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Citation: 1 Mich. L. & Pol'y Rev. 141 1996

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This work was originally published as W. Viscusi. Pain and
Suffering: Damages in Search of a Sounder Rationale - 1
Michigan Law & Policy Review 141 (1996).

PAIN AND SUFFERING: DAMAGES IN SEARCH OF A SOUNDER RATIONALE

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INTRODUCTION

Compensation for non-pecuniary losses is one of the most controversial components of tort liability. Newspaper headlines routinely feature occasionally extreme awards, such as the \$2.9 million award to the women who spilled a hot cup of McDonald's coffee on her lap.¹ In contrast, small awards or accident victims who are unsuccessful in their suits receive negligible press coverage.

Notwithstanding the salience of outlier award anecdotes, it is also clear that people suffer from accidents in more than financial ways. Lost earnings and medical costs often are not even the most consequential implications of an injury. The loss of one's life, the welfare effects of permanent disability, and the grief experienced by family members as the result of the death of an accident victim are among the many other consequences that distinguish personal injuries from events that simply involve monetary transfers. There are also consequences of accidents other than these itemized damages components, such as legal fees and the personal investment in the litigation process. These expenses make tort liability suits less of a windfall proposition than is frequently assumed.

While it is clear that there are effects of accidents that are not monetary in nature, exactly what the court should do about these losses remains a matter of substantial controversy. There are a variety of approaches one could take to pain and suffering damages. The reason for this diversity of viewpoints is that the manner in which one should quantify the pain and suffering damages depends in large part on the rationale for these damages. One possibility is to establish damages that would provide appropriate incentives for the injurer to avoid injuring the plaintiff in such accident contexts. A possibly related objective is to make the plaintiff whole and restore the plaintiff to the same level of welfare as would be experienced if there had been no injury. Alternatively, is the

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1. The original court award was \$2.9 million but this was subsequently reduced on appeal to \$640,000.

objective of these damages to provide the victim with the same level of insurance that the victim would have chosen had pain and suffering insurance been available? Whereas these three approaches may lead to identical compensation levels for monetary losses, they usually will have quite different implications for pain and suffering for personal injuries. This article will be concerned with these and other possible rationales for pain and suffering damages and their differing implications for how damages awards should be set.

As the American Law Institute has observed, pain and suffering damages reflect concerns with a variety of types of non-monetary loss:

Pain and suffering is a term that actually covers a number of categories of non-pecuniary loss, the most important of which are the following:

(1) Tangible physiological pain suffered by the victim at the time of injury and during recuperation, a period that may be lengthy but that is more often brief.

(2) The anguish and terror felt in the face of impending injury or death, both before and after an accident. Claims for this kind of harm have now become staple fare in suits arising from airplane crashes.

(3) The immediate emotional distress and long-term loss of love and companionship resulting from the injury or death of a close family member.

(4) Most important, the enduring loss of enjoyment of life by the accident victim who is denied the pleasures of normal personal and social activities because of his permanent physical impairment, a loss of which may not be perceived by individuals who suffer brain damage.²

This paper will address pain and suffering generally and will not distinguish these different potential components of pain and suffering damages.

Section 1 presents the theoretical foundations for damages awards, including both the deterrence and compensation objectives. Section 2 explores some practical rationales for pain and suffering damages, such as the omission of legal fees as a component of damages. Section 3 examines the extent to which pain and suffering awards vary systematically with the extent and nature of the injury as opposed to simply being random acts of capricious juries. Since much of the interest in pain and suffering damages is intertwined with concerns about tort liability reform,

2. See 2 AMERICAN LAW INSTITUTE, REPORTER'S STUDY, ENTERPRISE RESPONSIBILITY FOR PERSONAL INJURY, at 199-200 (Philadelphia: American Law Institute, 1991) (this also provides accompanying footnotes for many of these concepts).

a major concern of interest is the extent to which these reforms are influential in affecting liability losses. This is the subject of Section 4, which examines the efficacy of tort liability reforms in achieving their intended objectives. Section 5 examines several reform proposals and indicates how different rationales for pain and suffering damages would affect the level of pain and suffering awards and the objectives they promote. The guiding principle that I will adopt is to assess which structure of pain and suffering damages has the intended economic consequences and best improves the overall performance of tort liability. The objective is not cost minimization or reducing jury awards but efficient operation of legal institutions.

1. Theoretical Principles for Pain and Suffering Compensation

There are a variety of different approaches that one can use to rationalize pain and suffering compensation. The magnitude of the compensation that is appropriate will depend substantially on which rationale is pertinent and the nature of the injury. This outcome is substantially different than what is the case for pecuniary losses, for which the appropriate level of compensation is relatively robust with respect to different conceptional rationales.

The Theory of Optimal Deterrence

In most tort liability contexts, the pivotal concerns are deterrence of accidents and appropriate compensation of accident victims. The meaning of deterrence that will be taken here is the appropriate level of damage payment that is needed to provide appropriate incentives for the injurer to adopt an efficient level of care. These deterrence values are in no sense punitive in that they will not punish the injurer for reckless behavior or provide sufficient financial incentives to deter such behavior beyond the individual case. Thus, the only sense in which the value is a deterrence value is that if the injurer had faced these incentives in this particular instance the injurer would have adopted the efficient level of care. In the case of monetary losses, for example, paying for the monetary damages inflicted in a specific case will establish appropriate levels of deterrence with respect to the particular incident, but it will not influence the injurer's behavior more broadly unless similar values are applied in all other cases as well.

The determination of appropriate values of compensation needed to establish efficient deterrence has a well established literature in econom-

ics.³ In the case of mortality effects, this literature pertains to the implicit value of life. More specifically, the approach inquires how much are people willing to spend to prevent small risks to themselves. In the case of labor market evidence, for example, workers generally require a premium that averages \$300 to \$700 or a midpoint value of \$500 to face a mortality risk of 1/10,000 annually. Suppose that there are 10,000 similarly situated workers who face one expected death among their group. These workers will receive total compensation value of \$5 million if the wage premium per worker is \$500, or \$5 million for one statistical death.

There is a substantial literature on how these valuations can be obtained. In the case of the value of life after an accidental death, there have been dozens of studies documenting the implicit value associated with on-the-job fatalities. These studies, which are reviewed in Viscusi (1992, 1993), indicate a value of life that clusters in the \$3 million to \$7 million range, with a midpoint in the vicinity of \$5 million. Similarly, job injuries that are less severe in nature but typically lead to roughly one month of lost work have an implicit value that clusters in the \$25,000 to \$50,000 range.

To value outcomes for which there is not good data on either implicit or explicit market trades, one can utilize survey evidence on the valuations associated with health risks. In the case of nontrivial injuries, the appropriate approach to establish deterrence values is the individual's willingness to pay to reduce a small risk of this health outcome. For minor variations in well-being, the willingness to pay per unit risk will equal the willingness to accept an increase in the value of the risk.

The preference for using a willingness to pay survey value over a willingness to accept value is that this number is less likely to be biased upward by individuals' predilection to place a substantial value on their current risk position.⁴ To obtain the implicit value of the health outcome one then divides the willingness to pay amount by the risk reduction to get a willingness to pay per unit risk, as in the case of the value-of-life estimates. These values are summarized in Table 1 for a variety of different nonfatal health risks, ranging from temporary eye burns to

3. For a review of these principles, see W. KIP VISCUSI, *REFORMING PRODUCTS LIABILITY* (Cambridge: Harvard University Press, 1991); W. KIP VISCUSI, *FATAL TRADEOFFS: PUBLIC AND PRIVATE RESPONSIBILITIES FOR RISK* (New York: Oxford University Press, 1992)[hereinafter VISCUSI, *FATAL TRADEOFFS*]; W. Kip Viscusi, *The Value of Life and Health*, 29 J. ECON. LIT. 1912 (December 1993).

4. See W.Kip Viscusi, Wesley A. Magat, and Joel Huber, *Informational Regulation of Consumer Health Risks: An Empirical Evaluation of Hazard Warnings*, 17 RAND J. ECON. 351 (1986).

chronic bronchitis and nonfatal lymphoma. In some cases, these responses reflect an accurate understanding of the risk whereas for others, particularly the findings for gassings in Viscusi and Magat (1987), these high willingness to pay values reflect an overreaction to the very small probabilities presented to the respondents, as people experience difficulties perceiving small risks and giving valid responses to low probability events. Consequently, the findings in Viscusi, Magat, and Huber (1987), which were based on larger risks that were several orders of magnitude greater, are likely to be more credible than the findings in Viscusi and Magat (1987).

Using market evidence on the implicit value of life and injuries does not necessarily assume that all market operations are perfect, including those for risky products, in which case there would be no rationale for any government intervention either through regulation or tort liability.⁵ The labor market evidence is for acute accident rates rather than dimly understood health risks that are less likely to be assessed by workers. Evidence on worker risk perceptions suggests that subjective risk beliefs are strongly correlated with objective measures of the industry risk level.⁶ In addition, evidence from a high risk industry, notably the chemical industry, suggests that an average worker's subjective risk perceptions of the industry frequency rate are identical to the observed accident rate if we exclude illnesses with long term consequences from consideration.⁷ Diverse sets of evidence from readily monitorable hazards as well as hazards for which workers are given actual risk information suggest that the compensating differentials and the implied values of the health outcomes are in the ranges cited above.

There is some heterogeneity in these values because implicit values of life and health are not natural constants. Individuals' attitudes toward health risks and good health will affect the willingness to pay for improved safety and the implied values associated with these decisions. One would not expect the implicit values of life and health to be identical for

5. Steven P. Croley and John D. Hanson, *The Non-Pecuniary Costs of Accidents: Pain and Suffering Damages in Tort Law*, 108 HARV. L. REV. 1785, 1805 (1995), express a concern with whether these risk beliefs are accurate, but the available evidence for job risks suggests that worker risk perceptions for the types of hazards captured by risk premiums are reasonable.

6. See W. KIP VISCUSI, *RISK BY CHOICE: REGULATING HEALTH AND SAFETY IN THE WORKPLACE* (Cambridge: Harvard University Press 1983); and VISCUSI, *FATAL TRADEOFFS*, *supra* note 3, for reviews of this evidence. Moreover, see W. Kip Viscusi and William Evans, *Utility Functions that Depend on Health Status: Estimates and Economic Implications*, 80 AM. ECON. REV. 353 (1990)[hereinafter Viscusi and Evans, *Utility Functions*]; and W. KIP VISCUSI, *EMPLOYMENT HAZARDS: AN INVESTIGATION OF MARKET PERFORMANCE* (Cambridge: Harvard University Press 1979), (shows premiums for objective and subjective risk perception variables are comparable).

7. See Viscusi and Evans, *Utility Functions*, *supra* note 6.

all people any more than one would require everyone to have the same preferences with respect to different foods or forms of entertainment. For example, smokers place a lower value on risk and those who wear seatbelts place a higher value on risk.⁸

Moreover, even if markets for risky jobs are in some sense imperfect, the existence of an imperfection does not necessarily imply that the statistical estimations have no informational content. If, for example, workers assess the true risk of the job with some random error around the actual risk, then the estimates of the implicit value of life and health will be biased downward.⁹ This phenomenon represents the standard influence of random measurement error on econometric estimates. In this instance, the labor market evidence will provide a floor on the appropriate pain and suffering deterrence values. Similarly, if one hypothesizes that risks are systematically overestimated or systematically underestimated, one can also make clearcut inferences with respect to the direction of the bias.

It should also be emphasized that use of market-based evidence to value pain and suffering within the context of tort liability, for which there is substantial intervention with respect to product risks, does not necessarily imply acceptance of the view that all job markets are perfect and all product markets are intrinsically flawed. For many risks, such as the differing hazards of automobiles of different size and weight, there is likely to be accurate consumer perception of the nature of the hazards. There is, for example, substantial evidence that safer cars command a higher price that is reflective of a reasonable implicit value of life.¹⁰ Similarly, few consumers would believe that skin contact with household chemicals or ingestion of household chemicals is as safe as similar contact with baking products. Consumers make a variety of judgements with respect to the risks of products and, in this regard, also are assisted by hazard warnings provided by the producers and by other sources of information in the media and elsewhere with respect to product risks. Although there are clearly some instances in which consumers are not cognizant of the hazards posed by a product, this situation is certainly not the norm. Millions of product-related accidents occur every year, but not

8. See Joni Hersch and W. Kip Viscusi, *Cigarette Smoking, Seatbelt Use, and Differences in Wage-Risk Tradeoffs*, 25 J. HUM. RESOURCES 202 (1990) (for analysis of the variation in job risk premiums by smoking status and seatbelt use).

9. This is the usual errors-in-variables problem.

10. For documentation of the implicit value of life reflected in automobile car prices, see Mark Dreyfus and W. Kip Viscusi, *Rates of Time Preference and Consumer Valuations of Automobile Safety and Fuel Efficiency*, 38 J. L. & ECON. 79 (1995) (finding that used car purchases reflect an implicit value of life of about \$3 million).

all of these lead to litigation because they are among the well known risks generally associated with life in an intrinsically risky world.

The Theory of Optimal Insurance

Another possible justification for pain and suffering compensation is to make the victim whole in a sense of restoring the victim's pre-accident level of utility. Compensation for pecuniary losses does this by replacing the income that is lost. In the case of pain and suffering, one could similarly transfer money in an effort to restore, in so far as is possible, the level of utility that was experienced before the accident. In the case of severe accidents, such as death and permanent impairment, it may be that no monetary transfer will restore this pre-accident level of welfare. Even more fundamental is that restoration of welfare levels is not in and of itself a rationale for pain and suffering. Rather, it reflects one possible outcome of a sound conceptual basis for pain and suffering compensation that will be pertinent under very restrictive circumstances. As will be shown below, in the normal situation there will be no fundamental economic motivation for fully restoring the individual's welfare level.

Insurance only becomes a salient issue if individuals cannot purchase adequate insurance on their own. If accident costs are covered by private insurance, then the principal role of tort liability is that of deterrence. Indeed, since many costs of tort liability will ultimately lead to higher prices, duplicative product liability insurance would not be desirable. The discussion below will assume that individuals are not fully insured against all potential injury losses, particularly those associated with loss of income for which there may be a moral hazard problem.

Insurance economists do not take as a given the assumption that restoring welfare to the pre-accident level is appropriate. The more typical perspective taken by economists is to engage in the thought experiment of asking what insurance would the individual choose to provide in the case of pain and suffering losses. Before engaging in this thought experiment, it is worth noting that in practice people now purchase billions of dollars of insurance, little of which is devoted to pain and suffering compensation. However, this insurance is not actuarially fair so that it is useful to inquire what people would purchase if markets worked perfectly.

The insurance analogy is appropriate in that pain and suffering expenses are an ongoing business expense associated with risky products. Expenses that raise the marginal cost of production will lead to an increase in the product price that will function in much the same way as would an insurance premium. Consumers of the product consequently will

purchase pain and suffering insurance as a bundled attribute of the commodity. It should be emphasized that this thought experiment pertains to a hypothetical world of perfect insurance in which the insurance sold is actuarially fair (i.e., it breaks even and does not earn the insurance company a profit) and the insurance company can monitor the actual pain and suffering losses incurred as well as any contributory behavior on the part of the injured party that led to the pain and suffering damages.¹¹

Once placed in this situation, it is useful to inquire what insurance the individual would purchase. Figure 1 sketches the situation in which the pain and suffering damage is simply tantamount to a monetary loss. The person starts with an initial income Y_0 and reaps the appropriate utility level given by the utility function sketched in Figure 1. In this instance, the pain and suffering loss is simply equivalent to some drop in monetary income, so that experiencing pain and suffering is the same as if one's income dropped from Y_0 to Y_1 . The optimal insurance plan will then be a premium that the individual will pay so that the utility and marginal utility of income will be equalized whether or not the pain and suffering loss occurs.¹² In this case of financial losses, the result also equates total utility level in the states with and without an accident. If insurance were free the result would be a return to income level Y_0 . Since insurance is costly, there is a drop in income to Y_2 in both the pre-accident and post-accident states. In the post-accident state this is the income equivalent taking into account pain and suffering losses. The gap between Y_0 and Y_2 is the insurance premium. The prospective accident victim will in effect experience this income level Y_2 and the associated utility level irrespective of whether the accident occurs. Insurance in the case of monetary equivalent losses consequently smooths out any welfare losses and ensures that utility levels are unaffected. Since the accident does not change the character of preferences, the marginal utility of income at Y_2 is also the same irrespective of whether an accident occurs.

If, however, the accident has a more fundamental effect on the victim's well-being and on the victim's ability to derive welfare from expenditures, the optimal level of insurance may be quite different. Figure 2 sketches two different utility functions, U_0 before the accident and U_1

11. Loading fees and problems such as moral hazard will raise the effective price of insurance to the insured, making it less desirable to purchase full insurance. These same factors — administrative costs and adverse effects on victims' incentives — hinder compensation through tort law as well.

12. This is a well established result in economics. See, e.g., KENNETH ARROW, *ESSAYS IN THE THEORY OF RISK BEARING* (Chicago: Markham Publishing Co., 1971). The key assumption is that people maximize expected utility — more precisely, the key assumption is that people are rational maximizers, because it has been demonstrated that basic elements of rationality imply maximization of expected utility.

after the accident. The individual begins with utility of U_0 at the point where the income level is Y_0 . After an accident, suppose the person has become permanently disabled and is unable to engage in usual consumption activities. The victim's income level has dropped from Y_0 to Y_1 , and the utility function governing the benefits derived from income is now U_1 . The optimal level of insurance will be the amount that equates the marginal utility of income after the accident with the marginal utility of income before the accident. This amount will not equalize the utility levels but instead will place the person at some income level Y_2 after the accident where the slope of U_1 at Y_2 is the same as the slope of U_0 at Y_0 (if we ignore the insurance premium cost).¹³ This income level is below Y_0 , which results in lower utility in the post-accident situation than would have been experienced before the accident either at income level Y_0 or at Y_1 with utility function U_0 . The reason is that the accident has lowered the marginal utility of any given level of income and given this shift in the value of money, it has become less desirable to transfer income to the post-accident state.

Establishing equality in the utility levels would require that one transfer enough income to the post-accident state to put one's income level at Y_3 . However, such a large income transfer is very inefficient given the flatness of U_1 . Moreover, in the case in which one actually must make the insurance purchase, the effect will be to transfer resources from the healthy state where the utility function is U_0 to the post-accident state so the consumer will be sacrificing income in a state where one derives a high marginal utility of income to transfer the funds to a situation in which the marginal utility of income is low.

Consider an example in which the chance of experiencing good health and an injury is equal. Suppose that you face a 50-50 chance of being healthy or paralyzed, as happened to the actor Christopher Reeve. Also assume that your medical and rehabilitation expenses are covered so the only purpose of insurance is to allocate funds for consumption. Then under situations of actuarially fair insurance, purchasers will face the same price for providing resources either to the healthy state or the injured state. Thus, for the same insurance premium, it is possible to increase income for U_0 by one dollar or increase income for U_1 by one dollar. Will you want as much money to spend on consumption after being paralyzed as you would if healthy? Since the marginal utility of

13. As in the case of monetary losses, one could also incorporate into this analysis payment for the insurance premium. The net result would be to lower the post-insurance income amount a bit below Y_0 for the healthy state and a bit below Y_2 for the post-accident state.

income is higher for U_0 for any given level of income, it will be desirable to transfer more income to one's self when healthy than when one's ability to derive welfare from expenditures is impaired. This result does not imply that no money is useful, only that you would want somewhat less.

Consider another example that is certainly pertinent to the typical reader. Suppose you are miserable and unable to enjoy spending money during the week, but you are happy and capable of enjoying money on the weekend. In this instance, you will reserve additional spending money for the weekends when it will confer a substantial benefit to you rather than spend it during the week when the money is less beneficial to your welfare.

Croley and Hanson (1995) give a potential counterexample of a person with an opera ticket who can give it to a healthy friend who is an opera buff or a friend who enjoys opera less but has been "down on his luck." They hypothesize that you might choose to give the ticket to the disadvantaged friend even though the usual economic assessments might suggest that the recipient's marginal utility of the ticket is less. However, even though this person is down on his luck, they also suggest that the recipient of the opera ticket would really appreciate it, which suggests that in fact they seem to be implicitly assuming that there is a high marginal utility conferred by the opera ticket. However, to contradict the standard economic model of optimal insurance, the marginal utility income must drop for the individual who is down on his luck, yet you would still find it desirable to give the opera ticket to him.

This example also incorporates a charitable element that is not pertinent. Am I giving the opera ticket to the disadvantaged friend in order to experience the warm glow from an altruistic act? Giving to the less fortunate, such as the homeless, for example, typically provides more satisfaction to the donor than gifts targeted at the affluent. Am I giving the ticket to the person "down on his luck" to benefit myself, or is this gift a reflection of the ticket's high value to the recipient?

A more appropriate thought experiment that is more analogous to liability awards is whether I would choose to buy insurance that would not only prevent any income loss if I was temporarily less well off but would also give me the extra bonus of the opera ticket. In the case of injuries such as that to Christopher Reeve, it seems implausible that consumption expenditures at a level beyond his pre-accident spending would be desirable because he is unable to participate in most of his past activities. Rather than insure for an opera ticket bonus, he surely would prefer a drop in income for consumption purposes.

In the absence of evidence on preferences after injuries, one might construct scenarios with different implications. It is frequently suggested that one rationale for pain and suffering damages is that various expenditures of money are needed after an injury to promote the individual's welfare.¹⁴ An elevator in the victim's house, a ramp for handicap access, or a van equipped for a handicapped person are among the potential items that could substantially promote welfare of the victim and be a legitimate component of damages. The paralyzed actor, Christopher Reeve, has also benefitted from numerous technical devices to assist in breathing and other activities.

However, these items of damages are not properly viewed as pain and suffering compensation but rather as medical rehabilitation expenses. Capital expenses such as these as well as labor expenses, such as rehabilitation services, are explicit components of damages already included within the usual medical and rehabilitation cost components. Their inclusion is quite appropriate from an economic standpoint since they surely yield a high marginal utility. These are quantified economic aspects of the loss as opposed to the nonpecuniary losses associated with pain and suffering. Thus, this particular rationale for pain and suffering damages does not in fact provide a distinctive justification for a new damages component since it is already addressed by other aspects of the damages award.

Thus, much of the difference between optimal insurance concepts for pain and suffering and the views of strong advocates of pain and suffering insurance, such as Croley and Hanson, may stem in part from semantics and the nature of the designation of the award components. There are many expenditures for the injured that are of a rehabilitative nature that clearly confer substantial benefits and may dramatically improve the quality of life of the injured party. I would follow the usual court practice of designating these outcomes as rehabilitation expenses, not as pain and suffering. I would then restrict pain and suffering compensation as expenses that are justified not through targeted expenditures that are specifically designed to address the consequences of the injury, but rather to compensation that can be used for general consumption purposes. For this character of compensation, which is the usual meaning of pain and suffering compensation, optimal insurance principles will lead to providing less compensation after injuries that are sufficiently serious to diminish the welfare one can derive from spending money.

14. See Croley and Hanson, *supra* note 5 at 1799. These arguments are not unique to them. See also, STEVEN SHAVELL, *ECONOMIC ANALYSIS OF ACCIDENT LAW* (Cambridge: Harvard University Press, 1987) (others also raise this issue).

The distinction between rehabilitation expenditures and "make whole" pain and suffering amounts is also clear in that these rehabilitation steps stop short of making the person whole. The provision of wheelchairs does not completely eliminate the welfare loss experienced by paraplegics. We can try to diminish psychic losses through the provision of psychological counseling, but if I am depressed after experiencing a disability even substantial monetary transfers through the courts will not fully restore my spirits. Ultimately, the designation of the components of compensation is not relevant to the overriding issue which is at stake. Should the total package of the award be designed to restore the level of utility after an accident or simply to produce the same marginal utility as one would have experience had the accident not occurred? The fundamental implication of the theory of optimal insurance is that the marginal utility level should be our concern, not the overall level of welfare. The studies that I will cite below are based on the responses of healthy workers and consumers to different levels of risk. From these responses, it is possible to estimate the underlying structure of utility functions, including how the utility functions vary after an injury.

To resolve the issue of exactly how such accidents alter utility functions, one must obtain empirical evidence. In a series of papers, William Evans and I have estimated utility functions as a function of individual health status, thus making it possible to make inferences with respect to the effect of accidents on preferences.¹⁵ For severe accidents, such as the typical job accident that on average forces workers to miss roughly a month of work, the effect of the accident is to lower the marginal utility of money.¹⁶ If such individuals were faced with the opportunity to purchase actuarially fair insurance, they would not choose to buy full insurance. Rather, their optimal replacement rate would be 85 percent of the financial losses they experience. This partial insurance is desirable since job accidents impede their ability to derive well-being from the usual kinds of consumption expenditures that would be possible if not impaired by the accident.

Not all accidents will alter the structure of utility functions. Some minor accidents, such as those associated with household chemical products, are tantamount to a decrease in income so that marginal utility

15. See Viscusi and Evans, *Utility Functions*, *supra* note 6; and William Evans and W. Kip Viscusi, *Estimation of State-Dependent Utility Functions Using Survey Data*, 123 REV. ECON. & STAT. 94 (1991)[hereinafter Evans and Viscusi, *Estimation of State Dependent Utility Functions Using Survey Data*].

16. In the case of logarithmic utility functions, Viscusi and Evans, *Utility Functions*, *supra* note 6, show that the utility function in the injured state was $\ln Y$, and the utility function when healthy is $1.077 \ln Y$. Similar results were obtained using a flexible functional form.

is enhanced after an injury.¹⁷ In these accidents, which are equivalent to monetary losses, people would presumably want to purchase insurance to fully compensate for the losses.¹⁸

The level of such insurance would not, however, be great, as it would equal the monetary loss equivalent of the accident. The optimal actuarially fair insurance for accident victims and families without young children — given the estimated U functions — is \$482 for toilet bowl cleaner gassings, \$504 for toilet bowl cleaner eye burns, \$605 for insecticide skin poisonings, and \$842 for insecticide inhalation. What these results suggest is that accidents that are of minor consequence may not have such fundamental effects on one's welfare that one can distinguish any effect on the shape of the utility functions. Even in the case of accidents that may affect young children, such as insecticide child poisonings, for which the optimal fair insurance amount is \$2,482 given the estimated utility functions, there is no evidence of a change in the structure of utility functions as a result of the accident.¹⁹ Such a result is entirely plausible. Temporary injuries should have little or no effect on how additional income affects one's well-being after the injury has been experienced.

One possible objective of pain and suffering damages is to equalize the utility that an individual will experience irrespective of an accident.²⁰ Under this scenario, the economic damages award would eliminate any financial loss, and the pain and suffering award would restore the individual to the same level of welfare as would have been experienced if the accident had not occurred. Such an approach clearly would be an inefficient insurance approach in the case of fatalities even if substantial pain and suffering had been experienced.

Presumably no amount of compensation after the fact will restore the accident victim to the same level of welfare had the fatality not occurred. Would, for example, individuals be willing to forfeit all their income in the healthy states so as to increase their income sufficiently in the post-disability state to eliminate the effect of the disability? Preferences of this type are implicit in a "make whole" assumption for fatality insurance.

17. See Evans and Viscusi, *Estimation of State Dependent Utility Functions Using Survey Data*, *supra* note 15.

18. These accidents would, for example, fit the mold of those discussed by Croley and Hanson, *supra* note 5.

19. These estimates for optimal fair insurance are drawn from W. Kip Viscusi, *Social Insurance for Work and Product Injuries*, 15 THE GENEVA PAPERS ON RISK AND INSURANCE THEORY 115, 128 (1990).

20. See Croley and Hanson, *supra* note 5 at 1817–1821. (The authors consider this rationale in detail and generally find many attractive features in the approach. However, they ultimately fall short of endorsing it).

Such extensive insurance would be unattractive to potential injured parties if they had to pay for such coverage. Similarly, in the case of catastrophic accidents such as those that produce brain damage, quadriplegia, or similar massive assaults on one's physical well-being, it is possible that no financial transfer could make one just as well off had the accident not occurred. Moreover, whatever financial transfer would be required to achieve this equality would presumably be many times larger than the current levels of pain and suffering damages.

One possible approach for justifying full insurance is to appeal to a Rawlsian approach.²¹ Perhaps individuals would choose to set up a pain and suffering compensation regime that equalized utility irrespective of an accident, based on their assessment of what would happen behind a Rawlsian "veil of ignorance." This Rawlsian construct is frequently used to assess social decisions. If one applied this approach to thinking about how prospective accident victims might set up a compensation scheme, one might ask how people would structure insurance if they did not know their future medical condition following an accident. Would they choose to equalize utility across states of nature or, in a strict Rawlsian sense, maximize the utility in the state in which one's welfare was lowest?

What is missing from this approach is appropriate recognition of the probabilities that the different pain and suffering events would occur and the implications these probabilities and payoffs have for the costs of purchasing insurance. The thought experiment of asking people how they would structure pain and suffering compensation if they could purchase such insurance on an actuarially fair basis is identical to what one might hope to achieve through the Rawlsian veil of ignorance. The only difference is that there might be some person-specific characteristics influencing the insurance decision, such as the choice of consumption patterns. However, even if we purge the optimal insurance problem of these person-specific aspects, the fundamental economic result that expected utility maximizers will purchase actuarially fair insurance to equalize the marginal utility in different health states remains true.²² This is not mere intuition. It is a well established theorem of how individuals would behave if they are rational.²³ To the extent that the accident impedes one's ability to derive welfare from additional expenditures, thus lowering the marginal utility for any given income level, it will be desirable to

21. Croley and Hanson, *supra* note 5, explore this potential rationale in detail.

22. One only obtains the Rawlsian result that one maximizes utility in the worst off state if one imposes this result by assumption rather than assessing the implications of rationality.

23. Croley and Hanson, *supra* note 5, and other commentators also assume rationality.

transfer less income to the post-accident state once the physical or mental impairment has occurred.

It is also possible to appeal to the actual structure of observed insurance policies, which appear to be consistent with these empirical findings regarding the shape of individual preferences. For example, people do not generally purchase pain and suffering insurance for their accidents. The fact that we do not observe such insurance purchases in the market is consistent with the stronger empirical evidence with respect to the structure of utility functions. However, it is not fully conclusive because of the possible insurance market imperfections. Insurers may, for example, not be able to readily monitor the severity of the pain and suffering loss. It should be noted, however, that even market imperfections do not prevent the provision of some minimal pain and suffering amounts even though full compensation of all losses may involve problems in monitoring the extent of the loss.

Croley and Hanson (1995) suggest that juries may in fact act in the same manner as would people purchasing insurance since they will realize that pain and suffering awards ultimately will affect the product prices for their prior purchases. If that were the case, juries presumably would not award unreasonable pain and suffering damages unless such insurance were attractive to them on a prospective basis. This conclusion assumes that juries understand that such a price mechanism will exist and also can determine the implications of one jury award for the national market of this product. Moreover, in the case of pain and suffering damages for previously manufactured product models or products that can be redesigned to avoid such pain and suffering damages in the future, the pain and suffering damage award will largely serve as a lump sum cost rather than as a marginal cost that will affect prospective consumer purchases. Juries need not exercise any restraint in this instance. The assumption that juries will be cognizant of these costs assumes that juries can anticipate how these litigation costs will be reflected in a myriad of other court decisions for the product. It is more likely that whatever judgement they make will be narrowly confined to that particular case so that the role of jury responsibility may be minor.

Compensation for pain and suffering damages also would be infeasible if it violated some accepted societal norm.²⁴ However, it is unclear why such compensation would be viewed as inappropriate through an insurance mechanism, whereas it is entirely appropriate as a routine element of damages in the courts. Moreover, there seems to be no societal

24. See the discussion by Croley and Hanson, *supra* note 5; and Cass Sunstein, *Incommensurability and Valuation in Law*, 92 MICH. L. REV. 788 (1994).

reluctance to provide insurance either for medical costs or income losses in the event of death or injury for any family member, and it would seem that suggesting that a dead spouse could be monetized and treated as equivalent to simply a loss in earnings would be more offensive to moral sensitivities than would suggesting that the spouse's value to the family went beyond earnings alone.

In instances such as these, how the pain and suffering issue is framed may be quite important. In the environmental context, for example, tradeable pollution permits have an unfavorable connotation, whereas the ability of firms to purchase pollution reduction credits appears less objectionable and was the ultimate designation selected by the U.S. Environmental Protection Agency.

There is also an important temporal aspect to pain and suffering damages for those accidents that do not have long-term effects on the individual's welfare. Once the trial date has arrived, the temporary pain and suffering loss from, for example, an instance of food poisoning may have long since passed. At the time of the food poisoning incident when the individual spent a weekend being ill, the pain and suffering award was not available to provide for movie rentals or other amenities that might have enhanced the individual's welfare when the pain and suffering was experienced. Indeed, it may be that additional consumption expenditures would not have been made by the poisoning victim even if the pain and suffering award had been provided when the victim was bedridden as a result of the poisoning. When you have food poisoning and are ill for a week, do you live it up in order to compensate for the welfare loss you have suffered or do you skip the planned evening out, saving the money until you are well?

What pain and suffering awards accomplish is to confer additional benefits to that person after the injury, resulting in a higher level of welfare than would have been experienced had the injury not occurred. To the extent that the injury is tantamount to a monetary equivalent, as minor poisonings tend to be, the total level of welfare that is experienced over the accident period and the post-accident trial period will be roughly the same had the poisoning not occurred, but the temporal pattern will be different and more uneven. Thus, pain and suffering awards may return the total level of welfare over the pre- and post-accident period to what it would have been had the accident not occurred.

The Tradeoff Between Optimal Incentives and Optimal Deterrence

Unfortunately, it is not possible to structure the optimal pain and suffering amounts to simultaneously promote the objectives of optimal

insurance and optimal deterrence. If we provide pain and suffering compensation equivalent to the optimal deterrence amounts, then this coverage will provide excessive insurance. Similarly, if courts only provide plaintiffs with pain and suffering amounts that are optimal from an insurance context, then the court awards will not generate adequate incentives for deterrence. The task for any award is to strike a balance between these competing objectives. To the extent that deterrence objectives are more salient, the higher deterrence values are more pertinent, whereas if insurance is the dominant goal then the rationale for pain and suffering awards becomes substantially weakened.

It should be noted with respect to the insurance objective, however, that tort liability is not the only source of insurance. Some victims can and often do have first party insurance to cover the losses they have experienced. To the extent that these insurance needs have been met through their own purchases, the main concern should not be with insurance but rather with the deterrence role of tort liability.

One possibility is to impose a tort fine that would penalize injurers for the pain and suffering damages but would not transfer resources to the injured party.²⁵ Thus, this segment of the award would go to the state and would not provide excessive insurance. The difficulty with any such proposal is that at the settlement stage the plaintiff could capture some of the expected cost to the injurer associated with the tort fine since it would be in the injurer's financial self interest to bargain for only the economic loss component as well as any residual amount that was necessary to provide an economic inducement for the plaintiff to avoid seeking a court verdict that would trigger payment to the state.²⁶

2. Pain and Suffering Awards as Offsets to Undercompensation Under Ordinary Damages

Theoretical discussions of damages awards generally assume that the legal world is without transactions costs. The reality is quite different. In particular, to obtain their awards for economic loss and pain and suffering damages, plaintiffs may have to expend substantial resources, often on the order of one-third of the total value of the award. These funds are used to cover legal fees, the costs of experts, and related expenses, where these

25. For fuller discussion of this approach, see A. Mitchell Polinsky and Yeon Soo Che, *Decoupling Liability: Optimal Incentives for Care and Litigation*, 22 *RAND J. ECON.* 562 (1991).

26. Steven Shavell (oral communication with the author) suggests that one possibility is that out-of-court settlements will not be enforceable by the courts unless the settlement is reported, thus facilitating the monitoring of settlements and assessment of fines.

expenses are often assumed by plaintiff lawyers on a contingency fee basis. The net result is that the amount of money transferred to the plaintiff as a result of an award will typically be substantially less than the value of the economic loss if there is no additional compensation for non-economic damages.

The practical role of pain and suffering compensation in facilitating the payment of legal fees has not been lost on legal reformers. The American Law Institute tort liability reform group, for example, commented favorably on various limitations and schedules for pain and suffering awards.²⁷ However, the American Law Institute group coupled this reform proposal with an accompanying recommendation that there be a provision made to cover a plaintiff's legal fees. Critics of such a proposal may view it as being largely political in nature. To obtain the support of the plaintiff's bar for tort liability reform some provision for legal fees might be viewed as a necessary component to buy off their financial stake. However, such a measure that addresses the importance of legal fees is quite sensible from an economic standpoint and from the reality of financing litigation. Unless there is an accounting for the deductions that will be made from a personal injury award that addresses only economic loss, plaintiffs will not fully recover the economic losses they have suffered once legal costs are deducted.²⁸ The net effect will be that the tort liability award will not even meet their income compensation needs, much less any additional payments that may be warranted by addressing non-economic damage concerns.

From an efficiency standpoint, it is desirable for the defendant to pay these costs in the simple model in which the injurer is solely responsible for the injury. What are the social costs of the accident? The plaintiff will not only suffer lost earnings, medical costs, and pain and suffering, but will also incur legal expenses. Failure to compensate for these expenses will provide for inadequate incentives for deterrence and will also undercompensate accident victims for the losses they have experienced.

The second potential practical rationale for pain and suffering awards is that the economic damages compensation may not be complete. As was discussed in Section 2, many consumer expenditures that are specifically targeted toward the needs of those who have suffered impairments of various kinds may generate a very high marginal utility. Handicap-accessible vans and related kinds of capital expenditures that make the lives of the handicapped more fulfilling than they would otherwise be

27. See A.L.I., *supra* note 2 at 264-265.

28. See Louis Kaplow, *Shifting Plaintiffs' Fees versus Increasing Damage Awards*, 24 RAND J. ECON. 625 (1993).

may generate an extremely high marginal utility. If that is the case, then these expenses should be encompassed within the provision for medical expenses and rehabilitation expenses. To the extent that they are not addressed, there would be a rationale for an additional pain and suffering award. However, the purpose of this award is in effect not to compensate the victim or provide deterrence to the injurer for any pain and suffering damage. Rather, it is a recognition that the legitimate economic insurance needs of the individual have not been met by the standard provisions for economic damages. In order to encourage courts to distinguish these issues in a clearcut manner, there should be separation of the rationale for compensation for pain and suffering. In practice, there may be some inevitable overlap if for some reason there is a limitation on the provision of rehabilitation expenditures.

3. Patterns of Pain and Suffering Awards

To obtain an assessment of the total value of pain and suffering awards and their relationship to various injury classes, let us consider data based on the Insurance Services Office Product Liability Closed Claims Survey. This survey pertains to a sample of claims closed by companies from mid-1976 to mid-1977. Unfortunately, there is no more recent data set that provides a comprehensive perspective on the magnitude of pain and suffering award compensation and the relationship of this compensation to the character of the injury. Although these data are before the most recent tort liability crisis and the wave of reform efforts following it, they nevertheless are instructive in indicating how pain and suffering awards are treated in the courts and how these awards in turn will influence out-of-court settlements.

For concreteness, the value of pain and suffering is defined as the total value of the award or out-of-court settlement less the value of economic damages. Thus, this measure is in effect the value of non-economic damage compensation (i.e., including punitive damages) rather than simply pain and suffering. Table 2 presents evidence on the pain and suffering awards for court verdicts. Because most cases in the sample settled out of court, the sample size of cases that were resolved in court is only 159 cases. For cases in which there was pain and suffering compensation, the pain and suffering share of compensation overall ranges from 13 percent for concussions to 95 percent for electric shock victims. If we exclude all cases in which there was not pain and suffering compensation at all and focus only on cases in which there was positive compensation for pain suffering, then the role of pain and suffering is characterized by the final two columns in Table 2. The overall fraction of the payments for pain and suffering follows a similar pattern to that

indicated above for all our court verdicts, where the largest dollar value of pain and suffering compensation is for brain damage victims for which just over half of the award is for pain and suffering.

A more complete perspective on the potential role of pain and suffering damages is provided by the results in Table 3. This table pertains to 7,957 claims that were settled out of court. To the extent that pain and suffering awards are made in court as part of the court verdict, there will be a backward influence of these awards on the size of the out-of-court settlements that the parties are willing to make. In particular, pain and suffering awards will raise the expected stakes of going to court and, in the case of risk-neutral plaintiffs and defendants with identical beliefs about the probability that the plaintiff will prevail in court, will increase the maximum offer amount by the defendant and the minimum acceptance amount by the plaintiff by the same degree. This more extensive sample of pain and suffering compensation indicates that for all cases, including those in which there is no pain and suffering compensation, the overall share of pain and suffering awards ranges from 26 percent for para/quadruplegia to a high value of 57 percent for burns. If we restrict the attention to only those cases in which there is positive pain and suffering compensation, the overall share of pain and suffering compensation spans a narrow range from 50 percent for para/quadruplegia to a high of 76 percent for respiratory injuries and illnesses. This high value is an outlier, as virtually all pain and suffering awards in situations in which there is pain and suffering compensation comprise from 60–70 percent of the total value of the payment.

This fairly uniform percentage may lead one to believe that the pain and suffering award is simply a standard mark-up over economic loss. Various hypotheses with respect to pain and suffering damages are the subject of empirical tests presented for this data set in my earlier paper.²⁹ My regression analysis for pain and suffering damages indicates that pain and suffering awards increase with the size of the financial loss, but this relationship is not on a one-for-one basis. In particular, the elasticity of pain and suffering damages with respect to financial losses is 0.66 so that a one percentage change in economic loss will lead to a 0.66 percent change in the total value of pain and sufferings awards. One can consequently reject the hypotheses that pain and suffering awards are a flat amount wholly invariant with the size of the economic loss.

Moreover, one can reject the hypothesis that pain and suffering awards are simply a standard percentage markup of the financial loss. The

29. See W. Kip Viscusi, *Pain and Suffering in Product Liability Cases: Systematic Compensation or Capricious Awards?*, 8 INT'L REV. L. & ECON. 203 (1988).

character of the injury matters as well. Controlling for the economic loss, there is a higher value of the pain and suffering award for amputations, burns, cancer, lacerations, poisonings, and sprains/strains. Other ailments such as fractures and para/quadruplegia receive a lower fraction of pain and suffering award than other ailments, controlling for the economic loss. In short, there are many systematic elements of pain and suffering awards in the courts.

One can certainly reject the hypothesis that pain and suffering awards are simply a fixed amount or fixed percentage of the economic loss. One can also reject extreme hypotheses that pain and suffering awards are entirely random. These awards vary quite systematically with the character of the injury and the amount of the economic loss. However, the presence of such a systematic variation does not in and of itself imply that these awards are entirely rational. They do not suggest that these awards are too high, too low, or optimal. Instead, they simply indicate a pattern of regularity that suggests that the most extreme critiques of pain and sufferings awards are not well founded.

The final empirical issue with respect to this data set is the subject of Table 4, which presents the effect of the pain and suffering cap on different categories of damages. This table highlights the inequity of a pain and suffering cap ranging from \$50,000 to \$150,000 in mid-1970s dollars or caps of more than twice this amount in today's prices. As can be seen, there is a substantial differential effect of the cap on different classes of injuries. Very severe injuries, such as brain damage and para/quadruplegia would be particularly hard hit by a pain and suffering cap since at present these injuries receive a high absolute value of compensation for pain and suffering damages. In contrast, relatively minor injuries such as dermatitis, electrical shock, and poisonings would tend to be relatively unaffected. What these results suggest is that a uniform dollar cap on pain and suffering damages would not in fact treat all tort liability victims equitably since those who are particularly severely impaired would suffer the brunt of the effects of a pain and suffering cap.

The overall task of tort liability reform is not to cap damages but rather to place damages on a sounder footing. There is no *a priori* reason to necessarily believe that pain and suffering awards in the most severe injury cases are the most extreme. For this particular data set, as was indicated above, the percentage value of pain suffering compensation increases on less than a one for one basis with the value of the economic loss. Moreover, for the same data set, it can be shown that in terms of the total value of compensation relative to total value of economic loss it is the large loss cases that tend to be most under-compensated and the small

loss cases that tend to be most over-compensated.³⁰ As a result, there appears to be little empirical rationale for singling out the victims of the most severe injuries for pain and suffering reforms since it would limit the resources that are transferred to ameliorate the losses they have experienced as the result of their injuries.

4. The Effect of Pain and Suffering Reforms

Over the past two decades, a variety of states have enacted various types of caps and limits on pain and suffering damages. Although conceptually these reforms should be of some consequence in limiting damages, this need not be the case. Juries, for example, may adjust the awards in other ways to provide more compensation to the victim in terms of economic damages or other components of damages in order to avoid the restrictions imposed by the pain and suffering limit. If, for example, the pain and suffering designation simply served as a convenient mechanism for juries to transfer resources to plaintiffs to cover legal expenses, then the existence of pain and suffering caps may have no effect on the magnitude of the award if the juries react to the cap by altering the level of compensation for other purposes so as to meet the perceived legal costs of the plaintiff. In addition, pain and suffering caps and their enactment are also accompanied by the presence of a variety of other kinds of legal reforms, such as changes in statute of limitations provisions and similar measures. It is consequently an interesting empirical question to distinguish whether it has been pain and suffering damages caps *per se* that have had any influence on the magnitudes of the awards or whether the cause is simply the overall change in the legal climate that has resulted from the enactment of a package of tort liability reform.

To explore these issues, I will rely on two sets of data, one pertaining to product liability and a second pertaining to medical malpractice. Consider first the product liability data, which in this case will pertain to the product liability premium files by the company of purchase and by year for the 1980–1984 period. This data set was developed by the Insurance Services Office for ratemaking purposes, but it can nevertheless be used in conjunction with information regarding the state of the insurance company selling the insurance in order to assess the effect of liability reforms.

Since the structure of the data set is that the observational unit is the company purchasing the insurance policy, what will be pertinent for this

30. See W. KIP VISCUSI, *REFORMING PRODUCTS LIABILITY*, at 52 (Cambridge: Harvard University Press 1991).

assessment is the tort regime in the state in which the insured is located. Since most very large companies tend to self-insure, the data set by its very nature tends to pick up the smaller companies whose operations in many cases will tend to be within state. Moreover, to the extent that there is error, such random measurement error should bias downward the effects of pain and suffering limits for this particular data set. A different statistical structure will be employed to assess the effect of pain and suffering limits for medical malpractice, thus making it possible to have different statistical perspectives on the role of pain and suffering damages.

What we would like to observe is the effect of the enactment of damages rules on the level of pain and suffering compensation or on total awards. Thus, ideally we would like to have information on some experiment that has occurred to enable us to assess the incremental effect of imposing a damages rule on some tort liability context. Unfortunately, that is not possible during this sample period, but it is possible to analyze the differing performance of states in which damages rules, many of which pertain to pain and suffering, were in place from states in which damages rules were not in place.³¹ Overall, much of the difference in the presence of damages rules seems to reflect the factors that led to the adoption of these rules rather than the influence of these rules in restraining awards. For example, in states with damages rules, the percentage increase in product liability premiums from 1980–1984 was 69.3 percent, whereas in states without these rules the percentage was only 53.2 percent. This somewhat paradoxical result would be consistent if the high liability cost states were more likely to have adopted such rules initially, which seems to be the case.

A similar kind of influence was also borne out in other measures of the consequences of damages rules. The principal measure of insurance profitability is the loss ratio, which is the ratio of losses associated with a policy to the premiums. The loss ratio is inversely related to the profitability of the insurance policy. For states with damages rules, this loss ratio was virtually constant between 1980 and 1984, as its value was 0.86 in each of these years. In contrast, there was a decline in the loss ratio from 0.89 to 0.83 for states in which there were no damages rules. Thus, the profitability of insurance improved more in states without damages rules than in states with damages rules. States with damages rules also experienced a higher loss per claim — on average 15 percent

31. These results are discussed in Viscusi, *supra* note 29; Viscusi, *supra* note 30; and W. Kip Viscusi, *The Performance of Liability Insurance in States with Different Products-Liability Statutes*, 19 J. LEGAL STUD. 809 (1990).

more. Not surprisingly, insurance companies also charged a somewhat higher premium for states in which there were damages rules in place. These results hold even within the context of a multivariate regression analysis that takes into account the coverage of the insurance policy and other liability reform measures that may be in place. Even within a regression analysis the presence of a damage provision within a particular state is positively linked to the value of the bodily insurance premium level, controlling for other factors.³²

To better disentangle the role of the damages provisions, it is more instructive to analyze the legal context in which there was a shift within the state that led to the adoption of a damages cap and then explore the effect of this change in the liability structure on the performance of tort liability within the state. That was the focus of my study with Patricia Born on medical malpractice insurance.³³ An importance difference of this study is that the time period and the unit of observation in the sample were quite different. Rather than focusing on the pre-liability crisis period, this study focused on the 1985–1991 period that captures the effects of the recent liability crisis and the reforms that were subsequently enacted. Instead of focusing on the purchasing insured company (i.e., the producer of the insured product) as the unit of observation, the data set used in this study pertains to insurance firms. The particular data set used was developed by the National Association of Insurance Commissioners. These data include as a unit of observation every insurance firm, in every state, in every year, that wrote insurance coverage for medical malpractice over this time period. For example, if Prudential Insurance wrote coverage in 50 states in 1989, it would appear as 50 separate observational units in that year. As a result, it is an exhaustive data set in terms of the scope of its coverage and is considerably more comprehensive and at a more refined level of detail than has been used in any other medical malpractice study in the literature.

Consider the performance of medical malpractice reforms in the state of Michigan, which adopted a \$225,000 cap on noneconomic damages in 1986, and the performance of reform efforts in Wisconsin, which adopted a medical malpractice damages cap of one million dollars. In each of these states, there was a substantial effect resulting from the enactment of the reforms, particularly for the firms at the least profitable end of the profitability spectrum. Thus, reforms have a differential effect across the

32. See W. Kip Viscusi, *The Performance of Liability Insurance in States with Different Products-Liability Statutes*, 19 J. LEGAL STUD. 809, 832 (1990), for the regression results.

33. See W. Kip Viscusi and Patricia Born, *Medical Malpractice Insurance in the Wake of Liability Reform*, 24 J. LEGAL STUD. 463 (1995).

distribution of the profitability, with the greatest effect being experience by the large loss firms.

Figure 3 sketches trends in various measures of the insurance company loss ratio for the medical malpractice insurers of the state of Michigan. The loss ratio (i.e., the ratio of losses to premiums) is the principal measure of insurance profitability, as a loss ratio of 1.0 is the break-even level (excluding the role of interest earned on premiums) and loss ratios above 1.0 are unprofitable. The mean loss ratios dropped from 1.7 in 1984 and 1985 to 1.1 in the year of the reform, 1986, and stayed below 1.0 thereafter. The median loss ratios exhibited similar improvement. The greatest change was for the most unprofitable firms — reflected in Figure 3 by the 75th percentile of the distribution of firms' loss ratios. For this group, the loss ratios were as high as 4.0 in 1984, but they dropped below 1.0 from 1988 on. Tort liability reforms such as damages caps consequently have a differential effect across the market, benefitting the least profitable firms the most.

To a large extent, this is the kind of result one might expect. Damages caps suppress the large loss outliers most likely to affect the least profitable firms. However, from the standpoint of economic efficiency one might well raise a potential concern that these reforms do not have a similarly beneficial effect on the more profitable and better managed enterprises. The distribution of the liability reform effects in the market may also affect the extent to which the benefits of the reform are passed through to consumers.

For the national insurance firm data set, the reforms enacted in the 1970s seem to have a relatively modest effect. The reform in this period that appeared to be most consequential was the set of reforms dealing with the ceiling on recoveries enacted in 1975 and 1976. However, the magnitude of the effect of this reform is not as substantial as the damages reforms enacted in the 1980s. The magnitude of the influence of the reforms in the 1980s was almost twice as great as those enacted in the 1970s based on the effect on overall losses associated with insurance, controlling for the value of premiums and a wide variety of other influences.³⁴ There is less of an effect of the reforms on the level of premiums.

What this pair of results suggests is that the overall effect of damages caps in this situation in which premiums were initially too low to cover losses is to enhance the profitability of insurance by reducing losses without lowering premiums to the same extent. In a competitive market,

34. These observations are based on the results in Table 8 of *Id.* at 486.

one would expect the effects of the liability reforms ultimately to be passed on to purchasers of insurance through lower prices. However, since these prices were temporarily out of their equilibrium value and at a rate that was above the level that was needed to maintain a normal rate of profitability, then the effect of the liability reforms was to prevent insurance companies from raising prices as much as they would have needed to do had the reforms not reduced the size of the losses that needed to be covered through higher premiums.

In terms of the specific magnitude of the effect, the influences involved are quite large. The damages limitations enacted in the 1980s account for a 16 percent–29 percent reduction in the total value of losses in the short run, where the extent of the effect depends on whether one also takes into account all state-specific differences. This latter correction leads to the higher end estimates cited above. The ultimate long-run effects of the liability reforms are likely to be even greater to the extent that this analysis assessed the value of losses in the given years being highly dependent on the losses in the previous year. Thus, to the extent that liability reforms affect the loss history favorably, they will also tend to have a beneficial statistical influence on the magnitude of the losses observed in the future.³⁵

What these results do suggest is that tort liability reforms can be a very powerful mechanism for influencing the magnitude of damages awards in the overall cost of the liability system. In this analysis of medical malpractice insurance, the damages provisions were the most influential in affecting insurance market outcomes. Other reforms, such as collateral source rule changes, attorneys' fee provisions, and related reforms did not have as consistent depressing influence on the magnitude of losses and, to the extent that they were influential, did not have an effect that was of the same magnitude as the damages limitations.

Overall, the damages caps seemed to have achieved their intended objective of restraining tort liability costs. That this objective has been fostered does not necessarily imply that it is a laudable goal for legal reform. That judgement must rest on a more fundamental assessment of the rationale for pain and suffering damages and the principles that should guide these damages awards.

35. The extent of this long-run effect may, in part, be a statistical artifact reflecting the extent to which insurance firms have not already internalized the influence of the tort liability reforms.

5. What Direction for Reform?

Limits on pain and suffering and other damages components can clearly be consequential. These reforms can have a dramatic effect on tort liability awards and the overall costs of liability both to the insured as well as to the insurance companies writing the pertinent coverage. To the extent that tort liability reform is synonymous with lower tort liability awards, restrictions on damages of various kinds are certainly effective.

Such a simplistic view does not capture the pertinent economic rationale for damages amounts. If the objective were to minimize tort liability awards, this could be achieved by abolishing tort liability altogether. One might suggest that it is optimal to at least abolish the component of damages earmarked for pain and suffering compensation to the extent that this compensation does not have an insurance or compensation rationale. However, this approach neglects the potential role of pain and suffering compensation in meeting the other economic needs of plaintiffs, notably the coverage of legal fees. It also ignores the potential role of pain and suffering compensation in providing appropriate deterrence incentives for the injurer, where these deterrence incentives are not strictly punitive in nature but are simply the required financial costs that must be imposed on injurers to create efficient incentives for accident avoidance in this case.

The difficulty from the standpoint of structuring an optimal compensation scheme is that even within the context of theoretical economic models there is no optimal solution. Inevitably, there must be some tradeoff between the competing objectives of providing optimal incentives for deterrence and optimal amounts of compensation. Thus, pain and suffering awards recognizing these competing influences would be an increasing amount depending on the extent to which incentives were needed to be provided to the injurer to avoid such behavior in future contexts.

It may be the case that many current pain and suffering awards are currently in the appropriate range in the sense that they are above the optimal insurance amount and below the optimal deterrence amount. However, the current rationale for pain and suffering awards typically stems from the size of the injury in terms of the magnitude of the financial loss and the character of the injury experience rather than the character of the behavior of the injurer. To the extent that the intent of the pain and suffering award is to simply restore welfare of the victim to the pre-accident level, one might well question whether these awards are on sound footing. Restoring the individual's utility is not an appropriate objective of pain and suffering compensation if one were to ask how this

compensation would be structured by the plaintiff if faced with the prospect of purchasing an insurance policy to cover these losses in the event of an injury. There is also substantial misunderstanding in the legal literature of the implications of economic theory and the role of insurance in providing compensation after an injury. The main consequence of injuries that lead to substantial pain and suffering is that there is also an associated limitation on the ability of the injured to derive additional well-being from consumption expenditures. Juries should consider not only how much pain and suffering reduces welfare but also how effective compensation will be in enhancing welfare. This phenomenon will tend to reduce the optimal amount of compensation that is pertinent.

A variety of liability reform proposals involve various limits on pain and suffering damages, but limits of this kind involve inherent inequities. Victims who suffer the most serious injuries are likely to be most affected by these limits even though there is no clearcut basis for assuming that their awards are most unreasonable from the standpoint of an optimal pain and suffering compensation amount. The imposition of various limits on pain and suffering schedules serves largely as a form of discipline. Until we know exactly what we wish to put on these schedules, then they have no more rational basis than the current jury awards.

There are a variety of different approaches that could be taken to limit pain and suffering damages awards or to provide some discipline for juries. One approach is a cap, which would be a simply dollar limit on the amount of pain and suffering compensation. The difficulty of a cap is that there would be inequities across injury types, particularly for the more severe injuries. A variant of a cap would be to impose a pain and suffering floor so that only in the case of injuries in which the pain and suffering was of sufficient consequence would there be any compensation. The floor approach is also consistent with the empirical findings that small claims tend to be overcompensated and larger loss claims tend to be undercompensated both by the courts and through out-of-court settlements. A third possibility is to have a pain and suffering scale under which there would be a fixed pain and suffering compensation amount for severe injuries, and the amount of pain and suffering award for minor injuries would be governed by how the severity of the injury differed according to this scale. Similarly, there could be pain and suffering schedules in which there were set pain and suffering amounts established for particular injuries of different type.

The key issue to be resolved for pain and suffering schedules and scales is that establishing such arbitrary benchmarks does not resolve the more fundamental issue of how one should initially assess the value of pain and suffering damages. Is our objective deterrence or insurance?

Moreover, the use of these mechanisms is not necessarily sound from an economic standpoint even if an appropriate reference point can be established. The jury needs to inquire not only how severe the injury was in terms of the pain and suffering that occurred, but it also must ascertain the effect of the injury on the individual's marginal utility of income if insurance is the objective. If additional expenditures will not enhance individual welfare or will do so very inefficiently, then pain and suffering awards will be substantially less desirable from an insurance standpoint than if such expenditures were highly effective in enhancing welfare.

To establish pain and suffering damages awards, juries currently do not have precise quantitative guidance. They are asked to apply their "enlightened conscience" to assess a value for pain and suffering compensation. Although juries are often urged to provide "reasonable compensation" for the pain and suffering that has occurred, what compensation is reasonable and the objectives that are to be promoted by this compensation are not well defined.

What is needed in tort reform legislation is not so much an arbitrary numerical structure with respect to pain and suffering damages but rather a more formal articulation of the objectives that are intended to be promoted through this pain and suffering compensation. The appropriate levels of pain and suffering awards vary substantially depending on whether our objective is to make the victim whole, provide optimal insurance, provide optimal deterrence, or foster some other objective. Economists do not know the appropriate answers to all of these questions, but they could begin the process of refining our knowledge of these issues if there was a well-defined objective. The present situation in which the rationale for pain and suffering compensation is not well-articulated in a manner that fosters jury understanding of the appropriate level of pain and suffering compensation has created an environment of uncertainty in which juries are widely perceived to be acting capriciously. The primary source of the difficulty may not be with jurors but rather with the murky guidance they are being given.³⁶

36. While it is true that such guidance is not generally superimposed for common law, state tort liability reforms have constrained tort awards in a variety of ways. Similarly, they could also provide structure with respect to pain and suffering award principles.

Figure 1
Accidental Effects When Accidents Involve
Only Pecuniary Losses

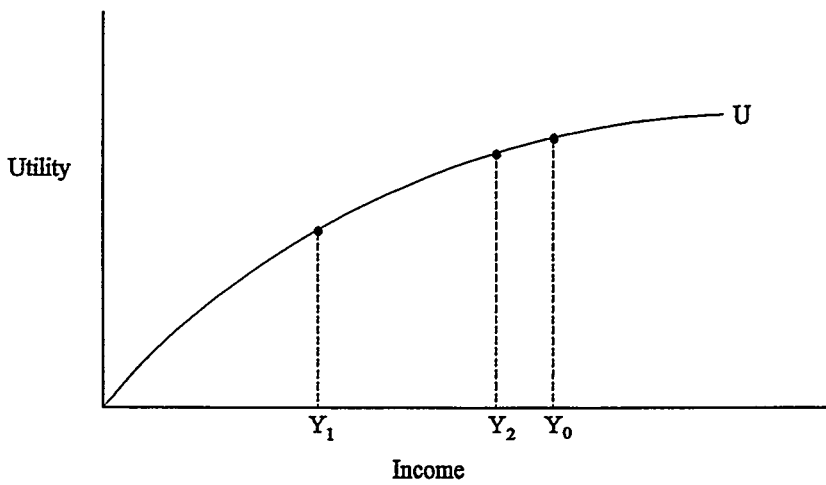


Figure 2
Accidental Effects When Accidents Involve
Pecuniary and Nonpecuniary Losses

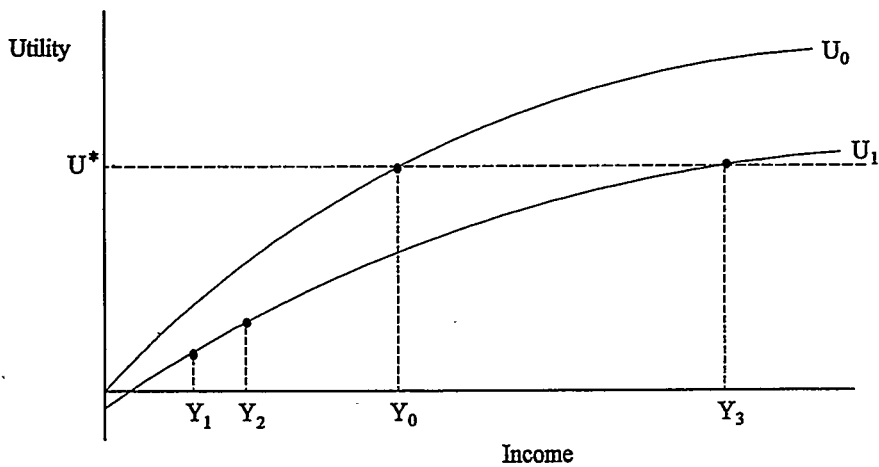


Figure 3
Loss Ratio Trends for Michigan
Medical Malpractice Insurance

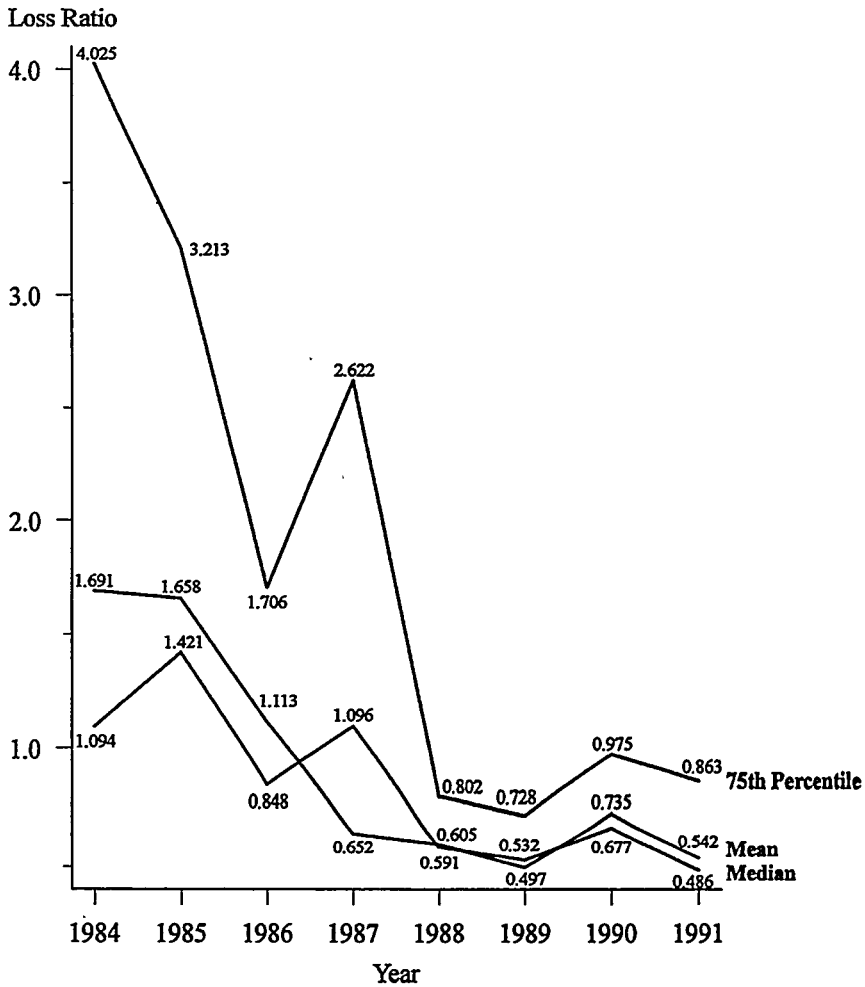


TABLE 1
SUMMARY OF VALUATIONS OF NONFATAL HEALTH RISKS

Author (Year)	Survey Methodology	Average Income Level	Nature of Risk	Value of Health Outcome
Viscusi & O'Connor (1984)	Percentages wage increase respondents require to face incremental job risk for 335 workers at four chemical plants, 1982	\$29,357	Job injury of sufficient severity to be reported to U.S. Bureau of Labor Statistics	\$13,810-\$17,761
Mark Berger et al. (1987)	Contingent valuation interviews with 119 respondents, 1984-1985	NA	Certain outcomes of one day of various illnesses	\$98 (coughing spells), \$35 (stuffed-up sinuses), \$57 (throat congestion), \$63 (itching eyes), \$183 (heavy drowsiness), \$140 (headaches), \$62 (nausea)
Viscusi & Magat (1987)	Paired comparison and contingent valuation interactive computer survey at mall, hardware store, 1984	\$39,768	Bleach: chloramine gassings, child poisonings; drain opener: hand burns, child poisonings	\$1.78 million (bleach gassing), \$0.65 million (bleach poisonings), \$1.60 million (drain opener hand burns), \$1.06 million (drain opener & child poisoning)
Viscusi, Magat, & Huber (1987)	Contingent valuation computer survey at mall, hardware store, 1986	\$42,700	Morbidity risks of pesticide and toilet bowl cleaner, valuations for 15/10,000 risk decrease to zero	Insecticide \$1,504 (skin poisoning), \$1,742 (inhalation), \$3,489 (child poisoning), toilet bowl cleaner \$1,113 (gassing), \$744 (eye burn), \$1,232 (child poisoning)
Viscusi, Magat, & Forrest (1988)	Contingent valuation computer survey at mall, hardware stores, 1986	\$44,554	Insecticide inhalation-skin poisoning, inhalation-child poisoning	Inhalation-skin poisoning \$2,538 (private), \$9,662 (NC altruism), \$3,745 (U.S. altruism); Inhalation-child poisoning \$4,709 (private), \$17,592 (NC altruism), \$5,197 (U.S. altruism)

TABLE 1 (continued)
SUMMARY OF VALUATIONS OF NONFATAL HEALTH RISKS

Author (Year)	Survey Methodology	Average Income Level	Nature of Risk & Value of Health Outcome	Value of Health Outcome
Evans & Viscusi (1991)	Contingent valuation computer survey at mall, hardware stores, 1986	\$32,700	Morbidity risks of pesticides and toilet bowl cleaner; utility function estimates of risk values. T values pertain to marginal risk-dollar tradeoffs, and L values pertain to monetary loss equivalents.	Insecticide: \$761 (T), \$755 (L) (skin poisoning); \$1,047 (T), \$1,036 (L) (inhalation-no kids); \$2,575 (T) (inhalation-children) \$1,748; \$3,207 (T), \$2,877 (L) (child poisoning); toilet bowl cleaner \$633 (T), \$628 (L) eye burn; \$598 (T), \$593 (L) gassing (no kids); \$717 (T), \$709 (L) gassing (children); \$1,146 (T), \$1,126 (L) child poisoning
Magat, Viscusi, & Huber (1991)	Risk-risk computer survey at mall, 1990	\$35,700	Environmental risk of non-fatal nerve disease, fatal lymphoma, nonfatal lymphoma	\$1.6 million (nerve disease), \$2.6 million (nonfatal lymphoma), \$4.1 million (fatal lymphoma)
Viscusi, Magat, & Huber (1991)	Risk-risk dollar computer survey at mall, 1988	\$41,000	Environmental risk of severe chronic bronchitis morbidity risk	.32 fatality risk of \$904,000 risk-risk; \$561,000 risk-dollar
Alan Krupnick & Maureen Cropper (1992)	Viscusi-Magat-Huber (1991) survey for sample with chronic lung disease, 1989	\$39,744	Environmental risk of severe chronic bronchitis morbidity risk	\$496,800-\$691,200 (median)

Source: Viscusi (1993), Table 7, with additions by the author.

TABLE 2
PAIN AND SUFFERING AWARDS FOR COURT VERDICTS

Type of Injury	Claims with Positive Bodily Injury Payments				Claims with Positive Pain and Suffering	
	Fraction with Pain and Suffering	Mean Pain and Suffering	Fraction of Payment for Pain and Suffering	Mean Pain and Suffering	Fraction of Payment for Pain and Suffering	Fraction of Payment for Pain and Suffering
Amputation	.78	59,396	.66	76,366	.85	
Asphyxiation	.75	5,484	.65	7,312	.86	
Brain damage	.90	172,607	.48	191,786	.54	
Bruise	.80	24,159	.69	30,199	.86	
Burn	.83	10,716	.55	12,860	.66	
Cancer	-	-	-	-	-	
Concussion	.13	6,041	.13	6,041	.13	
Dermatitis	.63	2,047	.63	2,729	.83	
Dislocation	.60	7,235	.60	7,235	.60	
Disease-other	.74	7,100	.74	7,100	.74	
Electrical shock	.95	6,157	.95	6,157	.95	
Fracture	.58	29,526	.58	35,431	.69	
Laceration	.73	43,264	.73	45,427	.76	
Para/quadruplegia	-	-	-	-	-	
Poisoning	.38	721	.38	1,172	.62	
Respiratory	.79	63,500	.79	63,500	.79	
Sprain/strain	.66	49,106	.66	55,244	.75	
Other	.83	128,198	.83	137,355	.89	

Note: The sample size of claims with positive bodily injury payments is 159.

-: no cases in this cell

Source: Viscusi (1988), Table 6.

TABLE 3
PAIN AND SUFFERING AWARDS FOR CASES SETTLED OUT OF COURT

Type of Injury	Claims with Positive Bodily Injury Payments		Claims with Positive Pain and Suffering	
	Fraction with Pain and Suffering	Mean Pain and Suffering	Fraction of Payment for Pain and Suffering	Mean Pain and Suffering
Amputation	.74	30,529	.50	1,245
Asphyxiation	.68	10,631	.46	15,608
Brain damage	.54	50,419	.36	93,198
Bruise	.73	2,209	.49	3,044
Burn	.82	23,167	.57	28,180
Cancer	.86	23,642	.54	29,915
Concussion	.75	9,067	.51	12,028
Dermatitis	.66	384	.41	582
Dislocation	.61	11,459	.41	18,697
Disease-other	.79	8,478	.48	10,749
Electrical shock	.59	3,336	.39	5,630
Fracture	.51	5,600	.29	11,084
Laceration	.75	2,651	.51	3,540
Paraquadruplegia	.52	72,834	.26	140,065
Poisoning	.72	507	.46	704
Respiratory	.53	17,376	.40	32,822
Sprain/strain	.76	9,405	.49	12,396
Other	.53	3,591	.34	6,779

Note: The sample size of claims with positive bodily injury payments is 7,957.

Source: Viscusi (1988), Table 5.

TABLE 4
EFFECT OF A PAIN AND SUFFERING CAP

Type of Injury	Fraction of Claims Exceeding Pain and Suffering Cap					
	Positive Bodily Injury Payment			Positive Pain and Suffering		
	\$50,000	\$100,000	\$150,000	\$50,000	\$100,000	\$150,000
Amputation	.169	.080	.061	.228	.108	.082
Asphyxiation	.068	.055	0	.100	.080	.0
Brain damage	.338	.239	.141	.571	.405	.238
Bruise	.012	.003	0	.017	.004	0
Burn	.073	.052	.023	.088	.064	.028
Cancer	.286	0	0	.333	0	0
Concussion	.061	.030	.015	.080	.040	.020
Dermatitis	0	0	0	0	0	0
Dislocation	.094	.031	0	.150	.050	0
Disease-other	.027	.014	.014	.034	.017	.017
Electrical shock	.036	0	0	.059	0	0
Fracture	.029	.010	.005	.057	.019	.011
Laceration	.018	.006	.001	.024	.008	.001
Para/quadruplegia	.400	.240	.080	.769	.462	.154
Poisoning	.002	.001	0	.003	.001	0
Respiratory	.135	.019	.019	.250	.036	.036
Sprain/strain	.025	.011	.008	.033	.015	.011
Other	.021	.009	.005	.039	.017	.010

Source: Viscusi (1988), Table 5.

