The Resolution of Medical Malpractice Claims

Research Results and Policy Implications

Patricia Munch Danzon, Lee A. Lillard
This research is supported by The Institute for Civil Justice.
The Resolution of Medical Malpractice Claims

Research Results and Policy Implications

Patricia Munch Danzon, Lee A. Lillard

1982
The Institute for Civil Justice

The Institute for Civil Justice, established within The Rand Corporation in 1979, performs independent, objective policy analysis and research on the American civil justice system. The Institute's principal purpose is to help make the civil justice system more efficient and more equitable by supplying policymakers with the results of empirically based, analytic research.

Rand is a private, non-profit institution, incorporated in 1948, which engages in nonpartisan research and analysis on problems of national security and the public welfare.

The Institute examines the policies that shape the civil justice system, the behavior of the people who participate in it, the operation of its institutions, and its effects on the nation's social and economic systems. Its work describes and assesses the current civil justice system; analyzes how this system has changed over time and may change in the future; evaluates recent and pending reforms in it; and carries out experiments and demonstrations. The Institute builds on a long tradition of Rand research characterized by an interdisciplinary, empirical approach to public policy issues and rigorous standards of quality, objectivity, and independence.

The Institute disseminates the results of its work widely to state and federal officials, legislators, and judges, to the business, consumer affairs, labor, legal, and research communities, and to the general public.
Board of Overseers

CHAUNCEY J. MICHENER, III, Chairman, of the Executive Committee, Bank of America; Chairman of the Board of Governors, The Institute for Civil Justice

KENNETH J. ARROW, The Joan Kemery Professor of Economics and Professor of Operations Research, Stanford University

WILLIAM O. BAILEY, President, Arena Life and Casualty Company

ARCHIE R. BOE, President, Sears, Roebuck & Company

GUIDO CALABRESI, Sterling Professor of Law, Yale Law School

RICHARD P. COOLEY, Chairman and Chief Executive Officer, Wells Fargo Bank and Wells Fargo & Company

THOMAS R. DONAHUE, Secretary-Treasurer, AFL-CIO

W. RICHARD GOODWIN, President and Chief Executive, Hughes Capital Corporation

SHIRLEY M. HUPSTEDLER, Attorney, Hubstleder, Miller, Carlson & Brodsky, former U.S. Circuit Judge, former Secretary, U.S. Department of Education

JOHN A. LOVE, Chairman, President and Chief Executive Officer, Ideal Basic Industries, former Governor of Colorado

LAURENCE E. LYNN, JR., Professor of Public Policy, John F. Kennedy School of Government, Harvard University

ROBERT H. MALOTT, Chairman and Chief Executive Officer, FMC Corporation

EDWARD J. NOHA, Chairman and Chief Executive Officer, CNA Insurance Company

WILLIAM B. SCHWARTZ, Vanderbilt Bank University Professor and Professor of Medicine, Tufts University

ELEANOR B. SHELDON, former President, Social Science Research Council

JUSTIN A. STANLEY, Partner, Mayer, Brown & Platt, former President, American Bar Association

POTTER STEWART, Associate Justice, United States Supreme Court, retired (Will join the Board of Overseers, March 1984)

WARD WAGNER, JR., Partner, Crow, W-head, Wagner, Wagner, Johnson, Johnson & Roth, former President. The Association of Trial Lawyers of America

ROBERT B. WILCOX, President, Property-Casualty Insurance Council

SANDRA L. WILLETT, Executive Vice President, National Consumers League

MARGARET BUSH WILSON, Partner, Wilkin, Smith and McCutchen; Chairman of the NAACP National Board of Directors

PAUL S. WISE, President, Alliance of American Manufacturers

LEONARD WOODCOCK, Adjunct Professor of Political Science, University of Michigan; President Emeritus, United Auto Workers; former U.S. Ambassador to the People's Republic of China

HONORARY MEMBERS

IRVING A. BLUESTONE, Professor of Labor Studies, Wayne State University; former Vice President, United Auto Workers

EDWARD H. LEVI, Dean, Yale University Law School; former Attorney General of the United States

SAMUEL R. PIERCE, JR., Secretary, U.S. Department of Housing and Urban Development

DONALD H. RUMSFELD, President and Chief Executive Officer, G.D. Searle & Company

CHARLES J. ZWICK, President and Chief Executive Officer, Southern Banking Corporation; former Director of the U.S. Bureau of the Budget
Foreword

Observers of the civil justice system recognize two dominant groundswells of legislated (as opposed to judge-made) change in American personal injury law during the past few decades. The first was the movement of many states toward no-fault auto liability systems. The second was the legislative reaction to a nationwide upsurge in medical malpractice insurance premiums during the early 1970s.

Rand’s Institute for Civil Justice has been conducting a study of the resolution of medical malpractice claims. The study applies sophisticated behavioral and mathematical modelling techniques to two rich lodes of data, collected by major insurance carriers, covering the vast majority of all claims of this type that were closed in 1974 and 1976—years that bracket the heart of the period of generally perceived crisis.

The objectives of the work are ambitious. They can be summarized as an attempt to build an analytic tool capable of providing at least preliminary answers to most of the questions that practitioners, scholars, and policymakers have not been afraid to ask, but to which they have heretofore received no empirically documented answers. To wit: Do the parties to medical malpractice disputes act rationally, on the average? What determines whether voluntary settlement occurs, and if so, at what dollar level? What would the verdict have been if a settled claim had been carried through to trial? What differences do principles of law and justice make in the upwards of 90% of cases that are settled instead of being tried to verdict? Is the compensation achieved through settlement or verdict fairly distributed across the broad spectrum of people who file malpractice claims? Which of the legal changes legislated during the crisis period seem to have had an immediate effect—and was that effect in the direction intended by the enacting legislatures?

To be sure, the answers provided by the study are neither definitive nor entirely comprehensive. The analytic model employed does not try to reproduce all of the nonrational behavior that leavens the human condition. Rather, it seeks to establish the degree to which actual
behavior, as expressed in thousands of closed claims, fits the patterns predicted by the model on the simplistic assumption that all parties are merely trying to maximize their financial advantage. The closer the fit, the more useful the model and its assumptions should be for anticipating the likely effects of proposed changes in public policy. At the same time, we begin to develop a research instrument that is not only capable of analyzing the behavior of parties to medical malpractice claims, but also is applicable to any bargaining situation involving opposing parties in a dispute that can and will be adjudicated by a third party if the disputants cannot settle it themselves.

The publication of these results is therefore doubly important for the Institute for Civil Justice. In themselves, they constitute a unique contribution to a policy issue of great significance across the country. Perhaps even more important, they introduce a research method that may prove useful in a much wider research arena.

The results of our research appear in two reports. The present report contains a detailed discussion of our findings and their implications for policy, and presents a general description of the data base and the model; it also incorporates an Executive Summary for readers who are primarily interested in a listing of the major conclusions. Readers with a technical interest in the model and its underlying theory will wish to consult the companion-piece to this report, published as the second in the Institute’s series on Research Design and Methods: R-2792-ICJ, The Resolution of Medical Malpractice Claims: Modeling the Bargaining Process, by Patricia Munch Danzon and Lee A. Lillard.

This kind of combination of substantive and methodological contribution is what the Institute was founded to generate. This study is a worthy addition to the evidence that such contributions are possible, as a technical matter, and that their insights can be communicated in plain English. It should reward the time invested by every reader with a serious interest in civil justice practice and policy.

Gustave H. Shubert
Director, The Institute for Civil Justice
Executive Summary

INTRODUCTION

In the early 1970s, both the frequency of medical malpractice claims and the dollar awards to successful plaintiffs rose at unprecedented rates. In 1974-1975, the malpractice insurance crisis erupted. Premiums increased dramatically—in some states, as much as 300% in a single year. In other states, insurers restricted coverage or even withdrew from the market.

By the end of 1976, most state legislatures had enacted laws to deal with the perceived causes of the crisis. With only scant empirical evidence on the actual operation of the tort system and likely effects of any changes, however, legislators have had to rely on anecdote, subjective reasoning, and conventional wisdom.

The research that is summarized here aims at rectifying that deficiency. It does so by analyzing two computerized data files on several thousand closed claims, using a computerized model of the bargaining behavior through which claims are resolved.

The model must be regarded as preliminary; it must be applied to more data sets before its validity can be precisely judged. Gaps and inadequacies in the data used so far make conclusions tentative. Nonetheless, the research has already produced useful evidence on the actual operation of the malpractice system, including changes made during the crisis, and analytic tools that can be applied to understand dispute resolution in other contexts.
POLICY QUESTIONS AND ANSWERS

Following are the five policy questions most frequently raised, and the answers suggested by our analysis.

Do the courts really make awards only when negligence is present and to the extent of loss actually incurred?

Because of limitations of the data, the analysis revealed far more about damages than about the question of liability. It is certain that court awards are strongly influenced by the extent of economic loss and by the law defining and sometimes limiting compensable damages. The data do not reveal how much courts "mark up" economic losses to compensate for pain and suffering, nor whether economic losses are over- or undercompensated. The more severe the injury, the more likely will the verdict favor the plaintiff, but the data base does not permit a conclusion on whether this simply reflects the fact that the probability of negligence increases with the severity of injury, or whether courts in fact relax the negligence standard in cases of severe injury.

Do outcomes generated by the settlement process bear any relation to outcomes in court?

Fewer than 10% of the claims in our sample were tried to verdict. Of those, plaintiffs won only about one-fourth—but the awards averaged $102,000. By contrast, about 50% of claims that were settled out of court resulted in some payment to the plaintiff, but the average award was only $26,000. This disparity in plaintiff win rates and dollar outcomes has caused concern about the "justice" of the settlement process.

The answer to the question is yes, nonetheless. On the average, paid settlements amounted to 74% of their "shadow verdicts"—the awards they would have won if the claims had been taken to trial, as estimated by our model. The remaining 26% difference is plausibly accounted for by anticipated litigation costs and reasonable estimates of the probability of winning or losing in court. Claims dropped without payment would have had a 39% to 53% probability of winning, whereas claims that settled with some payment would have had a 57% to 77% probability of winning. On the average, then, the probability of receiving a positive settlement out of court is influenced by the probability of winning in court. Of the cases that go to trial, a disproportionate number involve large claims for serious injuries; as a consequence, the awards in such claims on average exceed by far
awards for out-of-court settlements. The outcomes are far from random, then, and outcomes both in and out of court reflect legal standards to some extent.

Is compensation unfairly distributed?

The answer is probably not, if one believes that fairness implies distribution in direct relation to the severity of injury and economic loss. Although half of the dollars paid to plaintiffs were concentrated in only 3% of the total number of claims (or 5% of all claims that involved some payment), this heavy concentration is a reasonably accurate reflection of the concentration of injury severity and measurable economic damage in those claims.

Does the cost of litigation distort the process?

The answer is yes, to some extent. In medical malpractice suits and in most other forms of tort litigation, total litigation costs of plaintiff and defendant together roughly equal compensation received by plaintiffs. Small claims are much more likely to be dropped without payment, and less likely to be tried to verdict, than large claims. This suggests that some claimants with small but meritorious claims are barred from compensation by the costs of litigation.

Therein lies a dilemma for the policymaker, however. Any moves to reduce litigation costs will tend to increase the number of cases filed, decrease the percentage dropped without payment, increase average settlement size, and increase the number of cases taken to verdict.

Any reduction in the cost of litigation creates added incentive for both sides to proceed to trial, resulting in further congestion of court calendars and thus heavier costs to the general public.

On the other hand, the fact that half of all claims are dropped with no payment clearly refutes the popular belief that insurance companies stand ready to pay out money freely to be rid of small claims, including unfounded "nuisance" claims.

Have crisis-generated changes in tort law affected the system?

The analysis provides evidence on the direction and order of magnitude of the short-run effects of some of the changes enacted in the mid-1970s. Dollar caps on awards, elimination of specific dollar claims by the plaintiff, and authorization of installment payment of large awards appear to have significantly reduced jury awards and settlements in the states where they were enacted. Modification of the collateral source rule to admit evidence that the plaintiff is eligible for
compensation from other sources has apparently had a much weaker effect. Statutory limits on the contingent fees charged by plaintiffs' attorneys appear to have had moderately depressive effects on settlement amounts and on the number of cases going to verdict, while somewhat increasing the proportion of cases dropped.

The analysis did not attempt to identify the effects of other measures enacted by various states, including measures to reduce the statute of limitations (the allowable time between injury and claim-filing); to limit the circumstances in which a presumption of defendant liability is created (res ipsa loquitur); to make it easier to prove the patient's informed consent to a medical procedure; to introduce expert pretrial panels to screen claims for their merit; or to permit binding arbitration.

THE DATA BASE

The information base for the study consists of two large, computerized data files that report certain facts on almost 6,000 medical malpractice claims that were closed by an extensive list of large insurers during given periods in 1974 and 1976. All states are represented. The files are broadly representative but not strictly randomized samples of claims against physicians and hospitals. File tapes for both years include information on the severity of the injury (translated into a severity index); the insurer's estimate of the claimant's economic loss; the claimant's age, sex, income, and employment status; the identity of the defendant (institutional or individual); and the outcome of the claim (the stage at which it was resolved and the amount of payment to the claimant, if any). There is no information on the bargaining process or what the outcome of a settled case would have been if taken to verdict.

Some of the data items are missing for some claims and the two files do not neatly match. The 1974 file, for example, reports the claimant's specific allegations, such as misdiagnosis, absence of the patient's informed consent, or an assertion that, because the injury would not have occurred in the absence of negligence, the burden of proof should shift to the defendant (res ipsa loquitur). These data were not collected in 1976. On the other hand, the 1976 file provides much more specific data on the nature of the injury.
THE MODEL

The model starts by postulating that the relationship between the facts of the claim and the probable outcome if it were tried to verdict is determined by the law defining the standard of care and compensable damage. The behavioral model of preverdict bargaining adopts the simple premise that plaintiffs and defendants act (either directly or through an attorney) to serve their own financial interests. Both parties have an incentive to settle, to avoid prolonged and costly litigation. The plaintiff bases his "ask" on a simple calculation: He multiplies what he thinks would be his probability of winning in court times his expected award, and subtracts his costs. For example, if he believes there is a 50% chance of winning $10,000 and his costs will be $2,500, his "minimum ask" will then be $10,000 × 50% − $2,500 = $2,500. The defendant makes a similar calculation based on the probability of his losing, the likely award to the plaintiff, and his own costs. Using the same figures as the plaintiff's, he would be willing to settle for any amount up to his "maximum offer" of $7,500 ($10,000 × 50% + $2,500 = $7,500). The model suggests, then, that the parties would settle at a figure between $2,500 and $7,500. These assumptions add up to a simple set of contingencies: The plaintiff will drop the case if his calculation turns negative, because his costs of proceeding exceed his expected gains. If his ask is positive and less than the defendant's maximum offer, the case will settle for some intervening amount. If the plaintiff's ask is positive and exceeds the maximum offer, they will go to court.

The model does not deny that emotional factors sometimes cause departures from such rational behavior. The purpose of ignoring departures is to test whether the assumption of strict rationality explains enough of the actual outcomes to make it useful to analyze the liability system as though everyone were rational all the time.

OUTCOMES IF ALL CLAIMS WENT TO VERDICT

At least 90% of claims that are filed are settled voluntarily or dropped. If the assumption is correct, that settlements reflect to some degree the expected outcome at verdict, then it is important for the policymaker to learn what would have happened if all claims had been taken to trial. These results are presented below.
What determines the plaintiff's probability of winning a judgment?

The closed claim files provide a less solid basis for estimating the probability of an award than for predicting the size of an award, but some generalizations are possible.

An award was more likely if the injury was permanent rather than temporary, and the probability was highest if the injury was fatal. The evidence seems to support the allegation that courts relax the negligence standard in cases of severe injury. However, this is merely a possible, not a necessary, conclusion; evidence from a study of injuries affirms that the more severe the injury, the more likely it was due to negligence instead of normal risk. The courts may simply be reflecting that fact.

The plaintiff had a 50% higher chance of winning on claims asserting that the damage was so obvious that the burden of proof should shift to the defendant to show that he had not been negligent (that is, the plaintiff invoked the rule of res ipsa loquitur). The plaintiff in such a case was likely to receive something in settlement, probably because he was almost certain to if the issue had been pressed to verdict.

The plaintiff was 21% less likely to win if the charge was misdiagnosis, and 34% less likely if he alleged lack of informed consent to the injurious procedure. It appears that, at least in 1974, plaintiffs systematically tended to overestimate their chances in such cases.

The plaintiff was almost twice as likely to win against multiple defendants as against a single defendant. Contrary to the popular belief that plaintiffs add nonliable defendants solely in hopes that one or more of them will settle to avoid litigation costs, this finding suggests that such behavior is atypical. On average, the additional defendants do raise the probability of a plaintiff victory. The data do not reveal, however, to what extent this is because multiple defendants try to shift liability among themselves and thus produce evidence that aids the plaintiff.

The plaintiff did not have a significantly higher chance of winning in surgery-related cases than in others. This seems to contradict, but not dispose of, the widespread belief that courts hold surgeons to a higher standard than is applied to others. It may be that the standard is higher but that failure to meet it is harder to prove.

What determines the size of an award, if one is made?

The data permit more to be said about the size of potential awards—"shadow verdicts"—than about probabilities of winning.

The size of awards is strongly influenced by the severity of the injury and by the applicable law. This finding runs contrary to the conclu-
sions of earlier studies, that verdicts have little to do with severity or actual loss.

The higher the economic loss, the higher is the likely award. Although awards do not seem to rise in proportion to economic loss, this may be an erroneous perception resulting from imperfect data. Previous analyses of closed claim data have often concluded that the tort system tends to overcompensate small economic losses and undercompensate large ones. Statistical analysis shows that systematic errors in the data rule out such a judgment. For the same reason, it is impossible to discern whether the courts tend to award proportionately higher noneconomic damages when economic losses are high.

The median shadow verdict for claims involving permanent total disability is roughly double that for claims involving death. This conforms to what would be expected from the law, which deduces important elements of compensation to surviving dependents from what would have been paid if the injured person had lived but been totally disabled.

Shadow verdicts for permanent total disability increase roughly 2% for each added year of life expectancy, and 1% for permanent partial disability. Contrary to what is sometimes charged, then, the courts relate compensation to the claimant’s age for permanent disabilities, consistent with the law of compensable damages.

Awards for minor injuries, whether temporary or permanent, are not systematically related to severity (or at least to the severity index reported in the data). This is an important finding, since minor injuries account for more than 50% of all the claims studied.

Average awards for minor injuries rise and then fall with the age of the claimant, peaking when he is in his late thirties. This suggests that such awards are not arbitrary, but are more influenced by current wage loss than by medical costs, pain and suffering, or some other factor.

The foregoing findings may strike the reader as prosaic, but they are important because they strongly controvert the frequent charge that judges and juries do not follow established legal precepts.

OUTCOMES OF SETTLED CLAIMS

Why are so many claims dropped?

About half of the claims in the data base were dropped with no payment to the plaintiff—two-thirds of them without the filing of a lawsuit.

The smaller the shadow verdict, the more likely was a claim to be dropped. High litigation costs appear to be the chief reason.
The greater the court congestion, the more likely was a claim to be dropped. Delay tends to reduce the present value of an award.

Claims were more likely to be dropped in states that imposed statutory limits on contingent fees of plaintiffs' attorneys. States that enacted fee ceilings between 1974 and 1976 experienced a 13 percentage point increase in the rate of dropped claims (from 34% to 47%). Ceilings may have been responsible for 5 of the 13 percentage points. This suggests that attorneys were more reluctant to pursue cases where the allowed fee would be low relative to the time-costs of handling a case.

About half of the dropped claims would have produced an award for the plaintiff if taken to verdict. Indirect estimates suggest a figure of 39% to 53%—far from trivial, since it is about equal to one-fourth of all claims in the data base. It indicates that the uncertainties and costs of litigation deny compensation to many claimants with small but valid claims.

Settled claims have a somewhat higher probability of winning in court than do dropped claims. Some 57% to 77% of settled claims would have won awards in court, compared with 39% to 53% of claims dropped. This suggests that the settlement process is not random with respect to which claims receive payment. Still, it appears that some 30% of settled claims would have lost.

What determines the size of settlement?

The defendant's maximum offer was much more influential than the plaintiff's minimum ask. On a basis of 100, the imbalance between the two was 87 to 13. Put another way, the settlement amount was much closer to the defendant's offer, suggesting that the plaintiff typically got the better of the bargain.

There was a strong positive correlation between the size of settlement and the size of the shadow verdict, but the larger the claim, the wider the dollar gap between them. On average, paid claims settled for 74% of their shadow verdicts; but the estimates indicate that each $10,000 increase in shadow verdict produced only a $7,700 increase in settlement. The reason may be that, in larger claims, the plaintiff's anticipated legal costs rise faster than the defendant's (because of expert witness fees and the like), in which case plaintiffs would be willing to settle for less than what they could win in court.

Claims involving multiple defendants resulted in higher settlements, even after discounting for the fact that they yielded higher shadow verdicts. The causes could be several, such as the complexity of cases with multiple defendants, blame-shifting among defendants, and the higher probability of a verdict against at least one of them.
Claims involving at least one physician yielded higher settlements than those without one. This suggests that, although physicians are loath to settle because of the implicit admission of liability, their reluctance is exceeded by the desire to avoid the embarrassment and lost time that court appearances entail.

Claimants who were represented by attorneys but settled prior to suit received about 150% more than unrepresented claimants who settled at that stage. This clearly overstates the value of having an attorney, because many unrepresented claimants presumably had claims that attorneys declined to take on. Still, the sheer size of the difference suggests that an attorney who charged less than, say, 50% of the settlement value was well worth his fee.

Limits on contingent fees to plaintiffs' attorneys appeared to reduce average settlements by 9%. The evidence seems to support the view that fee ceilings do more than cut down on "windfall" returns—that they also reduce the attorney's efforts and hence the probability of victory for the plaintiff and the likely gross recovery and net amount realized by the plaintiff.

Court congestion tended to reduce the size of settlements. The reasons could be several, including the erosive effect of delay on the present value of expected awards.

Claims closed before the filing of suit were settled for much lower amounts than those settled after filing. It is doubtful, however, that the event of filing is as important as the characteristics of the claim.

STAGE OF DISPOSITION: WHY DO CASES GO TO VERDICT?

Many weak claims and small claims are dropped, and many of the more substantial claims are settled. Less than 10% of all claims are taken to verdict. The model predicts, and the data confirm, that this small but critical segment is atypical in several respects. Specifically, any factor that increases uncertainty or reduces litigation cost heightens the propensity to go to verdict.

By far the strongest predictor of how far a claim would be pursued was the size of the shadow verdict: The larger this verdict, the more likely the case was to be tried to verdict.

The more severe the injury, the more likely a claim was to be tried to verdict. Severe injuries entail higher and probably more uncertain shadow verdicts.

Claims involving multiple defendants were slightly less likely to go to verdict than were claims with only one defendant. The reason is
probably the higher cost of defending multiple-defendant suits, which is expected to raise the defendants' maximum offer.

Claims involving at least one physician were less likely to go to verdict, plausibly because of the time and embarrassment costs to physicians of going to verdict.

Limits on contingent fees reduced the likelihood of going to verdict—as would be expected, since limits reduce the attorney's return for a marginal hour of effort.

The evidence suggests that the larger the shadow verdict, the greater the litigants' errors in predicting it relative to their litigation costs. This is understandable, since some of the costs are relatively constant, while uncertainty pervades the estimation of damages for major injuries that entail large future losses. It follows that dollar caps on awards, or any other reform that reduces uncertainty, should encourage settlement out of court.

WHY ARE INDEMNITY DOLLARS SO UNEVENLY DISTRIBUTED?

The mean award in the data base was $102,000, the mean settlement $26,000. The top 5% of paid claims (those receiving more than $140,000) accounted for 49% of all dollars paid. The bottom 50% of claims accounted for only 4% (averaging less than $6,500 each).

An important controlling factor was the 103% disparity between the average shadow verdict of settled cases and that of cases taken to judgment. Much of the reason for the difference is that cases going to verdict usually involve more serious injuries and losses.

The analysis predicted that 43.5% of the claims in the full sample of closed claims would have received less than $6,500 if tried to verdict—a figure quite close to the 50% that actually received less than that amount.

In sum, the analysis suggests that the uneven distribution of dollars parallels the uneven distribution of severity of injury. The stage of disposition—settlement or trial to verdict—contributed a relatively small amount to the disparity between average verdicts and average settlement.

THE EFFECTS OF CHANGING THE TORT LAW

What difference did the 1974-76 changes make?

For several reasons treated in detail in the main report, the effects realized in the period immediately following enactment—the period
captured by the 1976 data file—may not be reliable guides to the long-term effects of each measure. For example, the precise form of a given measure varies from state to state in ways that are difficult to quantify; the data base includes only statutes enacted prior to the closing date of claims in the 1976 sample, and some of those statutes became effective only several months after they were enacted; it is not possible to control for all other factors that may have changed concurrently with changes in tort law. For such reasons, the estimates given below should be regarded as rough preliminary indicators.

When a state moved to cap verdicts, to eliminate specific dollar requests by plaintiffs, or to permit payment of awards for future losses in periodic installments, the seeming effect of any one of these changes was to reduce the average shadow verdict by 30%; cut the average settlement by 25%; raise the percentage of cases dropped from 43% to 48%; and reduce the share of cases going to verdict from 5.1% to 4.6%. The analysis does not permit an accurate estimate of the cumulative effect of these measures, and the assumption that all are of equal weight is probably incorrect.

Relaxation of the ban on evidence that the plaintiff has collateral sources of compensation seemed to reduce shadow verdicts by 18% (but the statistical significance of this finding was low).

Imposition of limits on contingent fees charged by plaintiffs' attorneys seemed to cut the average settlement by 9%; raise the portion of cases dropped from 43% to 48%; and reduce the share of cases going to verdict from 6.1% to 4.6%.

It appears, then, that changes in the tort law wrought substantial effects in the directions that lawmakers intended. It is also true that the "malpractice crisis"—the upsurge in the frequency of claims and in insurance premiums—abated after 1976. This analysis suggests that tort reforms were a factor, but it cannot prove how important they were relative to the many other factors that may have been at work. A longer period of experience is necessary to judge the full effects of the post-crisis tort reforms.

What would happen if litigation costs were cut?

The model can be used to predict the likely effects of hypothetical as well as actual changes in the law. We applied the model to reductions in litigation costs, which have been the result or object of many recent changes in law and procedure, such as those expanding the locality rule, permitting the admission of textbooks as evidence, permitting a more liberal interpretation of res ipsa loquitur, and the use of pretrial screening panels or arbitration. Specifically, we simulated the effects
of a 30% reduction in plaintiff's costs, in defendant's costs, and in the costs of both parties combined.

When the plaintiff's costs were reduced by 30% (thus increasing the minimum ask), average settlement amounts rose 4%, the portion of cases dropped without payment lowered from 42% to 40%, and the share of cases taken to verdict rose from 5.6% to 6.2%.

When the defendant's costs were reduced by 30% (thus decreasing the maximum offer), average settlement amounts fell by 20%, the portion of cases dropped without settlement remained unchanged, and the share of cases taken to verdict rose from 5.6% to 6.2% (as with plaintiffs).

When the costs of both parties were cut 30%, average settlement amounts fell by 17%, the portion of cases dropped without payment fell from 42% to 40%, and the share of cases taken to verdict rose from 5.6% to 6.9% (a 23% increase).

For urban court systems already burdened with 3- to 5-year backlogs, a large additional caseload may seem an alarming and perverse result of well-intended measures to reduce litigation costs.

We emphasize that these estimates do not measure the full effect of any specific change. Nevertheless, they indicate clearly that any change in the system is likely to produce complex results. For example, cutting the cost per case to the parties involved may save little if anything in total outlay, including public costs not borne by the litigants, because of an increase in the number of cases carried to settlement or verdict.
Contents

FOREWORD .................................................. iii
EXECUTIVE SUMMARY ..................................... v

Section

I. INTRODUCTION ........................................... 1
II. POLICY QUESTIONS ....................................... 3
III. THE BASIC METHOD APPLIED .......................... 5
IV. THE MODEL AND THE DATA ............................. 7
   Factors That Determine the Outcome at Verdict ...... 7
   Factors That Determine Settlement Outcomes ......... 8
   The Data Base ........................................... 11
V. OUTCOMES IF ALL CLAIMS WENT TO VERDICT ....... 14
   What Determines the Plaintiff's Probability of ....... 14
   Winning a Judgment? .................................... 14
   If an Award Is Made, How Large Is It Likely To Be? . 16
VI. OUTCOMES OF SETTLED CLAIMS ....................... 18
   Why Are So Many Claims Dropped? ..................... 18
   What Determines the Size of Settlement? ............... 19
   Why Are Indemnity Dollars So Unevenly Distributed? 23
VII. EFFECTS OF CHANGING THE TORT LAW .......... 25
    What Difference Did the 1974-76 Changes Make? .... 25
    What Would Happen If Litigation Costs Were Cut? . 27
VIII. RESPONSES TO POLICY QUESTIONS ................ 30
REFERENCES .................................................. 33
I. INTRODUCTION

Under the law of medical malpractice, the failure of a health care provider to meet the profession's customary standards of adequate care constitutes a "tortious" act. Like other forms of negligence, it creates in the person injured a right to sue for compensation under the relevant body of personal injury law known as "tort" law. Most individual and institutional health care practitioners insure against such suits. Although doctors, hospitals, and other practitioners have been subject to them for centuries, such actions have been relatively rare until recently.

In the early 1970s, both the frequency of medical malpractice suits and the dollar amounts awarded to successful plaintiffs rose at unprecedented rates. Malpractice insurance premiums increased dramatically—in some states, more than 300% in a single year. In other states the crisis of price became a crisis of availability as traditional insurers restricted coverage or withdrew from the market entirely, leaving health practitioners to choose between forming their own companies, seeking coverage from state-mandated insurance pools, or "going bare." Similar trends were occurring in other liability areas, notably product and municipal liability, but the rate of change in the medical field was more extreme. So was the drama created by the reaction of the health care professions. Fear became widespread that failure of the liability system might cause at least a temporary collapse of some elements of the health care delivery system.

Throughout 1974 and 1975, state legislatures were under intense pressure to take steps to resolve the crisis. Opinions differed dramatically as to both causes and appropriate cures, but consensus grew that something must be done. By the end of 1976, most states had enacted new laws designed to contain the perceived causes of the eruption in insurance premiums. The combinations of laws differed widely among the states, but all were founded in some set of perceptions about how the malpractice liability system works, and a set of expectations on how the new laws would affect the workings of the system.

In devising those laws, legislators had little to go on besides anecdote, hearsay, and intuition. Empirical evidence has been scanty. Few systematic attempts have been made to analyze the record of closed

---

1Causes of and solutions to the malpractice insurance crisis are analyzed in Munch (1976).
malpractice claims to see whether it corroborates common perceptions and expectations; and those attempts have not been methodologically equipped to analyze the bargaining process that underlies outcomes, or the influence of the law upon the process of voluntary settlement, which resolves at least 90% of the claims that are filed.

This study is designed to help fill this analytic gap. By applying behavioral modelling techniques to computerized data on almost 6,000 closed claims, it provides plausible estimates of how these claims were bargained, whether the settlement amount was closer to the plaintiff’s ask or to the defendant’s offer, and what the verdict would have been if each case that was settled had instead been pressed to judgment—the “shadow verdict.” Properly validated, this technique can provide empirical documentation for judging whether the liability system is operating as the law intends, and whether particular changes in the law are likely to induce desired changes in behavior and outcomes. It is already possible to draw some preliminary conclusions about the operation of the system, including effects of statutory changes that were made between the 1974 and 1976 data collections used in this study.
II. POLICY QUESTIONS

This section presents five policy questions that have been raised most frequently along with background information that illustrates the reason for concern. The background material comes from the closed claim data utilized in this study.

*Do the courts really find liability only where negligence is present and make awards equal to damages suffered?* The law says that a health care practitioner is liable only if he departs from the profession's customary standard of adequate care. Fewer than 10% of the claims studied herein were tried to verdict, and the plaintiff won only about one in every four that were tried. But when the plaintiff did win in court, the award averaged $102,000. By contrast, plaintiffs received an average of only $26,000 when they settled voluntarily (excluding cases that were dropped without payment). Do the courts tend to relax the negligence standard when, for example, the injury is severe?

*Do the outcomes generated by the settlement process bear any relation to court outcomes?* The disparity in average dollar outcomes mentioned above is one basis for this concern. So is the fact that about half of all claims settled out of court resulted in some payment to the plaintiff, whereas the plaintiff won only about 28% of the verdicts. Is there any relation between the “justice” meted out through the settlement process and that achieved through trial and verdict?

*Is compensation unfairly distributed?* Half of the dollars paid to plaintiffs in the claims studied were concentrated in only 3% of the total number of claims (or 5% of all claims that involved some payment). Is this concentration justified by the standards (e.g., severity of injury, presence of negligence) established in the law?

*Does the cost of litigation distort the process?* Rough estimates indicate that in this and most other forms of tort litigation, the parties spend about as much conducting the litigation as the plaintiff eventually receives in compensation. Does the threat of these costs really...

---

1. In discussing claims disposed of without verdict, we distinguish between those that were “settled” by mutual agreement with some payment to the claimant and those that were “dropped” or closed without payment.

2. Munch (1978) reviews various estimates of the distribution of the insurance premium dollar for automobile liability, product liability, medical malpractice, and worker's compensation.
induce insurance companies to pay something to get rid of small claims even when they may have no merit? Conversely, do litigation costs keep people with valid but small claims from receiving due compensation?

How have crisis-generated changes in the law affected the system? The changes enacted in the tort law during the mid-1970s included measures to cap court awards, particularly those for intangible loss; to reduce tort awards when the plaintiff is eligible for compensation from other sources; to reduce the time allowed between injury and the filing of a claim (the statute of limitations); to limit the circumstances in which a presumption of defendant liability is created; \(^3\) to make it easier to achieve and prove the patient's informed consent to a medical procedure; to limit the contingent fees that may be charged by plaintiffs' attorneys; to make compensation for future losses payable in periodic installments; to introduce expert pretrial screening panels to judge whether the claim has any merit; and to introduce arbitration mechanisms preceding or substituting for courtroom adjudication of the claim. No state enacted all of these changes, but most states enacted at least some. Did they have much effect? Were their effects in the expected directions?

This study cannot provide definitive answers to any of these questions, but the method described below yields some answers that appear to have a high probability of accuracy. To understand the strengths and limitations of these answers, the reader must have a general sense of how they were derived.

\(^3\)Primarily accomplished by limiting the circumstances in which the rule of *res ipsa loquitur* (the thing speaks for itself) may be invoked. In essence, this rule provides that when an event occurs that would not normally happen in the absence of negligence, it is up to the defendant to prove that he was not negligent. The rule is particularly invoked in instances where the plaintiff could not have intervened (e.g., because he was anesthetized) or cannot be expected to have the technical knowledge to identify which person or process injured him.
III. THE BASIC METHOD APPLIED

The information base for the study consists of two large, computerized data files that systematically report certain facts about almost 6,000 medical malpractice claims closed by an extensive list of large insurers during given periods in 1974 and 1976, respectively. These files always include information about the plaintiff, the defendant, the severity of the injury, the timing of various legal actions, and the outcome of the claim. They sometimes include other data on such matters as the evidence of negligence and the grounds for compensation asserted by the plaintiff. In no case, however, do the files detail the bargaining process that led up to the outcome, nor, of course, do they suggest what the outcome of a settled case would have been if the issue had been taken to verdict (the shadow verdict).

The basic analytic tool introduced here is a stylized model of the bargaining behavior through which claims are resolved. The model starts from a simple premise: that each party acts (whether directly or through an attorney) to serve his own financial interest—the plaintiff to maximize his gain and the defendant to minimize his loss. From this central proposition there flow a number of implications about the conditions under which a rational plaintiff or defendant, operating in the knowledge that litigation is costly, would drop the case, settle, or press on to verdict. These relationships can be stated in mathematical terms. The totality of these expressions is the model.

The study technique is to apply this oversimplified model of human behavior to the experiential data in the closed claim files. Given the assumptions of the model, the methodology makes it possible to estimate important facts that are not found in the files, such as the maximum dollar amount that the defendant is willing to offer and the minimum that a plaintiff is willing to accept, and to estimate shadow verdicts. To the extent that the resulting estimates are plausible and meet certain statistical tests, it may be said that the model—oversimplified though it may be—is capturing and simulating the fundamental behavior patterns that usually control the claim resolution process.

1 The 1974 survey instrument and data are described in AIA (1976). The survey included 11 companies. All states are represented, but some, e.g., New York, are underrepresented because participating carriers did little business there. The 1976 survey includes all claims closed July 1 through October 31, 1976, by the nine largest carriers. The survey instrument and data are described in Westat (1979). Although 54 companies wrote over $1 million of malpractice insurance in 1976, the nine participating companies accounted for 84% of all claims closed by private carriers in that year.
A validated model of this kind can be a powerful new analytic tool, not only for analyzing dispute resolution under the tort law, but for any bargaining situation between two parties operating in the shadow of a third who can and will resolve the issue if no voluntary settlement can be reached. The present model must be applied to many data files before its precise validity can be judged, but it has already yielded a consistently plausible range of estimates. Consequently, there is reason to hope that analytic and predictive tools can be developed to partially offset the limits imposed by the paucity and unreliability of large-scale data files in the civil justice field. Even so, as will be noted several times below in reporting results, data gaps and inadequacies still prevent conclusions about many important issues.

Before getting to the results, however, we provide a summary description of the model and the data to which it is applied. (A full technical description of the methodology and results is given in Danzon and Lillard (1982).) Even the reader interested primarily in the results is urged to read this summary review, because the model is quite sensitive to the assumptions built into it.
IV. THE MODEL AND THE DATA

The model starts by postulating that the relevant body of law determines the relationship between the facts of a claim and the probable outcome if it were resolved in court. The expected outcome at verdict and the costs of litigating to verdict in turn govern the preverdict settlement process.

FACTORS THAT DETERMINE THE OUTCOME AT VERDICT

The first question is the probability of a verdict for the plaintiff. According to the law in all states, this can only follow a showing that he was in fact injured, that the defendant departed from the customary standard of care, and that the injury was causally related to that departure. If courts apply this law, the probability of a plaintiff verdict will be a function of the facts of the case and the quality of the evidence, in addition to the applicable law.

When the liability of the defendant is established, the question shifts to the size of the award for damages. Damages occur in two forms: compensable and punitive. Compensable damages are designed to compensate for the plaintiff's actual losses, which must be fully offset if the tort system is to achieve its stated goal restoring a person injured by the negligence of others to his situation prior to the injury (as nearly as money payment can restore him). These actual losses may be "economic" (e.g., medical bills, lost wages) or "noneconomic" (e.g., pain, suffering, shock, anguish). If the injury is fatal, compensable damages are less than if the victim is badly injured because the survivors are not owed compensation for the decedent's noneconomic loss and probable consumption, had he lived.

Punitive damages are not related to compensation for the plaintiff's losses, but to the motivation and behavior of the defendant. Punitive damages are awarded only in cases of gross negligence or malicious or otherwise outrageous conduct, and are rare in medical malpractice suits.

Prior to 1975, basic tort damage rules governed how damages were calculated and what facts could be disclosed to the jury.¹ Under the

¹Courts differ in whether a per diem or mathematical formula can be used to compute pain and suffering, and in whether the jury can be instructed that awards are tax exempt. In preliminary analysis we found no significant effect from our measure of these differences, so they are omitted from the results reported here.
“collateral source rule,” evidence of other sources of compensation for the injury was inadmissible in court. Damages were to be paid in a single lump sum that included both expenses incurred to date and an amount to offset future losses; the latter amount, at least theoretically, was discounted to reflect the fact that it could earn interest prior to the point at which the expected loss materialized.

Since 1975, many states have changed these basic tort damage rules expressly for cases of medical malpractice. Seventeen states have placed limits on either the total award or the component for noneconomic damages. (This excludes states where the courts have overturned the statutory limits as unconstitutional.) Eighteen states have modified the collateral source rule to admit evidence of compensation from other sources; of these, eight mandate a reduction in the tort award. Sixteen states have made periodic rather than lump-sum payment of large awards for future losses either mandatory or at the discretion of the court. Thirty-two states have revoked the plaintiff’s right to state a specific dollar amount in his complaint. Where these changes were enacted early enough to affect the claims in the data base, they are accounted for in the model, and the 1976 and 1974 data are compared to see what effect the changes seem to have made.

FACTORS THAT DETERMINE SETTLEMENT OUTCOMES

The foregoing assumptions govern the expected outcome in the courtroom. Because most claims never reach trial, however, the model must also make assumptions about how the settlement process works under the threat of trial.

The model first assumes that both parties have an incentive to settle because prolonging litigation would be costly to both. The plaintiff is assumed to use a simple calculation to determine his “minimum ask”—the smallest amount for which he will settle. He multiplies what he thinks is the probability that he would win in court, times the amount that he would be awarded if he won, and then subtracts the attorney fees and other costs that he expects to incur if he goes to court. For example, if he thinks there is a 50% chance that the jury would award him $10,000, but that his costs would be $2,500, then he is assumed to be willing to settle for $2,500 ($10,000 × 50% – $2,500).

The defendant is presumed to make a similar calculation to arrive at his “maximum offer.” He multiplies what he believes is the proba-
bility that he would lose in court, times the damages likely to be awarded to the plaintiff, and adds the defendant’s litigation costs. If his estimates were the same as the plaintiff’s in the example above, he would be willing to settle for any amount up to $7,500 ($10,000 × 50% + $2,500). The model therefore suggests that the two parties would settle at a figure between $2,500 and $7,500.

These assumptions add up to a simple set of contingencies. The plaintiff will drop the case if his minimum ask turns negative (i.e., his expected verdict award times the probability of winning is less than his anticipated litigation costs). If the plaintiff’s ask is positive and less than the defendant’s maximum offer (as above), the parties will settle for an amount between the ask and the offer. If the plaintiff’s ask is positive but exceeds the maximum offer, they will go to court. In this way the model creates a neatly symmetrical pattern of rational bargaining behavior.

Perhaps too neat, an experienced attorney might observe. This is all very well for the laboratory, but not all human beings are rational and none are rational at all times. True enough. But the model does not claim that people are always rational; it simply tests whether the assumption that they are rational produces plausible explanations of their behavior on average, as expressed in several thousand closed insurance claims. In reality, outcomes may be influenced by stubbornness, stupidity, emotional outburst, perceptual error, greed, and even malevolence; conflicting interests of attorneys and the principals they represent; and concerns that behavior in one case will affect outcomes on others. The model does not deny that such factors exist, nor do its designers doubt that irrational behavior occurred in many cases.

But if these departures from rational bargaining are ignored, the model asks, does the simple rationality that remains explain enough of the behavior recorded in the closed claim files to make it useful to analyze the liability system as though everyone were rational all the time? Even if this simplistic approach does not capture every nuance of human behavior and motivation, are these nuances sufficiently infrequent or mutually cancelling to permit the overall patterns of bargaining and outcome to be simulated without trying to reproduce them? To the degree that the simple model yields plausible estimates when applied to actual data, the implication is that nonrational behavior can be ignored where the policy interest is in the gross overall effects of the current structure of the liability system and hypothetical or actual changes in it.

Testing whether the model explains most settlement behavior involves determining the degree to which actual experience systemati-
ally conforms to basic patterns that the rational premise would lead one to expect. The major implied patterns are as follows:

- The size of out-of-court settlements should be influenced by the law of compensable damages through the litigants' expectation of the award at verdict. Settlements will be lower than verdicts in similar cases, however, and should vary downward:
  - The lower the perceived probability of a verdict for the plaintiff
  - The higher the plaintiff's likely litigation costs
  - The lower the defendant's likely litigation costs

- The likelihood that the plaintiff will receive some dollar amount in settlement should vary with:
  - The probability that the court will find the defendant liable
  - The size of the potential court award
  - The plaintiff's likely litigation costs

- The likelihood that a claim will be litigated to verdict should increase:
  - The greater the gap between the plaintiff's and defendant's expectations of the probable size of a verdict
  - The lower the costs of going to verdict

- The sample of claims observed to close at each stage of disposition (dropped without payment, settled, or tried to verdict) should not represent a random sample of all claims; instead, they should represent a subset "self-selected" on the basis of those case characteristics that affect the expected outcome at verdict and the costs of litigation, and hence influence the litigants' behavior.

- In particular, claims that are tried to verdict are predicted to involve atypically large dollar amounts and more uncertainty about the likely outcome. As a result, this small subset of claims is expected to be an unreliable basis for predicting or evaluating how well the system functions for the great majority of claims that settle out of court.

The data analysis and statistical tests indicate the degree to which these implications of the rational premise are borne out by actual experience. Specifically, a complex methodology is applied to the actual outcome of each claim to generate estimates of the potential shadow verdict, the plaintiff's minimum ask, the defendant's maximum offer, and the amount for which the case should have been settled if both parties had (a) possessed only the information provided in the closed claim files, and (b) behaved according to the simple rational model.
We emphasize that the asks and offers calculated for this study are estimates only. The data files do not reveal the actual amounts. They are estimated by combining information on claim outcomes with the assumptions of the model. The critical assumption is that the settlement amount—which the closed claim files do provide—represents a weighted average of the ask and the offer, which are, in turn, based on the parties' expectations of what would happen if the case went to verdict. This chain of reasoning is central to the validity of the analysis. It permits the analyst to reason backward from what is known (the outcome) to what probably led to the known result.

To the extent that the methodology produces plausible results, it offers a wealth of policy-relevant information. By enabling one to infer quantitative relationships between the ask, the offer, and the outcome, it provides the ingredients for much more detailed simulation of the process of claim disposition than can be constructed from the closed-claim data alone. This permits at least preliminary conclusions about which known characteristics of a case affect the outcome, and to what degree. And, for the policymaker who wonders how various changes in the tort law have affected or are likely to affect the potential verdicts that would be rendered if all claims went to judgment (not merely the atypical few that go that far), the methodology provides a way to make such estimates. Before we report the results, however, it is important that the reader understand the character of the data used to reach them.

THE DATA BASE

As noted above, the 1974 and 1976 closed claim files that form the data base for the study are broadly representative but not strictly randomized samples of claims against physicians and hospitals. Both files include information on:

- The severity of the injury (translated into a severity index)
- The insurer's estimate of the claimant's economic loss
- The identity (individual or institutional) of the defendant
- The outcome of the claim (the stage at which it was resolved and the amount of payment to the claimant, if any)

Beyond these standard points of information, the files contain further fragments, but they are not uniform between the two closed claim surveys. The 1974 file, for example, reports the specific allegations of the claimant—misdiagnosis, absence of the patient's informed
consent to the procedure, or assertion that the injury would not have occurred without negligence, so that the burden of proof should shift to the defendant. This study takes this information into account for the 1974 material, but cannot do so for 1976 because the data were not collected.

On the other hand, the 1976 file provides much more specific data on the nature of the injury, allowing us to define three broad categories of injuries according to the likelihood of proving that they are negligence-caused:

- Injuries reflecting an obvious medical error (e.g., a medical instrument left inside the patient, or surgery on the wrong limb).
- Injuries induced by the treatment itself.
- Injuries resulting from lack of preventive care.

These factors can be taken into account for the claims reported in the second data file, but not for those reported in the first.

In instances where neither file provides important types of information, analysts must fashion surrogates (known technically as "proxy variables") from information that is available. Expected litigation costs are good examples. For the plaintiff's costs, this study uses as surrogate indicators the time that has elapsed between the injury and the reporting of the claim, the presence or absence of a plaintiff's attorney, and whether or not the state where the claim occurred places a statutory limit on the contingent fees charged by plaintiffs' attorneys. For the defendant's costs, the surrogates are the number of defendants, and whether at least one defendant is a physician. All such surrogate indicators are much less satisfactory than actual data would be, but each one used here has been developed pursuant to an explicit rationale, which is described elsewhere.

Insurance companies typically open a separate claim file for each defendant named in a specific incident, but because this study focuses on the outcome for the plaintiff, claims against multiple defendants that arise from the same incident have been combined. Thus, a

---

2This last charge is the allegation that the rule of res ipsa loquitur should apply. Twenty percent of the cases in the 1974 file involve this assertion.
3Danzon and Lillard (1982).
4Each file reports the number of defendants named in the case, but the surveys were not designed to include the files for all defendants in cases involving multiple defendants. Claim files for many defendants were missing. Allocation of files to the same incident sometimes required judgment on our part. Where multiple files for a single incident reported inconsistent data, we used the value from the file for the defendant on behalf of whom the largest payment was made, on the presumption that the incentive to collect accurate information is greatest where payment is greatest. We used the most advanced stage of disposition; for example, if at least one defendant went to verdict, we assigned the claim to the verdict sample.
"claim" in this study refers to a plaintiff's claim against one or more defendants.

As always in large data files, not all of the relevant information is collected, and many individual claim records have missing data items. Normally, these gaps are most serious where the information is not routinely obtained by the insurer, as is true, for instance, of the plaintiff's income. In cases where the problem of missing data is most severe—that is, where data on the analyst's list of "key variables" is missing—the deficient claims are simply excluded from the database. A comparison of the resulting subsample used for analysis with the full file indicates that the sample of claims selected for analysis tends to overrepresent claims involving severe injuries or large payments to plaintiffs, or both, because these claims are more likely to be represented by complete data in the closed claim files. Therefore, the results suggested by the study may be more relevant to substantial claims than to small ones.

---

5Income was dropped from the analysis after preliminary estimates showed no significant effects, possibly because of measurement error. Income is included in the empirical estimates in Danzon (1980).

6Key variables were size of payment; stage of disposition; dates of the incident, filing, and disposition of the claim; zero economic loss reported or (in 1974 only) zero future wage loss if the injury was permanent and the plaintiff was either a student or currently employed. The 1976 survey did not distinguish between incurred and future wage loss. A binary variable was included if reported economic loss was less than $100, which seems suspiciously low. The large positive coefficient of this variable confirms that loss was underreported in these cases.
V. OUTCOMES IF ALL CLAIMS WENT TO VERDICT

For the policymaker, it should be at least as interesting to learn what would have happened if all of the medical malpractice claims in the closed claim files had been pressed to verdict as it is to know the outcomes of the scant 10% of claims that actually were taken that far. Through this "shadow verdict" hanging over every claim, society can exert pressure on the bargaining process and hence on the outcome of all claims, including the great majority that are either abandoned or settled out of court. Since few cases go to verdict, the degree to which the shadow verdict is affected by various factors, including "reforms" in the law, is the first measure of what really matters to the outcome of claims.

The results of adding shadow verdicts to actual verdicts are reported here in summary form for the general reader. They are distillations of the findings of a complex statistical analysis, reported in Danzon and Lillard (1982). The reader with technical interest in the methodology or the precise figures involved is invited to review that report. The following summary does no more than present the highlights likely to be of policy interest.

WHAT DETERMINES THE PLAINTIFF'S PROBABILITY OF WINNING A JUDGMENT?

The data collected by insurers and reported in the closed claim files provide a less solid basis for estimating the probability of an award than for predicting the size of an award if one is made. The files lack a good deal that is known to the parties about the facts of the case and the quality of available evidence. Nevertheless, the data permit some generalizations about factors affecting the plaintiff's chances.

The plaintiff was more likely to receive an award if the injury was permanent than if it was temporary. The probability was highest if the injury was fatal. Although the evidence may seem to support the common allegation that courts relax the negligence standard in cases of severe injury, this is a possible but not necessary conclusion. Evidence from a study of injuries shows that the more severe the injury, the
more likely it was due to negligence. The courts may simply be reflecting that fact.

The plaintiff had a 50% higher chance of winning when he asserted that the damage was so obvious that the burden of proof should shift to the defendant to show that he had not been negligent (i.e., the plaintiff invoked the rule of res ipsa loquitur). Specific data on this assertion are available only for 1974, but the 1976 file can be adapted by assuming that obvious injuries will always generate the assertion. In both files, plaintiffs in such cases are likely to receive a positive settlement, and rates of claim abandonment and litigation to verdict are small. This suggests that there is little doubt that the plaintiff would win if the issue were pressed to verdict.

In cases taken to verdict, the plaintiff was 21% less likely to prevail if the charge was misdiagnosis and 34% less likely if the suit alleged lack of informed consent to the injurious procedure. It appears that plaintiffs tend systematically to overestimate their chances in cases of this kind.

The plaintiff was almost twice as likely to win a judgment against multiple defendants than against a single opponent. Contrary to the popular belief that plaintiffs routinely add nonliable defendants to a claim in the expectation that one or more of them will "buy out" of litigation costs through settlement, this finding suggests that such behavior is atypical. On the average, the defendants that are added raise the probability of a plaintiff victory. The extent to which this is because multiple defendants try to shift liability among themselves, thereby producing evidence that aids the plaintiff, cannot be determined from the data.

The plaintiff did not have a significantly higher chance of winning in surgery-related incidents than in others. Though this might seem to refute the widespread belief that courts hold surgeons to a higher standard than is used for others, it does not dispose of that question. It may be that the standard is higher, but the failure to meet it is harder to prove.

1A study of injuries in California hospitals (CMA, 1977) found that the proportion of injuries potentially liable under the tort system increases with severity, from 12% for minor temporary injuries to 83% for permanent total disability, but falls to 43% for fatal injury. Obviously, however, comparison between these injury data and the closed claim data does not permit a rigorous evaluation of court behavior without information on whether claims filed represent a random sample of injuries.
IF AN AWARD IS MADE, HOW LARGE IS IT LIKELY TO BE?

The available data permit much more to be said about factors affecting the size of awards if all claims went to verdict.

The size of awards is strongly influenced by the severity of the injury and by the applicable law. Even though the factors about which the files provide data fall far short of conveying the full store of information available to the litigants, statistical analysis suggests that more than 40% of the observed variation in shadow verdicts is explained by differences in information on the severity of injury and the applicable law. This finding runs contrary to the conclusions of earlier studies that verdicts have little to do with severity or actual loss.²

The higher the economic loss, the higher is the likely award, but, perhaps because of imperfect data, awards do not seem to rise in proportion to economic loss. In statistical analysis reported elsewhere (Danzon, 1980), the analysts have shown that it is impossible to tell whether—as often charged—the tort system tends to overcompensate small economic losses and undercompensate large ones. Systematic errors in the available data rule out such a judgment.³ For the same reason it is impossible to discern whether the courts tend to award proportionately more noneconomic damages where economic losses are greater.

The median shadow verdict for claims involving permanent total disability is roughly twice that for claims involving death. This conforms to what would be expected from the law, which, as already noted, deducts important elements of compensation to surviving dependents from what would have been paid if the injured person had lived but been totally disabled.

Shadow verdicts for permanent total disability average roughly 2% more for each remaining year of life expectancy, while awards for permanent partial disability average 1% more for each year. Again, as the

---

²R² = 0.43. The contrary conclusion reached in NAIC (1980), that economic loss and severity account for very little of the overall variation in indemnity, is attributable to difference in estimation techniques. Whereas we use a logarithmic transformation, the NAIC analysis apparently used actual dollar values, which effectively assigns the few very large cases a dominant weight.

³The "error" in reported loss is of three types: (1) missing or erroneous data; (2) the loss reported in insurance company files may be undiscounted, whereas courts typically use the present discounted value of future loss; (3) the court's estimate may differ from the insurance company estimate for reasons other than discounting.
law suggests, youth is important in determining compensation for permanent injuries. It seems not to be true, as is sometimes charged, that courts are given to compensating permanent injury without regard to age.

*Awards for minor injuries, whether temporary or permanent, are not systematically related to severity* (or at least to the severity index used herein). Since these injuries account for more than 50% of all claims studied, the absence of any significant relation between shadow verdicts and severity is important.

*Average awards for minor injuries rise and then diminish with the age of the claimant, peaking when he is in his late 30s.* This pattern is consistent with the supposition that awards for minor injuries are not arbitrary but are influenced primarily by current wage loss, rather than medical costs, pain and suffering, or some other factor.

The reader will note that most of these findings simply put figures on relationships whose direction and rough dimensions would seem to be determined by the law. Such findings may seem prosaic until one remembers the frequent charge that actual decisions by juries and judges typically do not follow the precepts established in the law. The net message of this analysis, based on almost 6,000 claims resolved in two different time periods, is to suggest the contrary—that the law makes a substantial difference in the outcome of the typical case.
VI. OUTCOMES OF SETTLED CLAIMS

About half of all claims in these files that did not go to verdict were dropped without payment. The other half were settled for an average of $26,000, a far cry from the $102,000 average award in the small minority of tried cases that the plaintiffs won. This section deals with why some claims are dropped, what influences the settlement amount in those that are settled, what conditions the propensity of the parties to litigate a dispute to verdict, and why the distribution of payments to plaintiffs is so uneven.

WHY ARE SO MANY CLAIMS DROPPED?

The sheer fact that about half of the claims in the data base were dropped with no payment to the plaintiff—two-thirds of them without the filing of a lawsuit—casts doubt on the widespread belief that insurers stand ready to pay out money freely on small claims, including unfounded "nuisance" claims, in order to avoid more costly litigation. The simple rational model suggests that a claim will be dropped if the claimant’s ask becomes negative—that is, if the expected costs of pursuing it become greater than the prospective gains. The results reported below indicate that actual outcomes are largely consistent with this assumption.

*The smaller the shadow verdict, the more likely a claim was to be dropped.* This tends to confirm the belief that small malpractice claims are often barred from recovery because of the high fixed costs of participating in the legal process.

*The greater the court congestion, the more likely a claim was to be dropped.* It is hardly surprising to find this correlation between the probability of claim abandonment and the average number of months between service of answer and jury trial in the urban areas of the host state, because delay tends to reduce the present value of an award to the plaintiff. It confirms that court congestion is an effective bar to recovery for some plaintiffs (unless one assumes that there was no merit to any case that was dropped but would have been pursued in a less congested jurisdiction).

*Claims were significantly more likely to be dropped where there were statutory limits on the contingent fees that plaintiffs’ attorneys may*
charge. States that enacted fee ceilings between 1974 and 1976 experienced a 13 percentage point increase in the rate of dropped claims, from 34% in 1974 to 47% in 1976. The analysis suggests that the ceilings may have contributed 5 of these 13 percentage points, presumably because of attorneys' increased reluctance to take on or pursue small or marginal cases if unable to charge a fee to cover the cost of their time.

About half of the claims dropped would have produced an award for the plaintiff if taken to verdict. This estimate is indirect and approximate, but the estimating technique used suggests that 39% to 53% of the claims dropped without payment would win in court if pressed to judgment. Since this number is about equal to one-quarter of all claims in the data base, it is far from trivial. It indicates that the uncertainties and costs of litigation deny compensation to substantial numbers of claimants with small but legally valid claims.

Settled claims would have had a higher probability of winning in court than dropped claims. The estimates are that 57% to 77% of the settled claims would have won if taken to verdict, a significantly higher percentage than the 39% to 53% estimated for dropped claims. Contrary to some allegations, then, the figures suggest that the settlement process is not random with respect to which cases yield payments; those with a better chance in court have a better chance in settlement. Still, the estimates also indicate that the plaintiffs would have lost something like 30% of all the cases settled if they had not accepted settlement.

WHAT DETERMINES THE SIZE OF SETTLEMENT?

The rational model assumes that the amount of a settlement represents a weighted average of the plaintiff's minimum ask and the defendant's maximum offer, both of which depend on the probability and amount of the expected award and the anticipated litigation costs. This permits estimation of the asks, offers, shadow verdicts, and shadow settlements for all claims, regardless of their actual outcomes. This, in turn, allows the kinds of comparative findings reported here.

The defendant's maximum offer exerted much more influence on the settlement amount than the plaintiff's minimum ask. On a scale of 100, the analysis indicates that the imbalance is 87 to 13. Put another
way, the amount of settlement was much closer to the maximum offer than to the minimum ask, suggesting that the plaintiff typically got the better of the bargain.

There was a strong positive correlation between the size of settlement and the size of the shadow verdict, but the larger the claim the wider the dollar gap between them. On average, paid claims settled for 74% of their shadow verdicts, but the estimates indicate that a $10,000 increase in shadow verdict resulted in only a $7,700 increase in settlement. This widening dollar gap may reflect the fact that the plaintiff's anticipated legal costs rise faster with larger claims (because of expert witness fees, etc.) than do those of the defendant. It would follow that plaintiffs would be willing to settle larger claims for a smaller percentage of what they could get in court.

Claims involving multiple defendants resulted in higher settlements, even after controlling for the fact that they yielded higher verdicts. This could reflect several plausible causes: the inherently greater complexity of multidefendant cases, duplicative defense costs, blame-shifting efforts that aid the plaintiff, or the higher probability of a verdict against at least one defendant.

Claims involving at least one physician yielded higher settlements than those without one. This runs counter to the common notion that physicians are unwilling to settle because doing so is an implicit admission of liability. Such concerns are apparently dominated by the desire to avoid the embarrassment and lost time that court appearances entail. Settlement offers are therefore higher in cases with a physician defendant than in cases with only institutional defendants.

Claimants who were represented by attorneys but settled prior to suit received about 150% more than unrepresented claimants who settled at that stage. This clearly overstates the value of an attorney, since many unrepresented claimants presumably had weak claims that had been rejected by attorneys. Still, the sheer size of the differential strongly suggests that an attorney who charged less than, say, 50% of the settlement value was pretty clearly worth his fee from the plaintiff's standpoint.

Limits on contingent fees to plaintiffs' attorneys appeared to reduce average settlement size by 9%. This evidence seems to support the view

\[1\] These estimates are based on Danzon (1980). Similar effects were found in data from 1970 and 1976.
that fee ceilings do more than simply cut down on "windfall" returns—that they also reduce the attorneys' efforts and hence affect the probability of plaintiff victory, and the likely gross recovery as well as the net amount realized by the plaintiff.²

_Court congestion tended to reduce the size of settlements._ Several reasons could be advanced for this, including the erosive effects of delay on the present value of expected awards, and the differential effects upon plaintiff and defendant costs of evidentiary "decay" over time. The converse of this phenomenon was that reductions in congestion tended to increase settlements.

_Claims closed before the filing of suit were settled at much lower amounts than those settled after filing._ It is doubtful, however, that the event of filing was as important as were other characteristics of the claims.

It has already been mentioned that fewer than 10% of the claims in the closed claim sample were tried to verdict and that this small segment is atypical in important respects. It is critical, nonetheless, because it generates the legal precedents that condition the settlement process. Also, this subsample contains a disproportionate share of claims involving the largest indemnity payments and litigation costs.

If the assumptions in the simple rational model are correct, litigation occurs when the plaintiff's minimum ask exceeds the defendant's maximum offer throughout the pretrial bargaining. This turns out to be approximately the same as saying that the plaintiff's expected award in court exceeds the defendant's expectations by more than the sum of their anticipated litigation costs.³ Thus the model predicts that any factor that increases uncertainty or reduces litigation costs heightens the propensity to go to verdict. The results reported below are consistent with these predictions.

_by far the strongest predictor of how far a claim would be pursued was the size of the shadow verdict; the higher this verdict, the more likely the case was to be tried to judgment._ It is clear from the analysis that cases dropped without payment had the lowest shadow verdicts, whereas cases litigated to verdict had the highest.

²See Danzon (1981) for an analysis of the effects of contingent fees on the amount of litigation and of the common objection that fees on cases won are excessive because they must pay for time spent on cases lost.
³This observation is also made in Landes (1971), Posner (1973), and Gould (1973).
The more severe the injury, the more likely a claim was to be tried to verdict. Only 5% of claims involving minor injuries went to verdict, compared with 6% of those involving permanent partial disability, and 7% of those involving permanent total disability. Since claims involving fatal injury typically win lower awards than do claims for permanent total disability, it was to be expected that they would be litigated less frequently (6%).

Claims involving multiple defendants were slightly less likely to go to verdict than were claims with only one defendant, even though the multidefendant claims involved higher shadow verdicts. The analysis suggests that the normal tendency for larger claims to go to verdict was slightly more than offset by some aspect of the multidefendant situation, probably the higher litigation costs of defending them. Such costs would, according to the model, raise the defendants' maximum offer relative to the plaintiffs' ask, thereby making settlement more likely.

Claims involving at least one physician were less likely to go to verdict. This is consistent with the aforementioned hypothesis that costs to doctors, due to lost time and embarrassment, tend to induce higher offers and higher rates of settlement than occur in claims not involving a physician.

Claims were less likely to go to verdict where there were limits on the contingent fees that could be charged by plaintiffs' attorneys. This would be expected from the fact that such fees reduce the attorney's return for a marginal hour of effort.

The evidence suggests that the larger the shadow verdict, the greater the litigants' errors in predicting it relative to their litigation costs. This is suggested by the fact that larger shadow verdicts are associated with a higher propensity to go to verdict. The finding is not surprising, for two reasons: Uncertainty pervades the estimation of damages for major injuries that entail larger future losses; and because some of the costs of going to court are relatively constant, they make up a larger proportion of the shadow verdict in smaller cases.4 It

---

4Evidence from a 1970 closed claim survey suggests that disagreement as to liability is more important than disagreement as to size of damages in the decision to go to verdict. In that survey, the insurer acknowledged liability in 80% of cases settled, as opposed to 20% of cases litigated to verdict. The insurer believed the damages were as severe as claimed in 60% of cases settled, as opposed to 50% of cases litigated (Danzon, 1980).
follows that dollar caps on awards—or anything else that reduces uncertainty—tends to encourage settlement out of court.

WHY ARE INDEMNITY DOLLARS SO UNEVENLY DISTRIBUTED?

The mean court award in the data base was $102,000, compared with a mean settlement of $26,000. It was also true that the top 5% of claims in terms of dollar payment (claims paid more than $140,000 each) received 49% of all dollars paid, while the bottom 50% of all claims received only 4% of the dollars paid (averaging less than $6,-500 per claim). What accounts for this discrepancy between court awards and settlement amounts, and the pronounced concentration of payments? The analysis suggests the following answers:

An important controlling factor, according to the analysis, was the 103% disparity between the average shadow verdict of cases that settled and that of cases that went to verdict. Since the shadow verdicts have been shown to be heavily influenced by economic loss (and, in turn, by severity of injury), this means that much of the difference between the mean court award and the mean settlement amount is due to the fact that cases going to verdict usually involve more serious injuries and losses.

The 30% differential between shadow verdicts and shadow settlements, due to the discounting for costs and the uncertainty involved in the settlement process, accounts for a much smaller proportion of the differential between mean court award and mean settlement amount. On average, plaintiffs who settle have suffered economic losses smaller than those of plaintiffs who go to verdict and win, therefore have smaller shadow verdicts, and are willing to settle for less than the average award won by plaintiffs in court.

This rationale was confirmed by a further finding: The shadow verdicts imply that 43.5% of the plaintiffs in the full closed claim sample would have received less than $6,500 if their cases were pressed to judgment—a figure quite close to the 50% that actually did receive less than that amount. It would appear, therefore, that the self-selection process through which settlement occurs does tend to route larger claims involving more serious injuries to verdict and smaller claims to settlement, and that the payments eventually received are, on the average, reasonably related to the determinations that would have been made in court if all cases had been pressed to verdict.
In sum, the analysis suggests that the uneven distribution of dollars parallels the uneven distribution of injury severity. The means by which claims were disposed of—abandonment, settlement, or verdict—does not seem to have created much additional disparity among payments to plaintiffs. This does not settle the question of whether distributive "justice" is being done, however, because the data do not permit a clear finding on whether the distribution pattern is closely related to the degree of defendants' negligence.
VII. EFFECTS OF CHANGING THE TORT LAW

WHAT DIFFERENCE DID THE 1974-76 CHANGES MAKE?

Section II listed the major statutory changes in the law that were enacted by state legislatures. Assessing their effects poses a three-fold challenge.

First, the precise form of a given measure varied from state to state. For example, relaxing the collateral source rule could involve simply making evidence of collateral compensation payments admissible in court, or it could authorize deductions from the court award to avoid double payment to the plaintiff. Second, identifying whether particular statutes could have affected claims in the data base is unavoidably imprecise. Our analysis considered only those statutes that were enacted prior to the closing date of claims in the 1976 sample. Some statutes, however, did not become effective until several months after they were enacted; claims in or near trial may have been exempt from recent changes in law; and there may have been further delays before changes in court decisions fed back into changes in out-of-court settlements. Third, it was not possible for us to control for all of the changes being made simultaneously, along with other unmeasured changes (e.g., alterations in judge-made tort law or in jury attitudes).

For all of these reasons, the effects realized in the period immediately following enactment—the period captured by the 1976 data file—may or may not be reliable guides to the long-term effects of each measure. Consequently, the estimates of the effects appearing below should not be viewed as definitive, but as rough, preliminary indicators of their apparent immediate impact. They were derived by comparing the change in awards between 1974 and 1976 in states that enacted a particular reform during that period and in states that did not.\(^1\) Technical difficulties sometimes made it impossible to separate closely associated measures; in those cases we grouped them together and arbitrarily assumed that they had equal impact. The reader should regard the resulting estimates as particularly tentative.

We have already partially reported the effect of limits on contingent

---

\(^1\)This controls for the fact that states with relatively high awards in 1974 were more likely to enact changes. Assuming no such changes, they could be expected to have high awards in 1976. If we simply compared the level of awards in 1976 in states that did and did not enact changes, we would underestimate the effects of the changes.
fees charged by plaintiffs' attorneys, which are not changes in the law but changes in the administrative rules through which it is applied, but we address them again here for convenience.

When a state moved to cap verdicts, or to eliminate specific dollar requests by plaintiffs (i.e., bar the ad damnum clause), or to permit payment of awards for future losses in periodic installments, the seeming effect of any one of these changes was to:

- Reduce the average shadow verdict by 30%.
- Cut the average settlement by 25%.
- Raise the portion of cases dropped from 43% to 48%.
- Reduce the share of cases going to verdict from 5.1% to 4.6%.

The analysis does not permit an accurate estimate of the cumulative effect of these measures, and the assumption that all are of equal weight is probably incorrect.²

Relaxation of the ban on evidence of collateral sources of compensation for the injury seemed to reduce shadow verdicts by 18%, but the statistical significance of this finding was quite low.³

Imposition of limits on contingent fees charged by plaintiffs' attorneys seemed to:

- Cut the average settlement by 9%.
- Raise the portion of cases dropped from 43% to 48%.
- Reduce the share of cases going to verdict from 6.1% to 4.6%.⁴

All of these results suggest that the changes enacted in the tort law during the crisis period had substantial effects, and that these effects were in the directions probably expected by the lawmakers who adopted them. It is also true that the frequency of claims and the explosion of insurance premiums, factors largely responsible for the sense of crisis, abated during the years after 1976. But we emphasize that this

²Using a different data set, Danzon (1981) finds similar effects for dollar caps and the ad damnum, but no effect of periodic payments. Periodic payments may not only affect the timing but also reduce the size of awards if the defendant can establish a trust fund yielding a higher rate of interest than a jury should have used to discount future payments to present value.

³Eight states mandate offset of at least some forms of collateral compensation. Danzon (1981) finds that mandatory offset reduces average awards by roughly the same amount as caps on awards.

⁴The estimate that 6.1% of cases would have gone to verdict in states that limited contingent fees, compared with 5.1% in states enacting measures to limit awards, shows that limits on contingent fees were adopted in states with relatively high litigation rates.
analysis does not establish any necessary connection between these
events; many factors other than changes in tort law may have worked
toward relieving the crisis. The evidence supports the general proposition,
however, that these changes had important downward effects on
settlements, verdicts, and the number of cases pressed to judgment,
while tending to increase the number of claims that were dropped
without payment.6

WHAT WOULD HAPPEN IF LITIGATION COSTS
WERE CUT?

In addition to measuring the effects of actual changes in the law,
such as those treated above, the model can simulate hypothetical
changes in law or any other relevant factor in order to assess their
likely impact. One of the changes of most widespread interest is re-
duction of litigation costs. Accordingly, our analysis simulated the
effects of a 30% cut in the plaintiff’s litigation costs, in the defendant’s
litigation costs, and in the litigation costs of both parties simultane-
ously. Such reductions are not necessarily far-fetched; many recent
changes in common and statutory law have such effects. Many states
changed their laws to permit nonresident doctors to testify in local
malpractice cases, to admit textbooks as evidence, and to permit a
more liberal interpretation of the rule of res ipsa loquitur; one effect
may well have been to reduce litigation costs to the plaintiff. The
widespread adoption of arbitration and pretrial screening panels may
have cut both parties’ costs by dispensing with the formal—and costly
—court rules of procedure and evidence. Although the simulation does
not measure the effects of any of these steps specifically, it sheds light
on the probable effect of any change in law or policy designed to
reduce litigation costs. The simulation yields the following results:

When the plaintiff’s litigation costs were reduced by 30%:

• Average settlement amounts rose by 4%.
• The portion of cases dropped without payment dropped from
  42% to 40%.
• The share of cases taken to verdict rose from 5.6% to 6.2%.

These outcomes reflect the fact that cutting the plaintiff’s litigation
cost is equivalent to increasing his minimum ask in the settlement
stage; that is, it lowers the amount that he is assumed to subtract

6Danzon (1982) analyzes the contribution of tort law and other factors to changes
over time, and differences among states in the frequency and severity of claims.
from the shadow verdict to determine the point at which he should settle. This tends to raise settlement amounts, lower the drop rate, and push more cases to verdict.\textsuperscript{6} The latter gives rise to what transportation analysts call the "freeway principle," according to which adding new lanes to a roadway almost always attracts more travelers; it does not simply move the current flow faster. Similarly, reducing the plaintiff's litigation cost is projected here to result in an 11% increase in the number of cases decided in court, because it makes using the road to and through court less expensive for the party who has the legal right to decide how far down that road the case will travel. Ironically, therefore, the model indicates that a reduction in the private costs of dispute resolution has the effect of increasing public costs by encouraging the use of publicly financed resolution mechanisms.

When the defendant's litigation costs were reduced by 30%:

- Average settlement amounts fell by 20%.
- The portion of cases dropped without settlement remained unchanged.
- The share of cases taken to verdict rose from 5.6% to 6.2%.

The effect on the propensity to go to verdict is identical to what occurred when the plaintiff's costs were reduced by the same proportion, but here average settlements fall sharply, rather than rise, and there is no change in the portion of cases dropped. Again, because of the assumptions built into the model, the effect of cutting litigation costs to the defendant is the same as lowering his offer by the amount of the cost reduction. Because the settlement amount is much more controlled by the defendant's offer than by the plaintiff's ask (as shown in Sec. VI), something that changes the offer has a much more dramatic effect on average settlements than does a similar proportionate change in the plaintiff's costs. Also because of the assumptions built into the model, that the decision to drop depends only on the plaintiff, cutting the defendant's costs does not affect the drop rate.

When the litigation costs of both parties were cut by 30%:

- Average settlement amounts fell by 17%.
- The portion of cases dropped without payment fell from 42% to 40%.
- The share of cases taken to verdict rose from 5.6% to 6.9%.

\textsuperscript{6}For technical reasons, we did not model the effect of changes in litigation costs on verdict awards.
These figures are unsurprising, coming after the analysis of cuts in the costs of each party taken alone. Nevertheless, it is of more than passing interest that the simulation predicts a 23% increase in the number of cases that would go to verdict if the parties realized these reductions in litigation costs. For urban court systems with 3- to 5-year backlogs, an added 23% burden may seem a hair-raising prospect. Coping with it would require expansion of court facilities and personnel, with the costs to be borne by the general public, not the litigants, who can ignore them in their calculations. (Of course, trial delay itself is part of the litigation cost to the parties; consequently, the example assumes that any increase in delay has been offset by some other steps that have a net effect of reducing total costs.)

The primary message conveyed in the simulation results is that even the most widely supported changes in the system are likely to produce complex results, so that the net effect is likely to be the resultant of opposing consequences. The cut in both parties' costs, for example, produces (by definition) a substantially smaller cost per case but a substantially larger number of cases that are carried both to settlement and to verdict. The parties to an individual case might not care much about the overall flow, but institutional parties (e.g., insurers) would find that their per-case savings are offset or perhaps even eliminated by the larger number of cases where they end up paying something. Meanwhile, as discussed above, public costs, which do not depend on costs to the parties, may well expand as incentives are provided for the parties to make more use of public resolution facilities.

In short, the interrelations between the behavior and the incentives of the parties and the governing jurisdiction must be carefully examined and explicitly taken into account if changes in tort law or procedure are to have the intended effects. Even then, the net change achieved is likely to entail undesirable side-effects.
VIII. RESPONSES TO POLICY QUESTIONS

Quantitative analysis can never provide definitive answers to policy questions. It can only seek to furnish objective evidence that policymakers can weigh in making decisions. The analysis presented here is reported in that spirit. It supplies no clear answers, but it provides a number of interesting points of evidence with regard to the policy questions stated in Sec. II.

At the broadest level of generality, the major implications of the study are three:

- Simple, self-serving rationalism largely explains average behavior and outcomes in the disposition of medical malpractice claims.
- There are reasonably stable and predictable relations between average formal (courtroom) and average informal (voluntary settlement) outcomes in these cases.
- Changes in the applicable law and procedures have produced substantial effects in the directions intended (but some of the side-effects may not have been anticipated).

To some, these may seem simple and unexceptionable propositions hardly in need of analytic support, but they are far from self-evident to many people, including many practitioners of the medical and legal arts. Taken together, these findings represent the first solid analytic platform from which it is possible to examine narrower, more sharply focused issues such as those summarized below. Preoccupation with these specific questions should not, however, obscure the significance of the development of quantitative evidence that the liability system contains inherent and discoverable threads of rationality.

The following is a summary commentary on our findings with regard to policy questions raised in Sec. II.

Do the courts really make awards equal to damages suffered and only when negligence is present? The analysis has much more to say about the issue of damages than about the question of liability. It is certain that court awards are strongly influenced by economic loss and by the law defining and sometimes limiting compensable damages. The data do not reveal how much courts "mark up" economic losses in determining noneconomic damages, nor whether plaintiffs are under- or overcompensated for economic loss. The more severe the
injury, the more likely will the verdict favor the plaintiff, but the database does not permit a conclusion on whether the probability of negligence increases with the severity of injury, or whether courts tend to relax the negligence standard in cases of severe injury. There is also evidence that the current workings of the law give medical practitioners a maximum incentive to avoid the most obvious error, not necessarily the most serious one.

_Do the outcomes generated by the settlement process bear any relation to court outcomes?_ The answer is yes: Settlements average 74% of shadow verdicts, and the 26% difference is plausibly accounted for by anticipated litigation costs and reasonable estimates of the probability of winning in court. Claims that are dropped without payment would have had a 39% to 53% probability of winning in court, whereas claims that settle with some payment would have had a 57% to 77% chance of winning; thus, on the average, the more meritorious the claim, the more likely that some compensation will be paid. Cases taken to court tend to consist disproportionately of large claims involving severe injuries. When settlements are made, they are much closer to the defendant's maximum offer than to the plaintiff's minimum ask. On the average, the settlement process is anything but random.

_Is compensation unfairly distributed?_ Not if one believes that fairness implies distribution in direct relation to the severity of injury and, hence, to the extent of economic loss. Although half of the dollars paid to plaintiffs were concentrated in only 3% of the total number of claims (or 5% of all claims that involved some payment), this heavy concentration is a reasonably accurate reflection of the concentration of injury severity and measurable economic loss. Since larger claims are much more likely to be taken to verdict, it is not unreasonable that average verdicts should be much larger than average settlements. Much of the difference between those averages can be explained in these terms.

_Do the cost of litigation distort the process?_ Small claims do tend to be dropped much more often, apparently because of the large and partially fixed costs of litigation. The fact that half of all claims are dropped with no payment clearly refutes the notion that insurers will pay something on any claim just to be rid of it. Because settlement amounts are much closer to the defendant's offer than to the plaintiff's ask, cuts in the defendant's litigation costs reduce average settlements much more than the same proportionate cuts in the plaintiff's costs raise average settlements. Any reduction in costs to the parties
will increase the number of cases pushed to verdict, thereby increasing costs borne by the general public.

*How have the crisis-generated changes in the law affected the system?* The analysis provides evidence on the direction and order of magnitude of the effect of some, but not all, of the changes enacted in the mid-1970s. Dollar caps on awards, elimination of specific dollar requests by the plaintiff, and authorization of installment payment of large awards have significantly reduced verdicts and settlements in the states where they were enacted. Modification of the collateral source rule to admit evidence that the plaintiff is eligible for compensation from other sources has had a much weaker effect. Statutory limits on the contingent fees charged by plaintiffs' attorneys appear to have had moderately depressive effects on settlement amounts and on the number of cases that go to verdict, while somewhat increasing the proportion of cases dropped.

These findings are relevant to issues now being addressed in state legislatures in many parts of the country. Illuminating as they are, however, they represent only the beginning of what could be learned by applying this type of analysis to other data bases on medical malpractice, including some new ones assembled for the purpose. In other fields of inquiry as well, many of them far removed from medical malpractice, the record of closed claims has much to tell us about how the civil justice system functions and how it may be changed if change is thought desirable. We hope that this study will help to stimulate the data collection and analysis necessary to expand further our understanding of the civil justice system.
REFERENCES


**Other ICJ Publications**

R-2716-ICJ  
The Law and Economics of Workers' Compensation  
Policy Issues and Research Needs  
L. Darling-Hammond and T. J. Knesner  
1980

R-2717-ICJ  
Models of Legal Decisionmaking  
Research Designs and Methods  
D. A. Waterman and M. A. Peterson  
1981

R-2732-ICJ  
Court Efforts to Reduce Pretrial Delay  
A National Inventory  
P. Ebener, with the assistance of J. Adler, M. Selvin, and M. Vesley  
1981

R-2733-ICJ  
Judicial Arbitration in California  
The First Year  
D. Hensler, A. Lipson, and E. Ralph  
1981

R-2792-ICJ  
The Resolution of Medical Malpractice Claims  
Modeling the Bargaining Process  
P. M. Danzon and L. A. Lillard  
1982

R-2801-ICJ  
The Civil Jury  
Trends in Trials and Verdicts, Cook County, Illinois, 1960-1979  
M. A. Peterson and G. L. Priest  
1982

R-2882-ICJ  
Cost-Benefit Analysis and Voluntary Standards for Consumer Products  
L. L. Johnson  
1982

R-2922-ICJ  
The Pace of Litigation  
Conference Proceedings  
J. W. Adler, W. F. Felstiner, D. R. Hensler, and M. A. Peterson  
1982

A special bibliography (SB 1064) provides a list of other Rand publications in the civil justice area. To request the bibliography or to obtain more information about The Institute for Civil Justice, please write or telephone: The Institute for Civil Justice, The Rand Corporation, 1700 Main Street, Santa Monica, California 90406. (213) 393-0411.