate/business, not individual, because corporate/business is earlier on the list. As there were still few observations for most of the litigant pairs, we further group into the four categories specified in the text. Results are not sensitive to alternative controls for litigant types.

These groupings, reported in Table 3, include seven tort categories: motor vehicle accident; premises liability; asbestos, breast implants and other product liability; intentional tort; medical and professional malpractice; slander, libel or defamation; and other negligent act. There are four contract and commercial case categories: fraud; seller and buyer plaintiff; employment discrimination and other employment disputes; and mortgage foreclosure, rental/lease agreement, intentional/tortious interference, and other contract disputes. The final grouping is the much smaller category of real property cases that includes eminent domain/condemnation, title or boundary dispute and other real property.

As Table 3 demonstrates, among trials in which the plaintiff wins, the types of cases faced by juries and judges are distributed in a manner consistent with the types of litigants. To generalize, juries see a far larger share of tort cases, in which the plaintiff is usually an individual, and judges see a far larger share of contract and real property cases, which more often involve businesses. Juries are more likely to encounter cases involving motor vehicle accident, premises liability, product liability, and medical malpractice cases. Almost half of all jury trials in which the plaintiff won are motor vehicle accident cases, as compared to only 10 percent for judges. In contrast, bench trials play a dominant role for many of the financial transaction cases, such as those in which the buyer or seller is a plaintiff or there is a mortgage foreclosure. Nearly half of the bench trials in which the plaintiff won are cases involving either a buyer or seller plaintiff, compared to 8 percent for juries.

In order to control for possible county-specific effects, we define a set of indicator variables. These county variables reflect differences in liability criteria by state,

differences in damages rules, as well as differences in the demographic composition of juries and plaintiffs in these cases. Most of the 45 counties included in the sample had few cases in which there was a punitive damages award. Indeed, eight counties had no trials awarding punitive damages.

Preliminary analysis indicated that the most consequential effect of county involved trials in Harris County, TX. Harris County is an aberration among the counties in several ways. First, Harris County had more trials than any other county and is the county most affected by the sampling procedures. Only 352 of the county's 1500 trials were included in the sample. The high rate of sampling is reflected in Harris County having the largest sample weight. Second, within the sample, Harris County had by far the largest number of trials in which a judge awarded punitive damages, with 12 of the 54 bench trials awarding punitive damages occurring in Harris County. Indeed, the Bureau of Justice Statistics estimates that overall, bench trials in Harris County awarded punitive damages in 67 trials, which exceeds the total of 46 punitive awards in bench trials in all of the other 44 counties combined. Third, the largest punitive award in the sample of $138 million was a jury verdict for a trial in Harris County. [24]

We control for county using three approaches. In the main results presented in the tables, we defined indicator variables for each county that contributed at least 2 each of jury and bench trials to the sample with positive punitive damages. We thereby define 10 such indicator variables. The 10 counties altogether account for 42.9 percent of the trials in which juries awarded punitive damages, and 68.5 of the trials in which judges awarded punitive damages. Second, we estimate equations with indicator variables for all

counties. Third, we estimate our equations including an indicator variable for only Harris County, and also provide estimates excluding Harris County from the analysis. As our sensitivity tests reported in Section X indicate, the results are sensitive to controlling for Harris County, but are not substantially affected otherwise by the number of county indicator variables in the specification.

IV. The Predictability of Punitive Damages Awards Given Compensatory Damages

What we mean by predictability of punitive damages hinges critically on the time at which these predictions are made. For concreteness, consider a corporation assessing potential liability from risky products. The prediction that matters is forecasted damages at the time of the corporate decision. Whether punitive damages will ever be awarded is highly uncertain and involves a series of uncertain events. A consumer must suffer an injury from this dangerous product. After an injury the person must file a lawsuit against the company seeking damages. The case may be settled out of court or dropped altogether. As either party has the right to request a jury trial, there is uncertainty about whether the case will be routed to a judge or a jury. If pursued to a court verdict, the next level of uncertainty is whether the plaintiff will win. If the plaintiff wins, there is uncertainty about the value of any damages, both compensatory and punitive.

The predictability of punitive damages is a recurring theme in the literature.[25] However, Eisenberg et al. take a point of view outside the mainstream and claim that

---

[24] This information is reported in the data documentation *supra note* 14 and *Bureau of Justice Statistics Bulletin: Civil Justice Survey of State Courts, 1996: Civil Trial Cases and Verdicts in Large Counties, 1996* (September 1999), Appendix E p. 23 and p. 10*, supra note* 9.

[25] For assessments on the predictability of punitive damages or the lack thereof, see Eisenberg et al. *supra note* 8 and A. Mitchell Polinsky, "Are Punitive Damages Really Insignificant, Predictable, and Rational?" 26 *Journal of Legal Studies* 663 (1977).

punitive damages are highly predictable, and in particular, punitive damages can be reliably predicted by compensatory damages. Before turning to our model and estimates of jury and judge behavior with respect to punitive damages, we start by estimating simple regression models of the relation between punitive and compensatory awards, following the procedure of Eisenberg et al.[26]

In addition to their multivariate analysis to determine whether there are differences in punitive damages awards by forum, Eisenberg et al. regresses the log of punitive damages on the log of compensatory damages, with separate equations for judge trials and for jury trials. Their results indicate that judges and juries grant punitive awards similarly, as their regressions yield similar slopes and intercepts for judges and juries, with R-squared values of 0.674 for the sample of 54 judge trials and 0.459 for the sample of 119 jury trials.

The decision to use logarithms rather than levels is not entirely innocuous and so it is worthwhile to examine the support for and implications of this choice.[27] The practical consequences of using logarithms is to greatly compress the apparent variability of the awards. The logarithm of punitive damages for the median award amount of $50,000 by juries is 10.8. Doubling the absolute value of the median award level increases it to $100,000. However, a doubling of the logarithm of the median punitive damages amount corresponds to an increase in the level of punitive damages to $2.4 billion. Analyzing the

[26] Eisenberg et al. *supra note* 6 presents the corresponding results in figure 1, page 754 and footnotes 35 and 37, page 753.

[27] Two recent articles that estimate damages awards are Jonathan Karpoff and John R. Lott, Jr., "On The Determinants and Importance of Punitive Damages Awards," 42 *Journal of Law and Economics*, 527 (1999) and Eric Helland and Alexander Tabarrok, "Runaway Judges? Selection Effects and the Jury," 16 *Journal of Law, Economics, and Organization* 306 (2000). Karpoff and Lott estimate their punitive damages equation using levels. Helland and Tabarrok estimate their (total) damages equations using logs.

variability of awards when considering patterns of log values of punitive damages consequently may mask much of the variability of the level of punitive damages.

As a consequence, our analysis considers models in which we analyze the determinants of the level of punitive damages as well as the determinants of the log value of punitive damages. Analyzing the influence of juries from both perspectives will provide a test of the robustness of the influence of juries across different specifications.

Table 4 provides two sets of simple punitive damages regression results, one of which is in terms of damages levels and the other in terms of logarithms. The only explanatory variable included in each equation is the compensatory damages award. The compensatory damages amount is not, however, observable to the defendant at the time of its wrongful conduct so that statistical predictability is not the same as predictability from the standpoint of incentives.

The top panel of Table 4 presents regression results in levels and the bottom panel presents regression results in logs. The value of the adjusted R-squared for each regression measures the fraction of the variation in the dependent variable that is explained by the regression.[28] In Panel A this value is 0.68 for judges but only 0.16 for juries, as differences in the compensatory award explain roughly four times the variation in punitive damages for judges as for juries. The log results in Panel B compress much of the variation in damages levels. Punitive damages awards are more predictable for bench trials than for jury trials, where the fraction of the log value of punitive damages explained by the regression is 0.57 for judges and 0.30 for juries. While it is true that punitive damages awards outliers contribute to the greater unpredictability of jury

awards, the existence of large outliers that cannot be predicted is precisely the matter of concern in debates over reform efforts to address the unpredictability of punitive damages. These findings indicate that the unpredictability of punitive damages for the sample of blockbuster jury awards is consistent with the pattern of jury behavior in a broader sample of cases.

V. Modeling the Litigation Process

The punitive damages statistics presented in Table 2 do not take into account differences in the types of cases handled by judges or juries or the different characteristics of these cases. Subsequent multivariate analysis will account for these influences.

Figure 1 provides a basis for analyzing the different stages of the litigation process. The earliest stage is the decision to file a lawsuit and go to trial. There is no information on cases that settled before verdict or were dropped because the data set is restricted to cases that were disposed of by trial. Available data do not permit analysis of this important first step. Once parties decide to pursue a case to trial, cases are not randomly assigned to judges or juries. Usually either party can request a jury trial. As Table 3 demonstrated, judges and juries see different types of cases. The forum for the trial is consequently endogenous as it is affected by the parties' choices. The nature of the case and the parties' assessment of its prospects will affect this choice, and for the most part derives from factors unobserved in the data set. Our empirical analysis controls for many of these case characteristics and other factors that should influence the sorting process.

[28] Comparisons of R-squared values for equations with different dependent variables are not appropriate. Thus, one cannot directly compare the fit of the equations in Panel A and those in Panel B on the basis of

In the analysis presented here we abstract from this choice aspect and treat the trial forum as exogenous to the punitive awards decision.[29] Eisenberg et al. likewise assume that the jury/judge choice is exogenous, and to the extent that this assumption is erroneous, any resulting biases will affect our results and theirs similarly.

The next stage in Figure 1 is whether the plaintiff wins the case. We take this outcome as predetermined prior to any damages award decision. In Section IX we assess the first stage of the litigation process, which is the level of compensatory damages, conditional on plaintiff success. Compensatory damages levels influence the magnitude of punitive damages. If juries are more prone to awarding substantial compensatory damages for any given case type, that award in turn may boost the punitive damages amount.

Our key concern is with punitive damages awards. All of our subsequent analyses assume that punitive damages are awarded sequentially after compensatory damages rather than jointly. The sequencing of any punitive damages award decision can take two forms, each leading to a distinct estimating approach. If the jury or judge makes a single decision to award punitive damages, where the amount of damages awarded may be a positive amount or may be zero, then the proper estimating procedure would use the sample of all observations in which the plaintiff won. Section VI describes and reports the results under this characterization of the decision process.

R-squared alone.

[29] The appropriate statistical technique for dealing with endogenous variables is instrumental variables estimation. Unfortunately, it is often difficult to find suitable instruments. In the current situation one needs data on variables that predict the choice of judge v. jury trial while at the same time are not significant predictors of the outcome of the case (e.g., whether the plaintiff prevails and damages in each forum).

Alternatively, if the judge or jury first decides whether to award punitive damages, and then sets the level conditional on the decision to make a positive award, then it is appropriate to first analyze the probability of a punitive damages award. Section VII presents estimates of the probability that a positive punitive award is made. To make inferences about the determinants of the level of damages for the entire set of cases in which plaintiffs won, it is necessary to correct for the probability of observing such positive awards.[30] If the question of interest is the determinants of punitive damages conditional on there being a punitive damages award, then selectivity is not an issue.

To explore whether in fact juries are no different from judges in their propensity to award punitive damages, we report two sets of estimates to examine the damages relation in both levels and in logs. We also control for litigant pairs, case types, and county as described in Section III, with sample characteristics listed in Table 3. The omitted litigant pair category is nonindividual vs. hospital, corporation, government, or individual. We expect cases with individual plaintiffs to fare better in terms of punitive awards relative to the omitted category, particularly when the defendant is not also an individual. The omitted case type category is motor vehicle accident. [31]

[30] Failure to correct for the influence of such selection effects on the level of punitive damages can lead to biased and inconsistent estimates Eisenberg et al., *supra note* 6, footnote 113, indicate that they performed a selection correction for the decision to award punitive damages. Their procedure was not correct. The two equations they described estimating were not identified from a statistical standpoint and do not provide information on the importance of selection.

[31] In their article, Eisenberg et al. *supra note* 6 delineate the states that enacted punitive damages reforms and discuss the effect of these reforms in a separate section but do not include the punitive damages cap variable in any of the reported equations. We also created a damages cap variable based on their listing of states with caps. In alternative specifications, we considered the influence of whether the trial occurred in a state that had a damages cap in place, which consists of roughly one-third of the sample. The cap variable was never statistically significant in our analysis and is consequently not included.

VI. The Determinants of Punitive Damages Awards

Our analysis begins with an assessment of the determinants of the level of punitive damages, taking into account the probability of such an award. Because of the large number of zero values for punitive damages, the correct econometric procedure is tobit regression.[32] Tobit regression simultaneously takes into account the likelihood of a nonzero punitive damages award, as well as the magnitude of the award if positive. The dependent variable takes on the value of the punitive award if the award is positive, and zero otherwise, and the estimating procedure adjusts for the probability of a zero or positive award in calculating the regression coefficients.

Table 5 presents estimates of the tobit regressions for both the level of punitive damages and the log of punitive damages. Each equation includes an indicator variable equal to one for a jury trial, a measure of compensatory damages, and indicator variables for three types of litigant pairs, 11 case types, and 10 counties. Controlling for these case variables, jury trials yield statistically significantly higher punitive damages than do bench trials. This effect of higher punitive awards for juries than for judges is not sensitive to whether damages are measured in levels or in logs, and is statistically significant at the 99 percent level in the punitive damages levels equation and at the 95 percent level in the log of punitive damages equation.

To interpret the magnitude of the coefficients on the jury indicator variable, it is useful to calculate the marginal effects of a jury trial evaluated at the mean values of the independent variables. We consider the incremental effect for all cases in which the plaintiff prevailed, the incremental effect conditional on a positive punitive award being

made, and the incremental probability that a positive punitive award will be made. For the linear equation reported in Table 5, jury trials increase the mean value of punitive awards by an average of $54,000 for all cases in which the plaintiff won the case. Conditional on there being a nonzero punitive damages award, juries increase this mean value by $380,000. The effect of a jury trial on the probability of having a positive punitive award rather than a zero award is estimated to be 0.01.

The influence of the other variables in the equations reported in Table 5 are as expected. Cases with high values of compensatory damages lead to a greater punitive award. For the litigant pair variables, cases initiated by individuals alone or individuals together with nonindividuals are associated with higher punitive damages than cases with nonindividual plaintiffs, with the effects statistically significant for 5 of the 6 variables.

The coefficients on the case type indicator variables measure the incremental effect of that case type relative to the omitted category of motor vehicle accidents. Because motor vehicle tort cases generally are routine insurance cases, one would expect many of these other case types to be associated with higher punitive awards. Indeed, none of the coefficients on case type are negative, as all case types are associated with punitive damages that are comparable to or greater than those for motor vehicle cases. Of the 11 case types, only medical and professional malpractice is not significantly related to punitive damages relative to motor vehicle cases. All coefficients on the other case types are positive and statistically significant in both equations, with the exception of negligent act, which is significant in only one equation. Leading case types with very high punitive awards, controlling for other variables, are intentional act; slander, libel, or defamation;

[32] This methodology is quite standard in econometric analysis, and was originally developed by James Tobin to analyze the purchase of durable goods. See, for example, pp. 896-926 of William H. Greene,

fraud; employment discrimination and other employment disputes; and real property cases.

VII. The Decision to Award Punitive Damages

The estimates in Section VI examined the level of punitive damages including those with zero damages awarded. The focus of this section is narrower. Abstracting from the level of the punitive damages award, if any is made, is there a difference between juries and judges in the decision to make an award at all? Because the decision to make an award or not is dichotomous, we use probit regression. The dependent variable is equal to one if a punitive award is made and is zero otherwise. The equation thus estimates the probability of a punitive damages award, and the probit coefficients capture the influence of each variable on this probability. The table reports both the original probit coefficients and the associated standard error, as well as estimates (in brackets) of the marginal effect of a one-unit change in each of the explanatory variables.

The results for both equations in Table 6 indicate that juries are more likely to make a punitive award controlling for other variables. Jury trials have a 0.013 greater probability of having a punitive damages award than do bench trials based on the first equation, and a 0.011 greater probability of a punitive award based on the second equation. These estimates are similar to those based on the tobit regressions. Given that there is an overall propensity to award punitive damages of 0.04, this effect is relatively substantial in magnitude, in addition to being highly statistically significant (99 percent confidence interval).

Econometric Analysis, 4th Edition (Upper Saddle River, NJ: Prentice-Hall, 2000).

The results are similar whether estimating controlling for the level of compensatory damages or the log, so for convenience we discuss the marginal effects for the first equation. Compensatory damages boost the probability of a punitive damages award in both equations. An extra million dollars in compensatory damages boosts the probability of a punitive award by 0.002. Put differently, the incremental influence of a jury trial on the probability of a punitive award is comparable to having a case with an extra $6.5 million in compensatory damages.

The other patterns of influence for the probability of punitive damages all follow the same general pattern as the tobit results. For the litigant pairs, cases with individual plaintiffs fare better than do the omitted group of cases with nonindividual plaintiffs. Relative to the omitted category of motor vehicle accident, all other case types have a higher probability of being associated with a punitive damages award. Many of these incremental probabilities of a punitive award are quite large: 0.34 for intentional act, 0.28 for employment discrimination and other employment disputes, 0.26 for fraud, 0.24 for real property cases, and 0.24 for slander, libel, or defamation. Even controlling for the level of compensatory damages and other influences, there is substantial heterogeneity among different types of cases in whether there is a punitive award.

VIII. The Level of Punitive Damages

A principal implication of the compilation of large award cases in Table 1 was that for the very big punitive damages awards of at least $100 million, juries play a dominant role. While there is only one award of this magnitude in the 1996 state court sample, we now use the state court data to examine whether the role of juries with respect to punitive

damages awards is particularly great in the large award cases. To explore this variation in awards, Table 7 presents the quantile regressions for five different percentiles of the distribution of punitive damages. Because quantile regressions focus on determinants of damages within particular quantiles, taking into account the likelihood of being in the quantile, there are severe limits to the number of variables that can be included in the specification when using a sample of the size available in this data set. We focus on equations including only a constant term, the log of compensatory damages, and whether there is a jury trial.

The quantile regressions make it possible to analyze how these different variables differ in their role across different portions of the distribution of punitive damages. Interestingly, from the 10^{th} percentile of the punitive damages awards through the 75^{th} percentile of these awards, there are no positive and statistically significant influences of jury trials on the level of punitive damages. However, at the 90^{th} percentile of punitive damages there is a positive and statistically significant effect of jury trials on the level of punitive damages awards. There is not a general effect of juries throughout the punitive damages distribution. Rather, the jury effect is limited to boosting the very large awards.

The influence of compensatory damages on the punitive award quantiles displays a somewhat surprising pattern. One might have hypothesized that the coefficient on compensatory damages would increase the punitive damages amount to a greater extent for the high award levels. However, the coefficients at the 90th percentile and the 75th percentile are the smallest in the table. Extremely large awards do not reflect a greater markup of the compensatory damages amount but actually incorporate a smaller influence of compensatory damages.

IX. Compensatory Damages Levels

A consistent finding throughout the analysis of the state court data is that the level of compensatory damages for the particular case is a significant determinant of whether there is a punitive damages award and, if so, the magnitude of the award. Virtually all of the plaintiff winners in this survey of civil trials were awarded compensatory awards. In this section we examine whether jury trials are more likely to lead to high compensatory damages awards controlling for different aspects of the case. If one wishes to account fully for the differences between judges and juries in awarding punitive damages, one must also take into account whether in fact there are any differences in their determination of the compensatory damages awards for these cases, rather than treating this value as independent of whether a case is handled by a judge or a jury.

Table 8 explores this issue with regressions of both the level of compensatory damages and the logarithm of compensatory damages against the control variables that have been included in all the previous analyses. Jury trials are associated with higher levels of compensatory damages even after taking into account these other variables pertaining to the parties involved, case type, and the county location. For the equation in levels of damages, juries award an additional $292,954 in damages controlling for other variables.

The most noteworthy aspect of the other variables in the compensatory damages estimates is how they differ from the influence of these variables on punitive damages. Whereas the litigant pair variables all boosted punitive damages relative to nonindividual

plaintiffs, these variables have no significant effect on compensatory awards except for the negative influence of individual vs. individual cases.

Case types that did not have a powerful effect on punitive awards may nevertheless have a large influence on compensatory damages. Particularly noteworthy in this regard are the large incremental damages amounts for medical and professional malpractice, other negligent acts, and asbestos, breast implants, and other products liability. While these and other determinants of damages differ greatly in their influence on compensatory and punitive damages, one consistent influence is the positive effect of jury trials on both types of awards.

X. Sensitivity Tests and a Reconciliation with the Eisenberg et al. Results

The results presented here are based on the same state court data set used in the Eisenberg et al. study yet yielded contradictory findings. In this section we consider alternative specifications. Doing so provides information on the robustness of our findings and identifies the sources of disagreement with the Eisenberg et al. finding. Specifically, we compare the specification used in our probit results reported in Table 6 to the logistic results of Eisenberg et al. reported in their Table 3.[33] We note that although the following discussion reports the consequences of changing one assumption at a time, we estimated all of our models using every possible combination of alternative assumptions. The results are consistent with those reported below.

[33] Our comparison is to the specification reported by Eisenberg et al. *supra note* 6 in Table 3, p. 760.

Table 9 summarizes the sensitivity tests and identifies the essential causes of the disparity. [34] As the following discussion demonstrates, Eisenberg et al.'s results are sensitive to the treatment of Harris county trials in their analysis and to their inclusion of two highly correlated jury variables. The other differences in specification, such as estimation in logs or levels, number of litigant pair categories, number of case type categories, adjusting for sampling weights, or adjusting the standard errors for clustering, are not responsible for the disparity.

Working through these possibilities one by one, first note that Eisenberg et al. estimates logistic equations and presents odds ratios; we estimated probit equations. Preliminary analyses yielded the unsurprising conclusion that none of the differences arise from the use of logistic rather than probit regression; the following discussion reports probit coefficients as we successively consider the impact of replacing Eisenberg et al.'s specification with that employed in our main analysis. Also note that the disparity with our findings does not result from Eisenberg et al.'s use of logs of compensatory damages awards rather than the levels, as our equations estimated using both logs and levels consistently found a statistically significant jury effect.

Now consider the controls for litigant pairs and for case types. Given the relatively small number of punitive awards, and the fact that, as demonstrated in Table 3, certain types of litigant pairs and certain types of cases are disproportionately likely to be heard by either a judge or a jury, controlling for more rather than fewer litigant pairs or types of cases may induce correlations that further mask the effect of type of trial. For example, judges did not award punitive damages in any cases of medical and professional

[34] For brevity, we do not present alternative specifications for our tobit results, but these follow a pattern similar to the probit estimates.

malpractice or slander, libel, or defamation. However, as we now discuss, substituting Eisenberg et al.'s categories for ours does not change our finding of a statistically significant jury effect.

Our analysis groups litigant pairs into four categories, in contrast to the eight litigant pairs used by Eisenberg et al. The jury coefficient remains statistically significant at the 99 percent confidence level when substituting Eisenberg et al.'s litigant pairs for ours. As for case types, we group case types into 12 categories, in contrast to 17 categories used by Eisenberg et al. Using their narrower classification of case types again does not alter the statistical significance of the jury variable or its magnitude, which continues to imply a 0.01 higher probability of a punitive damages award if awarded by a jury.

Since multiple trials occurred in each of the 45 counties represented in the sample, Eisenberg et al. adjusted the standard errors for the possibility that observations within counties are correlated with each other. This adjustment for within-county clustering assumes that observations between counties are independent.[35] The adjustment for clustering will not affect the coefficient, but usually increases the standard errors, and in doing so may lower the significance level of coefficients. Nonetheless, using our basic specification, adjusting for clustering does not change the statistical significance of our jury coefficient.

Because the sampling procedure captured a different share of trials in different counties, the survey provides sampling weights. Estimation using sampling weights results in the jury coefficient remaining significant at the 95 percent level in the equation controlling for compensatory damages in levels, although the significance of the

[35] If, say, observations for trials within a given state are correlated, this assumption of independence between counties will not hold and the adjustment for clustering gives misleading standard errors.

corresponding results using log of compensatory damages drops to 90 percent. The large sampling weight given to Harris County leads to this result for reasons that will be explored below.

As discussed earlier, our basic specification controls for 10 indicator variables. As Table 9 indicates, the statistical significance and magnitude of the jury indicator is not affected by controlling for all 45 counties.[36] However, exclusion of all county indicators reduces the magnitude and significance of the jury effect. This reduction in the jury effect can be traced to the failure to account for the influence of Harris County.

The final three tests reported in Table 9 identify how Harris County influences the results. Simply including an indicator for Harris County but for no other counties is sufficient to raise the jury coefficient and significance back to levels comparable to the basic specification. Indeed, excluding all Harris County observations results in even larger estimates of the jury coefficient, whether or not county indicators are included in the equation.

A final specification difference not reported in Table 9 is that Eisenberg et al.'s specification controlled for both a jury indicator variable as well as the interaction of jury trial with compensatory damages. Due to the high correlation between these two jury variables, it is not especially surprising that neither of these variables indicate a statistically significant effect on the punitive damages decision when both are included in our basic specification. Indeed, a formal test confirms that the relation between the log of compensatory awards and the probability of making a punitive award is statistically the

[36] No punitive damages were awarded in 8 counties. As there is no variation in awarding punitive damages, observations in these 8 counties are dropped by the probit model.

same for juries and judges.[37] Given this statistical test, inclusion of the interaction term only serves to induce multicollinearity with the jury term.

XI. Conclusion

Punitive damages have long been the focus of substantial media coverage. Because of their size, punitive damages awards are much more likely to garner headlines than more modest compensatory damages values. These awards are typically the result of jury verdicts that are often reduced or overturned by judges. Casual observation might suggest that judges exercise more restraint than juries in making punitive damages awards.

Whether this is true or not requires that one undertake a more formal analysis of jury and judge behavior. A recent series of experimental studies has used carefully controlled case scenarios to explore whether judges and jury-eligible citizens respond differently to legal case situations.[38] Substantial differences emerged from these investigations. Jurors award punitive damages more often than judges. Judges who do award punitive damages are more likely to do so if they perceive a significant shortfall from the efficient level of care in accident avoidance situations. Judges are also less susceptible to the phenomenon of hindsight bias in which the risks of an accident appear to be more apparent retrospectively as one takes into account the information communicated by an accident. Judges also are more accurate in their perceptions of risk more generally.

[37] Specifically, in probit estimates of the punitive damages awarded equation the test of the null hypothesis that the coefficient on log of compensatory damages are the same for judges and juries yields a z-value of 0.52 when the only explanatory variable is the log of compensatory damages, and z=0.89 when estimated controlling for the full set of variables.

[38] See *supra notes* 4 and 5.

An even broader range of experimental studies has addressed the failure of jurors in punitive damages contexts. Jurors are susceptible to a variety of biases, such as anchoring effects. More generally, jurors are unable to map their outrage with a reckless defendant's conduct into a punitive dollar amount. The result is that awards are highly variable.

It is this experimental evidence that in large part serves as the backdrop for the Eisenberg et al. study. [39] In Eisenberg et al.'s view, their empirical evidence based on the state courts data was more compelling than the anecdotal evidence to date or the controlled experiments undertaken with respect to judge and jury behavior. That experimental work focused on case situations that could be perfectly controlled to be identical for judge and jury samples. Eisenberg et al.'s analysis of state court data lacks perfect controls but through multivariate statistical analysis controls for important differences in the cases considered by judges and juries. Their much publicized conclusion was that there were no significant differences between the behavior of judges and juries. They claim that neither the frequency nor the level of punitive damages is different for the bench trials and jury trials in their sample. In their view, the common perception of juries as being less responsible in setting punitive damages awards is not justified.

To explore the veracity of this result, we first undertook a comprehensive survey of all punitive damages awards of at least $100 million. This world of blockbuster awards is almost exclusively the province of juries, which account for 98 percent of these awards. Casual impressions that it is juries not judges who are responsible for huge awards are

not incorrect but in fact reflect the actual distributions of such awards. These blockbuster awards could not be predicted based on the compensatory damages awards.

We then examined the same 1996 state court data that led Eisenberg et al. to conclude that jury trials and bench trials did not differ significantly in their punitive damages outcome. Only one of our blockbuster awards appeared in these data, as many punitive damages awards were for modest amounts. Nevertheless, these data do provide insight into punitive damages awards of a wide range of values.

What we found based on a careful statistical analysis was that these data are quite consistent with there being greater restraint by judges. Our statistical analysis of the level of punitive damages awards for all cases, including those with compensatory damages but no punitive awards, showed that juries award higher levels of punitive damages. If one considers the components of this effect, juries also differ from judges. Juries have a higher probability of awarding punitive damages. Moreover, juries are especially likely to make a large punitive damages award conditional on there being a punitive damages award. Thus, juries are more prone to generate large awards than are judges.

Taking the Eisenberg et al. results at face value one would conclude that there would be no practical effect of transferring greater authority over punitive damages to judges, as some reform proposals have suggested.[40] Our results show that such reforms would not be innocuous. They would reduce both the frequency and the level of punitive awards.

By any measure, punitive damages awards are rare, and the reason that blockbuster awards are newsworthy is precisely because they are rare. Our results also showed that

---

[39] Eisenberg et al. *supra note* 6. See also Theodore Eisenberg, "Punitive Damages, Jury Decision-Making Damage Awards in Perspective: Behind the Headline-Grabbing Awards in Exxon Valdez and Engle," 36 *Wake Forest Law Review* 1129 (2001).

[40] Discussion of these kinds of proposals appears in Sunstein et al., *supra note* 4.

these large awards are not predictable. As punitive damages are rare, it is tempting to dismiss concern about excessive punitive damages and any need for tort reform. But this dismissal of punitive damages' importance misses the point that the real social cost is that huge unpredictable awards may deter innovation or lead to withdrawal of products from the market out of concern for potential punitive damages awards. There does not, however, appear to be a significant constructive role of punitive damages in fostering safer behavior.[41] Indeed, a detailed examination of a variety of forms of risk taking behaviors, such as chemical spills, indicates that states that do not have punitive damages do not fare significantly worse on these dimensions than do those states that do permit the imposition of punitive damages.[42] Moreover, rather than promoting safety modifications and the introduction of new products, these high liability costs stymie innovation and lead companies to withdraw from the market altogether.[43]

Whether any punitive damages reforms are desirable or not depends on the character of the reforms and, in part, on whether one believes that the role of punitive damages in our court system should be expanded or reduced. However, irrespective on one's point of view with respect to the current efficacy of punitive damages, it is essential to understand

---

[41] For recent debate on the value of punitive damages as an incentive mechanism, see W. Kip Viscusi, "The Socials Costs of Punitive Damages Against Corporations in Environmental and Safety Torts," 87 *Georgetown Law Journal* 285, 345 (1998); Theodore Eisenberg, "Measuring the Deterrent Effect of Punitive Damages," 87 *Georgetown Law Journal* 347, 390 (1998); W. Kip Viscusi, "Why There is No Defense of Punitive Damages," 87 *Georgetown Law Journal* 381, 395 (1998) (reply to Theodore Eisenberg and to David Luban).

[42] See W. Kip Viscusi, "The Social Costs of Punitive Damages Against Corporations in Environmental and Safety Torts," 87 *Georgetown Law Review*, 1998, pp. 285-345 and W. Kip Viscusi, "Why There is No Defense of Punitive Damages," 87 *Georgetown Law Review*, 1998, pp. 381-395.

[43] See W. Kip Viscusi and Michael J. Moore, "Product Liability, Research and Development, and Innovation," 101 *Journal of Political Economy* 161 (1993). For empirical support of these phenomena with respect to pharmaceutical litigation, see W. Kip Viscusi, Michael J. Moore, and James Albright, "A Statistical Profile of Pharmaceutical Industry Liability , 1976-1989," 24 *Seton Hall Law Review* 1418 (1994); W. Kip Viscusi, Steven R. Rowland, Howard L. Dorfman, and Charles J. Walsh, "Deterring Inefficient Pharmaceutical Litigation: An Economic Rationale for the FDA Regulatory Compliance Defense," 24 *Seton Hall Law Review* 1437 (1994).

the current functioning of our legal system in order to assess the likely impact of different reform efforts. Judges and juries do differ in quite significant ways in their performance with respect to punitive damages.

Table 1
Summary of Punitive Damages Awards of at Least $100 Million

Case Name	Case No.	Punitive Damages Award	Compensatory Damages Award	Ratio of Punitive Damages to Compensatory Damages
Bench Trials				
Clayton D. Smith, et al. v. Delta TV Corporation, Don Acy, US Electronics, American General Financial Center	Civil Action 96-0254	167,217,600	554,392	301.623
Jury Trials				
Aultman v. Duncan Manufacturing	No. CV-96-077	100,000,000	16,500,000	6.061
City of West Allis, Kearney & Trecker Corporation and Giddings & Lewis, Inc., Plaintiffs-Respondents, v. Wisconsin Electric Power Company, Defendant-Third-Party Plaintiff-Appellant, v. Wisconsin Gas Company, Third-Party Defendant*	No. 99-2944	100,000,000	4,468,000	22.381
Hardy v. General Motors Corp.	No. CV-93-56 & 57	100,000,000	50,000,000	2.000
Hedrick v. Sentry Insurance Co.*	No. 96-128100-90	100,000,000	2,250,000	44.444
Johnny B. Aaron, et al v. Abex Corporation, et al.	No. 94C-21102	100,000,000	15,000,000	6.667
Randy Dorman v Bridgestone/Firestone Inc.	No. 962-07052	100,000,000	5,000,000	20.000
Timely Adventures, et al v. Coastal Mart, et al.	No. C-4597-92-1-B	100,000,000	2,300,000	43.478
William Forti v. General Dynamics Corp. Consolidated with Dolores Blanton v. General Dynamics Corp.	Nos. KC 016 871; KC 017 393; CRA No. 7357	100,000,000	7,400,000	13.514
Mosley v. General Motors	No. 90-V-6276	101,000,000	4,241,611	23.812
Tennessee Gas Pipeline Company v. KCS Resources	No. 3,448	114,094,500	28,532,625	3.999
Theresa Goodrich v. Aetna U.S. Heathcare of California, Inc.	No. RCV020499	116,026,104	4,538,259	25.566

Case Name	Case No.	Punitive Damages Award	Compensatory Damages Award	Ratio of Punitive Damages to Compensatory Damages
Alcorn v. National Railroad Passenger Corp. dba Amtrak*	No. CV9731927	120,000,000	40,400,000	2.970
Robinson, et al. v. Ford Motor Company	No. 96-200	120,000,000	24,875,336	4.824
Theodis Carroll, George Lassiter, Derrick Price, Gerald Brown, Mose Jackson, Winston Foote, Dwight Potts, Brian Bolder, Ray Dunhams, Herman Scott, Jr., Roosevelt Lewis, Charles Wright, Sr., Michael Bolden, Nate Butler, Elnorse McLemore, Scott Bryant, Rory Easterling, John Keye, Willie Wilkerson, Mark Edmonds and Harold Jones v. Interstate Brands Corporation dba Wonder Bread dba Hostess and dba Dolly Madison, et al.	No. 995728	121,000,000	11,000,000	11.000
Meyer Proctor v. Upjohn Company*	No. 84L3213	124,573,750	2,426,250	51.344
Micro-Vest v. (1) Computerland, (2) William Millard dba IMS; X/C: William Millard v. X/Defts: (1) John Martin, (2) Bruno Andrighetto and (3) Marriner & Reed	No. 545255-4	125,000,000	400,010,000	0.312
Ray D. Martin v. The ServiceMaster Co.*	No. 96-VS-114677-J	135,000,000	1,281,000	105.386
Martin v. Children's Advanced Medical Institutes	No. 99-02953-I	137,000,000	131,680,000	1.040
50 Off Stores v. Banque Paribas S.A. et al.*	No. SA-95-CA-159	138,000,000	13,000,000	10.615
John Does; 241 Plaintiffs v. (1) Technical Equities (Bankrupt); (2) Harry Stern; (3) Herbert Barovsky; (4) Stern Management Associates*	No. 600306	147,000,000	30,000,000	4.900
Robert J. Bellott; Robert J. Bellott Insurance Agency, Inc. v. State Farm Mutual Automobile Company & State Farm Life Insurance Company, et al.*	No. 3AN-97-03677	150,000,000	2,703,000	55.494
Michael Coyne, et al. v. Celotex Corp.	Nos. 85-110034 and 86-181052	150,000,000	2,035,000	73.710
Schwarz v. Philip Morris Cos.	No. 0002-01376	150,000,000	168,514	890.134
Broussard, et al. v. Meineke, GKN PLC, New Horizons Advertising*	No. 958 F. Supp. 1087	150,000,000	196,956,596	0.762
Dominguez Energy L.P., et al. v. Shell Oil Company, et al.; Dominguez Properties, L.P., et al. v. Shell Oil Company	No. C736 891 c/w BC030 746	173,000,000	46,881,183	3.690

Case Name	Case No.	Punitive Damages Award	Compensatory Damages Award	Ratio of Punitive Damages to Compensatory Damages
Mitchell Energy Corporation Appellant v. James Bartlett, Patricia Bartlett, Kelly James Bryant, John E. Baran, Carrie W. Baran, Robert F. Drury, Dorothy Drury, Quention Gilbert, Shelva J. Gilbert, Tommy Wallace, Richelle Wallace, G.W. Manning, Betty J. Manning, Ronnie Manning, Gina Manning, William Reynolds and Patricia Reynolds*	No. 2-96-227-CV	200,000,000	4,000,000	50.000
MMAR Group, Inc. v. Dow Jones & Co.*	No. H-95-1262	200,000,000	22,700,000	8.811
Wilhite v. Rockwell Int'l Corp	No. 1993-CI-000158	210,000,000	7,700,000	27.273
Rubicon Petroleum Inc. v. Amoco Production Co.*	No. 90-S-0444-C	250,000,000	125,000,000	2.000
Jimenez v. Chrysler Corp.*	No. 2:96-1269-11	250,000,000	12,500,000	20.000
Six Flags Over Georgia L.L.C. v. Time Warner Entertainment Co. L.P.	No. 97-A-1939-1	257,000,000	197,000,000	1.305
Juan Ramon Romo; Evangelina Romo; and Juan Romo as Guardian ad litem for Maria Irene Romo v. Ford Motor Company	No. 82318	290,000,000	5,309,112	54.623
Lisa D. Perez and John T. Perez, Co-Personal Representatives of the Estate of Daniel Scott Perez, deceased v. William Recht Co., Inc., d/b/a Durex Industries, Inc., William C. Whitman, and Waste Aid Systems, Inc.	No. 92-8983	300,000,000	200,000,000	1.500
Fuqua v. Horizon/CMS	No. 98-CV-1087-Y	310,000,000	2,710,000	114.391
Maryland Deposit Insurance Fund Corporation, et al. v. Julian M. Siedel, et al.	No. 13408	322,000,000	65,000,000	4.954
Pioneer Commercial Funding Corporation v. American Financial Mortgage Corporation, et al*	No. 0885	337,500,000	15,779,000	21.389
COC Services Ltd. v. CompUSA Inc. et al.	00-8358-F	364,500,000	90,000,000	4.050
Amoco v. Certain Underwriters at Lloyd’s of London, et al.	Nos. BC 030 755; CRA No. 5052	385,433,000	39,243,300	9.822
Cassoult, et al. v. Cessna Aircraft Co.	No. 91-2939-CA-01	400,000,000	80,000,000	5.000

Case Name	Case No.	Punitive Damages Award	Compensatory Damages Award	Ratio of Punitive Damages to Compensatory Damages
O'Keefe v. Loewen Group*	No. 91-67-423	400,000,000	100,000,000	4.000
Carlisle, et al. v. Whirlpool Financial National Bank, et al.*	No. 97-068	580,000,000	975,000	594.872
Maddux v. Einhorn	September Term, No. 4542	752,000,000	155,000,000	4.852
Lockheed Litigation Cases - Group V*	No. JCCP No. 2967	760,000,000	25,400,000	29.921
Cowart v. Johnson Kart Manufacturing Inc.*	No. 95CV006004	1,000,000,000	23,935,756	41.779
Grefer v. Alpha Technical Services Inc	No. 97-15003	1,000,000,000	56,125,000	17.817
Boeken v. Philip Morris*	No. BC 226593	3,000,000,000	5,539,127	541.602
Pennzoil Co. v. Texaco, Inc.	No. 84-05905	3,000,000,000	7,530,000,000	0.398
In re New Orleans Tank Car Leakage Litigation*	Civil Action 87-16374	3,400,000,000	2,000,000,000	1.700
Exxon Corp. v. Department of Conservation and Natural Resources	No. CV 99-2368	3,420,000,000	87,700,000	38.997
Patricia Anderson, Jo Tigner, and Kiontra Broadnax, Alisha Parker, and Ty-Shon Haney by and through their Guardian ad litem Mary Bell Seward v. General Motors Corporation and Karl Chevrolet*	No. BC 116-926	4,814,000,000	107,000,000	44.991
In re: The Exxon Valdez*	No. A89-0095-CV (HRH)	5,000,000,000	287,000,000	17.422
Engle et al. v. R.J. Reynolds Tobacco Co., et al.	No. 94-08273	144,871,383,549	12,700,000	11,407.196

*Notes
City of West Allis v. Wisconsin Electric - Court reversed punitive damages and ordered a new trial on that issue.
Hedrick v. Sentry Insurance Co - Settled in March 1994 for an undisclosed amount.
Alcorn v. National Railroad - All awards subsequently reduced; compensatory damages reduced to $25 million, punitive damages reduced to $50 million by trial judge and then eliminated completely by the Supreme Court.
Meyer Proctor v. Upjohn Company - Trial court remitted punitive damages to $35 million; appellate court then remitted damages to approximately $6.1 million.
Ray D. Martin v. The ServiceMaster Co.- Trial judge reduced the punitive damages award to $45 million; entire punitive damages award was vacated on appeal.

50 Off Stores v. Banque Paribas S.A. et al. - 5th Circuit Court later vacated punitive damages award.
John Does; 241 Plaintiffs v. (1) Technical Equities - Compensatory damages were calculated as approximately $50,000 per plaintiff, with 600 plaintiffs.
Robert J. Bellott; Robert J. Bellott Insurance Agency, Inc. v. State Farm Mutual Automobile Company & State Farm Life Insurance Company, et al. - Parties later settled for $7.5 million.
Broussard v. Meineke - By statute, the plaintiff had to choose punitive damages or trebled compensatory damages, which they took. The damages were trebled to $590,869,788 (Case no. 155 F.3d 331).
Mitchell Energy - Court reversed both compensatory and punitive damages saying that they were time barred and causation was proved sufficiently.
MMAR Group, Inc. v. Dow Jones & Co. - Court reversed punitive damages award.
Rubicon Petroleum Inc. v. Amoco Production Co. - Settled in February 1994 for a confidential amount that was subsequently indicated to be about 10 percent of the verdict.
Jimenez v. Chrysler Corp.- Punitive damages were overturned and new trial was awarded on reduced compensatory damages award of $9 million.
Pioneer Commercial Funding Corporation v. American Financial Mortgage Corporation, et al. - Punitive damages were remitted to $40.5 million.
O'Keefe v. Loewen Group - Case later settled for $175 million.
Carlisle, et al. v. Whirlpool Financial National Bank, et al.- Punitive damages verdict later reduced to $301 million.
Lockheed Litigation Cases - Group V - Punitive damages remitted to $355 million.
Cowart v. Johnson Kart Manufacturing Inc. - Case settled for an undisclosed amount post-verdict.
Boeken v. Philip Morris - Punitive damages reduced to $100 million on appeal. Appeals are continuing.
In re New Orleans Tank Car Leakage Litigation - Punitive damages award vacated and remanded for further proceedings.
Patricia Anderson et al. v. General Motors Corporation and Karl Chevrolet - Punitive damages were later reduced to approximately $1.1 million.
In re: The Exxon Valdez - Court vacated punitive damages award and remanded case for new determination of punitive damages.

The following articles from *Lawyers Weekly USA* were used in compiling the list of the large punitive damages awards. Based on this information we then obtained additional information using Westlaw and Lexis searches. The *Lawyers Weekly USA* articles were the following: "Special Report: The Top 10 Verdicts of 1998, " April 23, 1999; "Special Report: The Top 10 Verdicts of 1999," undated website entry on http://www.primeglobal.com/top1099.htm; "Top 10 Verdicts of 2000," January 8, 2001; and "Record Tobacco Verdict Tops Year's Large Awards," January 7, 2002. Other sources include *The National Law Journal*, September 17, 2001 and *The Wall Street Journal*, March 25, 2002.

Table 2: Characteristics of Punitive Damages Awards[a]

	Jury	Bench	Combined
Number of trials	2,972	1,364	4,336
Number with punitive damages > 0	119	54	173
Percent with punitive damages > 0	4.00	3.96	3.99
Descriptive statistics with punitive damages > 0			
Mean	$1,816,031	$557,292	$1,423,130
Standard deviation	12,974,300	3,425,466	10,928,939
Median	50,000	33,000	40,000
Mean of log(punitive damages)	10.69	10.16	10.53
Ratio of punitive damages to compensatory damages if both > 0			
Mean	4.60	1.25	3.56
Standard deviation	24.70	2.91	20.61
Median	0.49	0.60	0.51
N	118	53	171
Percent with punitive damages			
$1 - $9,999	22.69	22.22	22.54
$10,000 - $99,999	36.97	53.70	42.20
$100,000 - $299,999	14.29	18.52	15.61
$300,000 - $999,999	18.49	1.85	13.29
$1 million - $138 million	7.56	3.70	6.36

a. Sample comprised of jury and bench trials in which plaintiff won.

Table 3: Sample Characteristics of Jury and Bench Trials
Mean (Standard Deviation) or Percent

	Plaintiff win		Plaintiff win with punitive award	
	Jury	Bench	Jury	Bench
Damages				
Punitive damages	$72,715 (2,610,079)	$22,063 (684,167)	$1,816,031 (12,974,300)	$557,292 (3,425,466)
Compensatory damages	$423,528 (1,868,729)	$152,344 (982,626)	$598,497 (1,625,066)	$914,111 (4,196,590)
Litigant pair (%)				
Individual v. individual	38.19	26.25	33.61	37.04
Individual v. hospital, corporation, or government	52.02	28.01	57.14	42.59
Individual & nonindividual v. hospital, corporation, government, or individual	3.20	4.40	3.36	5.56
Nonindividual v. hospital, corporation, government, or individual	6.59	41.35	5.88	14.81
Case type (%)				
Tort cases:				
Motor vehicle accident	46.47	10.12	9.24	1.85
Premises liability	14.74	4.62	4.20	12.96
Asbestos, breast implant and other products liability	3.20	0.88	3.36	1.85
Intentional act	3.77	3.01	20.17	18.52
Medical and professional malpractice	6.76	1.91	2.52	0.00
Slander, libel or defamation	0.57	0.37	2.52	0.00
Other negligent act	4.85	2.27	2.52	1.85
Contracts/commercial cases:				
Fraud	3.33	6.89	12.61	22.22
Seller and buyer plaintiff	8.24	48.02	14.29	18.52

[Continued on next page]

	Plaintiff win		Plaintiff win with punitive award	
	Jury	Bench	Jury	Bench
Employment discrimination and other employment dispute	3.67	3.81	17.65	9.26
Mortgage foreclosure, rental/lease agreements, intentional/tortious interference, and other contract	4.07	16.72	8.40	11.11
Real property cases: Eminent domain/condemnation, title or boundary dispute, and other real property issue	0.34	1.39	2.52	1.85
Counties (%)				
Bergen, NJ	2.49	2.79	4.20	3.70
Cuyahoga, OH	2.73	3.67	2.52	3.70
Du Page, IL	2.05	2.20	3.36	3.70
Harris, TX	2.05	7.11	3.36	22.22
Los Angeles, CA	4.07	5.35	13.45	3.70
Middlesex, NJ	2.05	1.25	1.68	5.56
Orange, CA	3.06	7.11	7.56	12.96
Pima, AZ	1.62	2.05	1.68	3.70
St. Louis, MO	2.09	2.05	2.52	5.56
Ventura, CA	1.31	1.54	2.52	3.70
Other counties	76.48	64.88	57.14	31.48
Number of observations	2,972	1,364	119	54

Table 4: Simple Regression Results for Punitive Damages Awards[a]

	Coefficient (standard error)	
	Jury	Bench
Panel A: Dependent variable: punitive damages		
Explanatory variables		
Compensatory damages	3.265**	0.676**
	(0.674)	(0.063)
Constant	-137,796	-60,729
	(1,162,171)	(269,981)
Adjusted R-squared	0.16	0.68
Number of observations	119	54
Panel B: Dependent variable: log(punitive damages)		
Explanatory variables		
Log(compensatory damages)	0.666**	0.688**
	(0.094)	(0.082)
Constant	3.192**	2.879**
	(1.078)	(0.886)
Adjusted R-squared	0.30	0.57
Number of observations	119	54

a. Sample is comprised of jury and bench trials in which the plaintiff won and punitive damages were awarded.

** (*) indicates coefficient is significantly different from zero at 1% (5%) level, two-sided tests.

Table 5: Tobit Estimates of Punitive Damages Awards[a]

Explanatory variables[b]	Dependent variable Coefficient (standard error) Punitive damages in thousands	Log(punitive damages)
Jury trial	3,632**	4.777*
	(1,146)	(1.875)
Compensatory damages (in millions)	740**	
	(158)	
Log(compensatory damages)[c]		1.081**
		(0.377)
<u>Litigant pair</u>		
Individual v. individual	5,951**	12.650**
	(1,722)	(2.825)
Individual v. hospital, corporation, or government	4,319**	9.891**
	(1,664)	(2.702)
Individual & nonindividual v. hospital, corporation, government, or individual	6,914**	6.357
	(2,409)	(4.351)
<u>Case type</u>		
Premises liability	5,107*	8.435*
	(2,119)	(3.315)
Asbestos, breast implant and other products liability	9,215**	15.372**
	(2,975)	(4.690)
Intentional act	17,897**	31.981**
	(2,112)	(3.582)
Medical and professional malpractice	877	1.630
	(3,165)	(4.861)
Slander, libel or defamation	14,571**	26.330**
	(4,327)	(6.948)

[Continued on next page]

Explanatory variables[b]	Dependent variable Coefficient (standard error) Punitive damages in thousands	Log(punitive damages)
Other negligent act	9,520**	7.969
	(2,470)	(4.682)
Fraud	15,817**	28.073**
	(2,164)	(3.605)
Seller and buyer plaintiff	10,013**	16.812**
	(1,923)	(3.105)
Employment discrimination and other employment dispute	16,850**	28.841**
	(2,234)	(3.704)
Mortgage foreclosure, rental/lease agreements, intentional/tortious interference, and other contract	11,600**	20.507**
	(2,171)	(3.529)
Eminent domain/condemnation, title or boundary dispute, and other real property issue	13,820**	26.735**
	(4,012)	(6.313)
Constant	-39,136**	-75.958**
	(3,162)	(7.270)
Log likelihood	-2,199	-1,147
Number of observations	4,336	4,336

a. Sample is comprised of jury and bench trials in which plaintiff won.

b. Also included in the regression equations are ten indicator variables representing the counties listed in Table 3.

** (*) indicates coefficient is significantly different from zero at 1% (5%) level, two-sided tests.

Table 6: Probit Estimates of Punitive Damages Awards[a]

Explanatory variables[b]	Dependent variable: punitive damages awarded (1)	(2)
Jury trial	0.292**	0.256**
	(0.098)	(0.100)
	[0.013]	[0.011]
Compensatory damages (in millions)	0.045**	
	(0.015)	
	[0.002]	
Log(compensatory damages)		0.047*
		(0.020)
		[0.002]
Litigant pair		
Individual v. individual	0.652**	0.666**
	(0.145)	(0.145)
	[0.040]	[0.041]
Individual v. hospital, corporation, or government	0.520**	0.515**
	(0.141)	(0.141)
	[0.027]	[0.027]
Individual & nonindividual v. hospital, corporation, government, or individual	0.331	0.325
	(0.233)	(0.233)
	[0.022]	[0.021]
Case type		
Premises liability	0.487**	0.456**
	(0.176)	(0.175)
	[0.034]	[0.031]
Asbestos, breast implant and other products liability	0.862**	0.806**
	(0.248)	(0.247)
	[0.092]	[0.082]
Intentional act	1.748**	1.740**
	(0.160)	(0.160)
	[0.336]	[0.334]
Medical and professional malpractice	0.127	0.096
	(0.264)	(0.262)
	[0.007]	[0.005]

[Continued on next page]

Explanatory variables[b]	Dependent variable: punitive damages awarded (1)	(2)
Slander, libel or defamation	1.418**	1.414**
	(0.357)	(0.359)
	[0.238]	[0.237]
Other negligent act	0.422	0.415
	(0.254)	(0.251)
	[0.030]	[0.029]
Fraud	1.533**	1.505**
	(0.169)	(0.169)
	[0.258]	[0.250]
Seller and buyer plaintiff	0.919**	0.882**
	(0.157)	(0.157)
	[0.079]	[0.074]
Employment discrimination and other employment dispute	1.582**	1.528**
	(0.174)	(0.174)
	[0.277]	[0.260]
Mortgage foreclosure, rental/lease agreements, intentional/tortious interference, and other contract	1.105**	1.073**
	(0.176)	(0.176)
	[0.132]	[0.125]
Eminent domain/condemnation, title or boundary dispute, and other real property issue	1.415**	1.409**
	(0.331)	(0.329)
	[0.236]	[0.235]
Constant	-3.465**	-3.900**
	(0.198)	(0.284)
Log likelihood	-578	-578
Number of observations	4,336	4,336

a. Sample is comprised of jury and bench trials in which plaintiff won. Table reports probit coefficients with standard errors in parentheses and marginal effects in brackets.

b. Also included in the regression equations are ten indicator variables representing the counties listed in Table 3.

** (*) indicates coefficient is significantly different from zero at 1% (5%) level, two-sided tests.

Table 7: Quantile Regression Results for Punitive Damages Awards[a]

	Dependent variable: log(punitive damages) Coefficient (standard error)[b]				
	Quantile				
Explanatory variables	0.10	0.25	0.50	0.75	0.90
Jury trial	-0.706	-0.249	-0.019	0.481	0.924*
	(0.527)	(0.223)	(0.230)	(0.357)	(0.443)
Log(compensatory damages)	0.912**	0.830**	0.866**	0.642**	0.446*
	(0.105)	(0.081)	(0.107)	(0.190)	(0.220)
Constant	-0.789	0.587	0.945	4.211	6.957**
	(1.417)	(0.916)	(1.202)	(2.155)	(2.462)

a. Sample is comprised of jury and bench trials in which plaintiff won and punitive damages were awarded (173 observations).

b. Standard errors are bootstrap standard errors.

** (*) indicates coefficient is significantly different from zero at 1% (5%) level, two-sided tests.

Table 8: Regression Results for Compensatory Damages Awards[a]

Explanatory variables[b]	Dependent variable Coefficient (standard error) Compensatory damages	Log(compensatory damages)
Jury trial	292,954**	0.980**
	(66,926)	(0.077)
Litigant pair		
Individual v. individual	-280,470**	-0.960**
	(88,226)	(0.101)
Individual v. hospital, corporation, or government	-3,231	-0.024
	(85,905)	(0.098)
Individual & nonindividual v. hospital, corporation, government, or individual	170,066	0.022
	(146,338)	(0.168)
Case type		
Premises liability	-7,611	0.633**
	(89,238)	(0.102)
Asbestos, breast implant and other products liability	382,917*	1.573**
	(166,152)	(0.190)
Intentional act	114,555	0.149
	(138,424)	(0.159)
Medical and professional malpractice	884,757**	1.829**
	(117,125)	(0.134)
Slander, libel or defamation	39,423	-0.344
	(349,312)	(0.400)
Other negligent act	462,655**	0.952**
	(131,520)	(0.151)
Fraud	192,487	0.663**
	(129,578)	(0.149)

[Continued on next page]

Explanatory variables[b]	Dependent variable Coefficient (standard error) Compensatory damages	 Log(compensatory damages)
Seller and buyer plaintiff	7,134 (88,790)	0.370** (0.102)
Employment discrimination and other employment dispute	37,364 (139,332)	0.797** (0.160)
Mortgage foreclosure, rental/lease agreements, intentional/tortious interference, and other contract	99,088 (110,069)	0.450** (0.126)
Eminent domain/condemnation, title or boundary dispute, and other real property issue	191,645 (306,809)	0.363 (0.352)
Constant	127,211 (104,725)	9.740** (0.120)
Adjusted R-squared	0.03	0.18
Observations	4,336	4,336

a. Sample is comprised of jury and bench trials in which plaintiff won.

b. Also included in the regression equations are ten indicator variables representing the counties listed in Table 3.

** (*) indicates coefficient is significantly different from zero at 1% (5%) level, two-sided tests.

Table 9: Sensitivity of Jury Effects to Alternative Specifications of Punitive Damages Award Equation[a]

	Jury Coefficient (Std. Error)	
	1	2
Reference point probit results	0.292** (0.098)	0.256** (0.100)
Logistic odds ratio model	1.838** (0.375)	1.722** (0.358)
Detailed litigant pairs	0.309** (0.098)	0.274** (0.100)
Detailed case types	0.258** (0.100)	0.214* (0.101)
Clustering at county level	0.292* (0.120)	0.256* (0.126)
Sampling weights	0.223* (0.106)	0.180 (0.109)
Full set of county dummy variables	0.265** (0.106)	0.238* (0.107)
Influence of Harris County		
No county dummy variables	0.181 (0.093)	0.135 (0.096)
Harris County dummy variable only	0.266** (0.095)	0.225* (0.097)
Sample excludes Harris County, no county dummy variables	0.324** (0.101)	0.287** (0.103)
Sample excludes Harris County, county dummy variables included	0.354** (0.104)	0.324** (0.106)

**(*) indicates coefficient is statistically significant from zero at the 1% (5%) level, two-sided tests.

[a] All equations are identical to the reference point equation in Table 6 except as indicated. The dependant variable for both equations is 1 if there was a punitive damages award and zero otherwise. Equation 1 includes compensatory damages in levels, and Equation 2 includes compensatory damages in logs.

Figure 1

The Structure of Litigation in the 1996 Civil Justice

Survey of State Courts

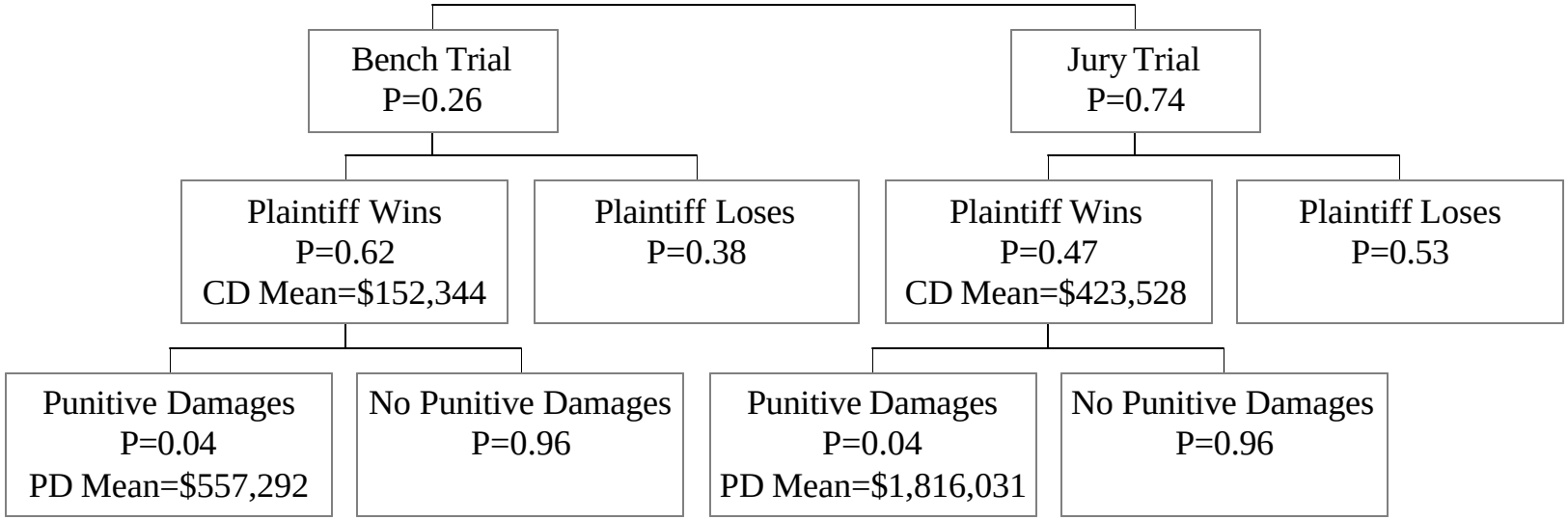

Figure 2
Distribution of Jury and Judge Punitive Damages Awards