REVIEW

Theory and Fact in the Law of Accidents


Reviewed by Lewis A. Kornhauser‡

During the nineteenth century, the common law fashioned rules conditioning compensation for accidents on both causal agency and the fault of a party. This scheme of accident compensation has been under attack for nearly a century. Some of the battles have been fought within the common law itself; product liability emerged with Cardozo’s opinion in MacPherson v. Buick Motor Co.¹ That decision has served as an exemplary illustration of the adaptability of the common law. More often, the controversy has raged in the legislatures and in the legal literature. In the first of these arenas, the battle resulted in workers’ compensation, which transformed the basis of compensation for industrial accidents from fault to injury within the scope of employment. In 1932, a Columbia University study made the first calls for the abandonment of fault as a basis for compensation for automobile accidents.² Roughly forty years later, no-fault automobile accident plans were adopted in some states.³

† The authors are all members of the Centre for Socio-Legal Studies, Wolfson College, Oxford. Two of the authors, Paul Fenn and Yvonne Brittan, promise a further volume, The Economics of Compensation for Illness and Injury, which will present a theory of compensation. Economists have recently begun to articulate an economic theory of compensation, which is discussed briefly infra in Part II.

‡ Professor of Law, New York University. B.A., M.A. 1972, Brown University; J.D. 1976, University of California, Berkeley; Ph.D. 1980, University of California, Berkeley. I gratefully acknowledge the financial support of the New York University Law School Research Program and the hospitality of the Centre for Socio-Legal Studies, Wolfson College, Oxford while I wrote this Review. My colleague David Leebron provided useful comments. He of course is not responsible for any errors contained in this Review.

1. 217 N.Y. 382, 111 N.E. 1050 (1916).


Each of these retreats from the tort system primarily weakened the requirement of fault in certain accidents, yet retained the causation requirement. The “general” law of accident compensation, however, retained both pillars of cause and fault. Now, opponents of the tort system urge that society should abandon fault, and possibly causation, as prerequisites to compensation for any type of accident.4

A recent addition to the literature exploring the effects of the tort system is Compensation and Support for Illness and Injury. The authors undertook a detailed and extensive survey, on the basis of which they outline the net compensation effects of both the tort system in Great Britain and the various social welfare programs with which it interacts. The energy devoted to this work, as well as that spurring earlier studies, derives from the belief that the tort system should primarily compensate victims of accidents and the perception that it has proved both inadequate and inequitable in the fulfillment of this task. Both the 1932 Columbia University study5 and a 1963 University of Michigan study6 noted that victims who suffered equivalent losses from auto injuries did not necessarily receive equal compensation through the tort system and that compensation generally did not completely cover a victim’s loss. The argument may of course be extended beyond automobile accidents, since the tort system distinguishes among victims on the basis of cause of injury as well as on the basis of extent of injury. Thus, sufferers of illness or victims of home accidents may be subject to losses equal to those incurred by victims of negligence but not recover anything at all.

This criticism of the tort system suffers from three serious deficiencies. First, as the authors of Compensation and Support do point out (p. 1), the tort system is not the sole compensation device available. Individuals who receive little from the tort system might receive much from their own first-party insurance or from various social welfare programs. Lost wages, for instance, might be partially replaced by an employer’s sick-pay program or by unemployment compensation. Second, the claim that the tort system provides incomplete compensation rests on an unstated norm of what constitutes complete or adequate compensation. The critics of the tort system thus need a theory of compensation to substitute for the deterrence-based measure employed by the tort system.


5. For a summary of the 1932 study’s findings, see Smith, The Problem and Its Solution, in Symposium, supra note 2, at 785-803.

Third, the critics’ emphasis on the compensatory aspect of the tort system, without weighing the value of deterrence, is a grievous oversight. This emphasis enables them to dismiss causation as an important factor in a compensation scheme. But if deterrence through causation doctrine is indeed important, these critics must demonstrate that the tort system does not deter or they must demonstrate how other deterrent devices may replace the tort system. The study made in Compensation and Support does provide data relevant to the deterrent effects of the tort system, but it does not explore the importance of deterrence sufficiently.

This Review begins with a synopsis of the compensation study made by the authors of Compensation and Support and an analysis of how its results bear on the debate over the tort system in the United States. It then evaluates the policy goals that the authors glean from their empirical findings, testing these goals by developing alternative no-fault systems through welfare economics. Finally, I turn to the most serious theoretical gap between the authors’ findings and their conclusion that the tort system should be abandoned: the importance of deterrence, and therefore the causal link, in any compensation system. In the end, I conclude that while the study discloses provocative data on the efficacy of the tort system, many further questions must be answered before one can persuasively argue that the tort system should be replaced by some “better” system.

I
A Brief Summary of the Compensation Study and Its Relevance in the United States

Compensation and Support is based upon two surveys. First, the authors surveyed the general population to determine the incidence of illness and accident in that population. Then, with the portion of the population isolated in the first study identified as injured and ailing, the authors examined the extent and source of compensation (p. 26). This latter survey provides the heart of the analysis. It gives a shocking and dismal view not only of the tort system but also of the complex social welfare system in Britain that supposedly provides income maintenance and a barrier against poverty. The social programs designed to provide compensation give less than they promise and, indeed, less than one might believe them to provide.

Both surveys define “illness and injury” functionally as a serious

---

7. A critic of the tort system cannot consistently claim to be uninterested in deterrence. Accident deterrence, after all, reduces the instances in which compensation must be awarded and the critics surely prefer a whole, uninjured person to a compensated victim. The authors of Compensation and Support do not abandon the goal of deterrence; they base their critique of tort law in part on the perceived ineffectiveness of its deterrence effects (p. 328).
restriction on the victim's normal (i.e., pre-event) activity (pp. 28-29).\textsuperscript{8} The study defined "serious" in terms of the duration of the restriction: any event that limited the victim's ability to function for at least two weeks constituted an "illness or accident" (p. 29).\textsuperscript{9} The study apparently distinguished illness from accident based upon responses to the survey questionnaires.\textsuperscript{10}

The first survey, conducted in 1976, sought to identify those people whose activities had been limited as a result of illness, injury or handicap (p. 26). The group sampled 15,102 addresses in over 200 parliamentary constituencies that derived from a stratified random sample. The initial sample therefore sought to account for differences attributable to region, population density, and wealth (pp. 30-32). The experimenters had a remarkably high response rate of 82.6\% and the survey yielded data on 35,085 individuals (pp. 30-32).\textsuperscript{11}

The second survey (the "compensation survey") was completed in 1977, and focused on the 5,036 cases of illness or accident uncovered by the first survey (pp. 33-34). Of these cases, 2,226 were illness, 1,404 were accidents that occurred within the twelve months preceding the interview, and 1,406 were accidents that occurred within five years of the interview. In each case, the illness or accident had limited the activities of the victim (p. 34). The second category of accident victims was drawn specifically to study the tort system because those injured within twelve months were unlikely to have completed legal proceedings (pp. 29-30). In every instance of a road or work accident, criminal injury, or industrial illness, the victim was interviewed. For all other categories of illness and accident, one of every two cases was sampled. This led to 2,142 interviews of which 1,202 were accident, criminal injury, or industrial illness cases and 940 were other illness cases (pp. 34-35).

The compensation survey covered the nature, duration, and extent of the victim's illness or injury, the sources of compensation and income available during the illness and after, and basic demographic and socio-

\textsuperscript{8} The reference to normal functioning as defined by the victim's preincident conduct excluded individuals with congenital defects or defects that arose outside the questionnaires' time span of 12 (and occasionally 60) month intervals during which the authors sought to identify accident or injury events (p. 29).

\textsuperscript{9} Cf. p. 31, Table 1.2; appendix I at 1.

\textsuperscript{10} The authors report that the screening survey simply distinguished "illness" from "accident," including the 12 reported cases of industrial accident as "accident" by accepting "the respondent's definition of an industrial illness" (p. 31, nn. 3-4). The authors apparently also accepted the respondents' classification of their condition as "injury" or "illness," which was phrased in the screening survey as a distinction between an "accident on the roads, at work or at home, or [an injury] by anyone else," and "apart from" these, "any long term medical condition, a missing or defective limb or any similar condition" (appendix I at 2).

\textsuperscript{11} Of the 15,102 addresses, 14,866 were private households. Given the response rate, they had 12,285 households of which 12,217 "were successfully coded on to a computer file for analysis" (p. 32).
economic data. These data led the authors to formulate several empirical conclusions that bear directly on policymaking:

(1) During a period of restricted activity, the households of victims of illness or accident have significantly lower incomes than those of the healthy or uninjured, even after compensation from all sources (pp. 312-13).  

(2) While the tort system determines eligibility for benefits on the basis of cause, cause bears no relation to the victim's need for compensation (pp. 252-53).

(3) Very few tort victims receive any damages, largely because very few tort victims even consider claiming damages (pp. 76-77; 132-33).

(4) "The social security system proved to be the most important source of monetary compensation for the victims of illness or injury . . ." (p. 174). But only 37.5% of the respondents claimed receipt of some social security benefit (p. 174).

(5) Compensation schemes had very few work disincentive effects (p. 278).

(6) Duration of absence from work was proportional to the severity of loss of income suffered by the victim (pp. 277-78).

This brief summary captures neither the range nor the richness of detail of the study's empirical findings. The above findings, for instance, ignore the study's account of the victims' attitudes toward responsibility for accidents and injuries (pp. 139-63). For this and other provocative findings and detail, the reader should consult the study directly.

The relevance of these empirical findings to policy in the United States is greater than one might initially think. In the absence of a comparable study using American data, we can only extrapolate from our sense of the differences between the operation of the American and British tort systems and social welfare programs. However, I suspect that even though several details may differ dramatically, the first two conclusions of the compensation study also apply to the United States. Households of accident and illness victims are likely to have significantly lower incomes than otherwise demographically equivalent households in any country. Nor is the cause of the disability likely to be any more related to the victim's need in the United States than it is in the United Kingdom.

12. This income difference is not attributable to demographic differences between the injured population and the healthy population (p. 312). The income differential is greatest when the victim is the head of household (pp. 307-08).

13. Only 12% of tort victims receive any damages, while only 26% consider making a tort claim (p. 46).

14. Specifically, the authors found that "although there is a demonstrable disincentive effect associated with higher levels of income replacement, it is not large enough to present a serious barrier to policy options which increase levels of replacement" (p. 278).
Nevertheless, several differences exist between the United Kingdom and the United States that might affect the conclusions drawn from these data. Any recommendation to abandon the fault system must ultimately rest on a comparison with an alternative scheme. And such an alternative scheme must be examined in light of the differences between the two nations.

Broadly, one suspects that while the American compensation system is as complex as the British system, the tort system functions better in the United States and the no-fault system functions worse. Several factors suggest that the American tort system provides more compensation than does the British system. First, the American scheme of attorney compensation, the contingent fee, makes the presentation of a claim more likely here. In the United Kingdom, contingent fees are not allowed and the losing party bears the attorneys' fees of the winner. Thus, the American victim need not worry about incurring costs that would exacerbate the losses caused by his injury or illness. This difference in attorney compensation schemes is likely to alter not only the average recovery but also the distribution of recoveries. The contingent fee selects against cases in which the victim suffered little damage, since the fixed costs of asserting a claim are relatively high. In the United Kingdom, even a small claim can be pursued "free" given the possibility of being awarded attorneys' fees, provided the claim itself is sound. Thus, while most British recoveries are rather small (pp. 120-23), we would expect the more severely injured to do better in the United States (and the less severely injured to do worse). Furthermore, although most tort claims are settled in both countries, we might expect American settlements to be higher since American attorneys have greater incentives to bargain hard. The compensation of the American attorney derives from the size of the award while, according to the compensation study, United Kingdom settlements include a separate attorneys' fee offer that the defendant may manipulate to induce early settlement (pp. 98-99).

Second, the American tort system may provide more compensation simply because victims here may be more likely to sue. The litigiousness of the American victim is legendary, and the legend, if true, would lead to rates of compensation through the tort system greater than those available in the United Kingdom. One should note, however, that the compensation study found that most of the nonlitigants were victims of accidents other than work or highway accidents (p. 51, Table 2.2). Nonroad, nonwork accidents occurred most frequently in the home, at

---

15. Many victims, nonetheless, use damages for purposes other than compensation (p. 121, Table 3.13).
leisure or at sport (p. 50). In most home accidents, no likely defendant presents himself, unless some product has arguably malfunctioned. Much of the difference between compensation rates would then depend on the relative frequency with which American product liability law is invoked.

Evaluation of the relative efficacies of the no-fault aspects of the American and British compensation schemes presents more difficulties. The British victim clearly benefits from the presence of a national health scheme that provides free medical care. The American victim may have health insurance, but it is unlikely to cover all his costs. Other aspects of the compensation systems present even greater difficulties of comparison. The compensation study found that a significant percentage of victims entitled to sick pay did not claim it (p. 213). Thus, to compare accurately the performance of the American system, one must know not only the level of benefits offered by sick pay and disability schemes, but also the claim rate. This difficulty in assessment illustrates the compensation study's contribution to the debate over no-fault. A similar study for the United States would greatly improve both the quality of the debate here and the quality of any proposal put forth to resolve the American tort system's shortcomings.

The empirical conclusions drawn from the surveys of the British tort system, which to some extent are probably true for the United States tort system, lead the authors to propose several guidelines for a new compensation scheme to replace the hodge-podge of legal regimes that currently govern in the United Kingdom. This proposal, however, severs the link between compensation and deterrence that characterizes the tort system. The authors' recommendations suggest first the optimal structure of compensation and second the appropriate source of funds for compensation. Under this proposal, if deterrence were needed, it would come from the financing aspect of the system. The policy goals of the authors' proposal may be summarized in five points:

(A) A compensation system should not discriminate among victims on the basis of the cause of the functional disability. This implies the abolition of the tort system (pp. 334-36).

(B) Benefits should be allocated on the basis of relative need. This

---

16. Only 2% of those injured in the home or "other" accident category obtained any damages as opposed to about 33% of road accident victims and 20% of work accident victims (p. 50).

17. In addition, the different compensation rates would turn on the extent to which British social care schemes compensate home accident and "other" victims relative to American social care schemes. See generally pp. 235-54.

18. The authors also suggest abolishing the illness/injury demarcation for purposes of determining compensation, and the differential treatment of some categories of accidents, such as work accidents or criminal injuries (pp. 334-36).
implies a preference for those with long-term disability over those with short-term disability (pp. 336-37).

(C) The benefit scheme should (i) primarily provide for income replacement benefits, then for the extra expenses of disability, and only when these two aims have been met, for nonpecuniary loss (pp. 338-39); (ii) include incentives for rehabilitation and avoid disincentives for return to work (p. 340); and (iii) base entitlement primarily on medical grounds (p. 340).19

(D) The scheme should minimize administrative costs (p. 341);

(E) Deterrence should occur through “risk relationship” categorization (p. 341).20

To evaluate these proposals adequately, they must be elaborated in considerably greater detail. The compensatory aspects of these policy goals must be compared to some normative theory of compensation. Unfortunately, this comparison has not been made in the study. Thus, Part II outlines some concepts in welfare economics that might facilitate this comparative evaluation. The assessment of recommendations D and E depends on one's understanding of deterrence mechanisms. Administrative costs depend upon the showing a victim must make to gain compensation as well as upon the information needed to operate the financing scheme. For if a financing scheme is to be used to deter accidents, rates must be linked in some way to the payor's rates of accident causation. To judge the feasibility of achieving deterrence through the financing scheme, we might profit from considering the economic theory of deterrence, which is outlined in Parts III and IV.

II

WELFARE ECONOMICS UNDERLYING AN ECONOMIC THEORY OF COMPENSATION

In designing a compensation scheme to replace the tort system, two logical prerequisites must be met. These follow from the premise that "compensation for a loss" implies the substitution of something for the lost thing. In the context of illness or injury, the loss may or may not be economic. The substitute, however, is generally pecuniary. The term "loss" reflects some notion of a baseline, a notion of what the victim

19. The authors add:

for loss of earnings in the longer term, some additional social and occupational criteria will be necessary so that the impact of the medical condition on the individual's future ability to earn could be measured in relation to his previous type of job, and to his particular qualifications and experience (p. 340).

20. Categorization by "risk relationship" refers to making different sectors of the economy responsible for providing contributions to various compensation schemes, so that "those who benefit from a particular activity . . . should bear much of the costs of accidents arising in that activity" (p. 341).
would normally have. Thus, the first requirement of an alternative compensation scheme is to identify the baseline, or, equivalently, to identify the class of accidents for which compensation will be given. Second, one must decide how much compensation to give.

The tort model resolves these two problems by reference to a single principle. It compensates only when compensation promotes deterrence. And it chooses the level of compensation to achieve "optimal deterrence." Any accident compensation system that abandons the causation requirement obviously severs the link between compensation and deterrence and hence must resort to some other theory to determine the class of accidents covered and the extent of compensation.

A nondeterrence theory of compensation might derive the identification of a baseline and the amount of compensation from moral or political philosophy. Thus, lawyers have tried to ground the idea of fault in some conception of "just deserts." The rhetoric of the no-fault movement, which points both to the inadequacy of current awards and to the inequities in the award system, suggests that the decisions about which "accidents" to compensate and what level of compensation to provide should be answered by reference to some philosophy of equality. Alternatively, no-fault advocates could look to welfare economics to determine the answers to these questions.

Welfare economics offers three possible alternatives to tort compensation that identify the class of incidents compensable and the appropriate level of compensation. Each alternative is distinct from "full compensation," as measured by the amount of money necessary to place the victim at her preaccident level of utility or well-being. The first option sets compensation at the amount the potential victim would be willing to pay to avoid facing the risk of injury or illness. The second alternative sets compensation at the amount the victim would require to maintain her utility, given that she must also be subject to the risk. Both of these ex ante measures may be small relative to the damage actually suffered, particularly if the probability of illness or injury is small,

21. These measures are the compensating and equivalent variations, respectively. See E. Mishan, Cost Benefit Analysis 133-34 (1976). Economists frequently allege that, in the absence of large wealth effects, the two measures are equal. In the case of accidents that maim or kill, however, the two are likely to diverge. Knetsch, Legal Rules and the Basis for Evaluating Economic Losses, 4 Int'l Rev. L. & Econ. 5-6 (1984) suggests that in fact the two measures differ generally. Professor Knetsch surveys the empirical evidence on the question.

A growing literature in economics has addressed the problem of compensation in light of this deviation between the compensating and equivalent variations. See, e.g., Cook & Graham, The Demand for Insurance and Protection: The Case of Irreplaceable Commodities, 91 Q.J. Econ. 143 (1977); Freidman, What is 'Fair Compensation' for Death or Injury?, 2 Int'l Rev. L. & Econ. 81 (1982); P. Fenn, Damages for Personal Injury Loss: Some Consumer Theoretic Considerations (undated, unpublished manuscript) (available at Centre for Socio-Legal Studies, Wolfson College, Oxford University).
since compensation is based on the expected value rather than the reality of the loss. The third economics-grounded measure of compensation, socially provided insurance, adopts ex post compensation, like all current schemes and most proposed compensation schemes other than the two outlined above.

The socially provided insurance measure derives from the likely market failures of a hypothetical insurance market. Under this approach, one would first determine first what class of events consumers would seek to insure against and the level of insurance they wish to buy. Second, one would determine for which of these events the insurance market would prove inadequate. The socially provided insurance scheme would then offer the insurance that market failures prevented individuals from acquiring in the (hypothetical) private market. The social insurance scheme would attempt to set appropriate premiums; compensation for injuries provided by the scheme would parallel the

2. At this point an economist would ask why, in a hypothetical insurance market posited to determine the appropriate level of compensation, we even need a compensation system. That is, why does the insurance market not work? Three reasons support social provision of accident insurance. First, individuals might underestimate the risks they face, either in terms of the probability that the harmful event will occur or in terms of the cost that the event will impose. Since they underestimate the risk, individuals will not purchase insurance, the premiums of which are based upon the true probabilities and costs of accidents.

Two other reasons for the failure of insurance markets exist: adverse selection and moral hazard. Suppose that each potential insured knows the probability with which she will be injured, but the insurance company cannot distinguish high-risk from low-risk individuals. The insurance contracts, however, can distinguish between high- and low-risk individuals through the individuals' buying decisions. Paradoxically, this method of inducing people to reveal their risk factor causes the low-risk individuals not to purchase. This self-selection leaves only the high-risk individuals in the market, which drives the price of insurance up until even these individuals decline to purchase. This phenomenon is called adverse selection.

On the problems adverse selection creates for the insurance market, see, e.g., Rothschild & Stiglitz, Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information, 90 Q.J. Econ. 629 (1976). For example, an insurer might offer two different contracts: contract $A$ charges a high premium but has a low deductible, while contract $B$ combines a high deductible and a low premium. Low-risk individuals might opt for contract $B$ and high-risk ones for contract $A$. It may be, however, that if only high-risk individuals purchase contract $A$, the costs will rise and the premium will have to increase even more. In the end we might observe that premiums for contract $A$ rise so high that no one will purchase it.

Moral hazard refers to a further complication. Suppose the potential insured has some control over the probability that the insurable risk will occur but that, should the risk occur, the insurer will not be able to determine whether the insured acted appropriately. When the insured has some incentive to increase the probability of an accident, moral hazard exists and some device for risk-sharing between insured and insurer must evolve. See generally Holmström, Moral Hazard and Observability, 10 Bell J. Econ. 74 (1979). Most insurance policies do contain some risk-sharing device, such as a deductible, to account in part for moral hazard.

In the absence of moral hazard and adverse selection, any person who disliked risk would purchase complete insurance at an individually designed premium. Since both moral hazard and adverse selection are present, some markets may fail to provide insurance at the levels all people desire. This phenomenon is called market failure.

23. See supra note 22.
compensation portion of the insurance contract individuals would purchase on the (hypothetical) private market. Nevertheless, this hypothetical contract might provide for less than full compensation.24

Each of these alternatives to the tort system offers the victim of accident or illness some measure of compensation irrespective of causation. In this respect, many observers would deem these alternatives superior to the tort system, which does not ensure victims compensation for their losses. Like other proposals by no-fault advocates, however, these options lack a system of deterrence. Until the value of that factor is considered, studies such as *Compensation and Support* cannot persuasively demonstrate the desirability of abandoning the tort system.25

III

ACCIDENT DETERRENCE

Economic theory offers a framework in which to consider deterrence of accidents generally.26 Deterrence is a significant concern for any compensation scheme, because it reduces the number of accidents by creating incentives for accident avoidance. Economic analysis can gauge the deterrent effects of a wide variety of accident control schemes ranging from the fault system to criminal penalties to various financing schemes for no-fault compensation. Economic analysis requires, however, a sufficiently detailed description of the control scheme to determine the incentives it provides to various actors. The authors of *Compensation and Support* do not provide such a description of the alternative no-fault scheme they advocate. Consequently, in this Part, I shall outline the theory of deterrence, illustrate it through the application to the fault system, criticize that application, and then suggest some problems likely to plague any financing scheme.

"Deterrence," to an economist, refers to the incentives that cause an individual to take steps to reduce the probability of, or the harm produced by, an accident. Deterrence thus assumes that the individual has some control over the frequency or severity of the feared event. "Opti-

24. See supra note 22.

25. Even if those in favor of no-fault schemes care only about compensation for distributional reasons, they must attend to deterrent effects of their schemes. The incentives to take care have distributional effects, since a higher incidence of accidents implies that more compensation must be paid. Thus, the greater the number of accidents, the poorer people will be; and, if the injured receive less than full compensation, a greater number of people will have suffered a loss.

26. I shall treat illness and accident identically. The compensation study does not fully explain the distinction between the two. See supra note 10. Implicitly, the study seems to differentiate the two on the basis of causation: illness is not subject to human agency. In fact, people, both individually and collectively, may take actions to reduce the likelihood and severity of many illnesses. The economic model therefore covers both, although the economists' assumption that only two actors causally influence accident-illness frequency and severity is perhaps less plausible for illness than for accidents.
mal” deterrence occurs when the individual chooses the level of care that leads to the “right” level of accidents. The “right” accident level is generally not zero because it is costly to prevent accidents and the costs of reducing that accident rate from, for example, 10 per 1000 to 9 per 1000, might exceed the costs of the accidents themselves.

Economic analysis of the law has produced a detailed theory of optimal deterrence in the context of accidents. This theory rests on the perception that accidents occur through the interaction of various individuals. For most accidents, we believe that an individual may unilaterally decrease the frequency of accidents only by increasing her own costs. Thus if driver $A$ wishes to lower the frequency of accidents she may drive more slowly, or otherwise more “carefully,” but driving more slowly may be costly to her. It increases her travel time and time is a scarce, and hence valuable, resource. Since both accidents and accident prevention impose costs on individuals, optimal deterrence of accidents will strike some balance. Optimal deterrence does not imply that no accidents occur or even that we have reduced accidents to the lowest possible level. Instead, the “optimal level of accidents” occurs when the marginal cost of reducing accidents just exceeds the additional reduction in costs generated by the extra accidents.

In the design of an accident control scheme, the designer seeks to induce individuals to take the appropriate level of care. In general, it is insufficient merely to announce the appropriate levels of care, for it may not be in the best interest of the individual to adopt that level of care.$^{27}$ Inducing people to adopt the appropriate level of care presents two related problems. First, each individual with influence over the accident frequency may not bear all the costs that her choice of care level creates. If driver $A$ increases her speed, she increases the likelihood of an accident not only for herself but for others. The tort system makes her aware of the costs she imposes on others by making her responsible for the costs of their injuries. Under a no-fault scheme, however, she may not consider the consequences of her action because she will not bear them. Second, in most accident situations, the optimal care level for one person depends on the care taken by others. Accident control may require the coordination of the care choices of many.

The interplay between the doctrines of negligence and contributory negligence in the tort system resolves the two problems of cost internal-

---

$^{27}$ In the case of highway accidents people often argue that the threat of injury to oneself provides sufficient incentive to drivers to take the optimal level of care. This need not always be the case. For example, in many accidents, the injury to a truck driver will be small relative to the injury she causes to the other party because the weight of the truck in part protects her from injury. If she does not bear the costs she imposes on smaller vehicles, she is likely to drive with too little care. See also Bruce, The Deterrent Effects of Automobile Insurance and Tort Law: A Survey of the Empirical Literature, 6 LAW & POL’Y Q. 67, 80-84 (1984) (expected accident costs).
ization. It makes individuals responsible for the costs they unilaterally impose on others and coordinates everyone's care choices. Analysis has shown that the two doctrines will, in two-party accidents, induce both parties to select the optimal levels of care. The defendant acts more cautiously because if she is negligent in injuring the plaintiff, she will bear the costs suffered by the plaintiff. The plaintiff is induced to use greater care because any award to which he may be entitled from the defendant will be reduced by the amount of the costs for which he is responsible. Each party bears the costs caused by his or her actions—the costs of avoiding an accident and the costs incurred through an accident. Thus, each chooses the appropriate level of care. Indeed, actors are induced to behave optimally even though their behavior is observed only when accidents occur and is not monitored in advance. Setting the standards of care imposes information requirements on the courts; but it has been shown that an astute court can, with the proper procedures, arrive at the appropriate standards of care without full knowledge of the relationship between the care levels of the parties and the frequency of accidents generally.

These conclusions about the optimality of the system of negligence and contributory negligence rest on theoretical models. Ideally, we would test these models empirically to determine their validity. Unfortunately, while a vast and frequently technical theoretical literature underlies the argument that tort law deter, empirical evidence to support the theory is lacking. Thus, to use these models to further our understand-

28. Accidents involving more than two parties are discussed infra pp. 1037-38.
30. When the plaintiff acts negligently, she increases the frequency of accidents for any given level of care chosen by the defendant. Thus, if the defendant were liable regardless of the actions of the plaintiff, the plaintiff's negligent behavior would increase the defendant's liability payments by increasing the number of accidents for which he would be responsible.
32. See, e.g., Brown, supra note 29; Calabresi, supra note 29.
33. A small body of empirical literature exists in the law and economics journals. For example, Landes, Insurance, Liability and Accidents: A Theoretical and Empirical Investigation of the Effect of No-Fault Accidents, 25 J.L. & ECON. 49 (1982) purports to show that deterrence, as measured by the number of fatal accidents, decreased in no-fault states. However, I find Professor Landes' regression equation and results difficult to interpret. She uses the number of accidents as the dependent variable, and attempts to determine the accident level through various independent variables, such as population. But it would seem more reasonable to use the accident rate as the depen-
ing of the tort system and other schemes for accident compensation and deterrence, we must reveal and evaluate the models' underlying assumptions.

One underlying assumption of the tort model is that the actions of only two people contribute causally to an accident. Most accidents, however, have much greater causal complexity. In highway accidents, for example, we might reduce both the incidence and severity of accidents by improving the safety of roads and cars as well as by demanding more care on the part of the drivers involved. The simplification in the model thus glosses over three considerations that impede the smooth operation of the tort system. First, driver A's chosen care level may affect the

dent variable. Even more perplexing, Professor Landes' regression equation has separate independent variables for the threshold and for the presence of a no-fault scheme, and this equation is used in all years, regardless of the presence of a no-fault scheme. It thus appears that even in years in which a state did not have a no-fault scheme, the regression equation included a value for the threshold at which tort actions could be introduced if a no-fault system had existed. This is an odd causal relation. Presumably the appropriate independent variable is an interaction term of threshold times the dummy variable for the presence of a no-fault scheme.

Two other articles bear on the empirical deterrence of the tort system in an ambiguous way. Chelius, Liability for Industrial Accidents: A Comparison of Negligence and Strict Liability Systems, 5 J. LEGAL STUD. 293 (1976) finds that the introduction of either employer liability or workers' compensation statutes decreased the rate of industrial accidents as measured by the ratio of a state's nonmotor vehicle machinery death rate to the general nonmotor vehicle death rate in the United States. Id. at 306. Employer liability statutes are, of course, fault systems, and it is not clear how to apply these conclusions to a no-fault system governing accidents that occur outside a contractual relationship.

Higgins, Producer's Liability and Product Related Accidents, 7 J. LEGAL STUD. 299 (1978) compares the effects of various schemes of product liability on the rate of nontransport accident deaths and on industrial accidents. He finds that producer liability reduces accidents when a state's educational level is low and increases them when it is high.

Finally, Bruce, supra note 27, offers a useful survey of empirical literature that bears on deterrence of automobile accidents in tort law. He distinguishes three empirical questions: (1) Can an individual adjust her accident-causing behavior? (2) If so, under what circumstances will an individual adjust her accident-causing behavior? (3) Does the combined scheme of tort law and automobile insurance constitute circumstances under which accident-causing behavior will be reduced? Id. at 68.

Much of Professor Bruce's article summarizes evidence that bears on the first question. Bruce concludes that individuals could take steps to reduce the likelihood or severity of automobile accidents. Id. at 77-78. He then suggests that the expected value of fines for accident-causing behavior is large relative to the expected cost of injury from an accident. To bolster these calculations, he cites several studies that show that criminalization of various activities—drunken driving, nonuse of seatbelts, reductions in the speed limit—has reduced the cost of accidents. Id. at 80-84. While his discussion significantly bolsters the case for deterrence, it is hardly conclusive. The criminalization studies, for example, are subject to another interpretation: people may not be deterred by the penalty but influenced by the disapprobation placed upon the conduct when the state enunciates a rule backed by a criminal sanction. The speed limit studies suggest an ideal experiment: reduce the speed limit but for every speed keep the expected value of the penalty constant. If the distribution of speeds shifts downward, we would have observed an effect solely from the enunciation of the rule.

Next, Bruce shows that the tort system as moderated by the insurance system does deter accident-causing behavior. Id. at 84-87. He does not however, cite any study, other than those referred to above, that bears directly upon the effect of changes in liability rules.
probability of an accident with various other drivers in more complex ways than those imagined by the model. Second, if a court following the economic model has an incomplete causal picture of an accident—that is, if it believes that only two parties determine the likelihood and severity of an accident when in fact others may also influence accident behavior—it will impose an inappropriate standard of care. The court might take the levels of care actually adopted by the ignored third parties as fixed and immutable and then select standards of care for the two “relevant” actors to minimize accident costs.\footnote{34} In a highway accident case, a court that ignores the role of the highway department will set standards of care for drivers inappropriately.\footnote{35} Third, if actors choose their care levels sequentially rather than simultaneously, rules based on actual damage will not yield the appropriate incentives.\footnote{36}

Other assumptions of the economic models also do not stand up to reality. Individuals may not always act purely in their own self-interest. The participants in the accident-generating activities may not themselves know the effects that their actions have on accident frequency. And different people will in general face different costs of care, so an optimal legal rule will present different people with different standards of care.\footnote{37} These deviations from the assumptions of the models suggest that a tort system that chooses standards of care as defined by the models would not induce optimal care choices on the part of the individuals. We might expect that “optimal” care standards would underdeter.

The models of the tort system also assume that every nonnegligent victim of an accident pursues his claim and is compensated by the injurer. The compensation study provides some evidence of the shakiness of this assumption and, when interpreted in light of the economic models of accident liability, allows us to predict biases in the functioning of the fault system.

\footnote{34} I am assuming here that all actors choose their levels of care “simultaneously,” or at least in ignorance of the choice of other actors. In this simultaneous case, a system of negligence tempered by contributory negligence, and with no contribution among joint tortfeasors, will yield efficient outcomes if a court has the correct view of causation of accidents. \textit{See} Landes and Posner, \textit{Joint and Multiple Tortfeasors: As Economic Analysis}, 9 J. LEGAL STUD. 517 (1980).

\footnote{35} The interactions of care are extremely complex. A priori, we cannot tell whether the courts will set standards too high or too low; that depends upon details of the causal relation. These causal relations may yield counterintuitive results. For instance, although traffic lights are popularly regarded as safety devices, installing a traffic light at the intersection of a major and minor avenue may increase the number of accidents because the number of rear end collisions may rise. But the severity of the accidents may decrease. \textit{See United States Dep't of Transp., Driver Behavior and Accident Involvement: Implications for Tort Liability} 131 (1970).


\footnote{37} Diamond, \textit{Single Activity Accidents}, \textit{supra} note 29, at 149-60, and Green, \textit{supra} note 29, at 558-63, discuss the consequences of nonuniformity in costs of care on the functioning of the negligence system.
The first of these biases derives from the economic theory that accident victims always seek and obtain compensation for their injuries. The compensation study reveals that, at least in the United Kingdom, very few people injured in accidents seek compensation (p. 46). Of course, it is possible that none of the 74% of accident victims who failed to consider making a tort claim were entitled to damages, but this seems unlikely. Since not all victims entitled to damages will claim them, the tort system will not make individuals whose activities contribute to the accident level aware of the full costs their activities impose. These individuals are thus apt to take too little care, and the social costs of accidents are apt to be above their minimum.

Second, the compensation study confirms that most claims are settled and shows that most of those who settle accept the first settlement offered. Both the frequency and level of settlement are therefore inaccurate barometers of the actual damages caused by the accident. Hence, as an actually operating tort system shows, even legal regimes with optimally determined standards of care are likely to lead to nonoptimal levels of accidents and care.38

These findings of the compensation study do not imply that the tort system has no deterrent effect. They only imply that the system, when it has chosen care levels "optimally," will not induce actors to choose the cost minimizing levels of care. This conclusion does not mean that the tort system should be abandoned in favor of some other compensation mechanism. Rather, we must compare the deterrent effects of the alternative compensation system to those of the tort system.

IV
ACCIDENT DETERRENCE IN NO-FAULT SCHEMES

The discussion in Part III suggests that fault systems as they actually operate will not induce actors to select care levels that minimize accident costs. It does not necessarily follow, however, that fault systems should be abandoned. Any no-fault system of compensation will also affect the level and severity of accidents we observe. To choose between fault and no-fault systems, we must compare not only the extent of compensation provided under each system but also the extent of (imperfect) deterrence induced by each.39

Unfortunately, the advocates of no-fault

38. The importance of settlement behavior in the evaluation of legal rules is discussed in Mnookin & Kornhauser, Bargaining in the Shadow of the Law: The Case of Divorce, 88 YALE L.J. 950 (1979). Recently, economists have begun to model the choice between settlement and litigation, but these models of settlement have yet to be integrated into models of the accident liability system.

systems have not provided us with sufficiently detailed descriptions to analyze carefully their deterrent effects. I shall thus restrict myself to some general comments.

The economic theory of deterrence assumes that individuals respond only to those costs for which they are responsible. Thus deterrence requires some attribution of causality to actors. Moreover, we may make this attribution in two ways. First, we may observe care levels independent of their consequences. We might police driver behavior and penalize carelessness even when no accident results. Or we might license only those drivers who exhibit a propensity for careful driving. These ex ante schemes of deterrence are independent of the compensation scheme we adopt and we may be able to induce people to act optimally without resorting to incentives generated by the compensation scheme, fault or no-fault. Ex ante monitoring, however, is expensive. All behavior that might lead to an accident must be policed, although litigation costs under an ex ante system may be lower since fines are apt to be smaller than liability awards.

Ex post deterrence, that is, any allocation of costs after the accident has occurred, is also costly, but the nature of the costs incurred differs. All potential accident-creating behavior need not be monitored; instead, one must identify the responsible parties for each instance of illness or injury and see that each party bears the appropriate level of cost. The appropriate level of cost bearing is determined by the future accident costs the agent may avoid. Causal relations and the prospects for future accident avoidance are costly to identify. Indeed, in many instances it may be difficult to notice the accident itself. In addition, because ex post deterrence requires larger fines than ex ante deterrence, those threatened with liability are apt to contest the attribution of liability more vigorously, thereby increasing administrative costs.

Even in a no-fault compensation system, effective deterrence through financing requires identification of either the care levels of those who finance the system or the actual level of damages imposed by their actions. Under most proposed systems, little attention has been paid to the costs involved in this administrative task. Each claimant will have to report the nature and extent of injury or illness as well as possible responsible parties, and then some determination as to who should bear the accident costs must be made.

One estimate of accident costs might come from an analysis of insurance schemes. Through "categorization," insurance companies avoid having to perform in as great a detail the task of identifying care levels and actual damages. Thus, administrative costs are reduced. Insurance companies presumably categorize as crudely as they do because the costs of finer classification outweigh the benefits. No-fault systems could
adopt similar schemes to reduce administrative costs. Of course, crude classification is already present in the tort system, since most drivers and employers are insured and respond to the incentives created by their premium schedules.

Categorization has several deficiencies in terms of transmitting incentives, which result in undermining its deterrence effect. First, if the scheme sets rates in terms of average performance of members of the group, each individual insured has a decreased incentive to alter her behavior since the benefits from her changed behavior are spread among all members of the category, rather than fully accruing only to her. Second, the categorization may not reward at all actions that in fact reduce accidents or illnesses. Most insurance schemes are experience based, which may make them less responsive to advances in understanding of accident and illness causes. Once a categorization scheme is implemented, it determines the nature of the data collected. This collection device may make it difficult to determine the efficacy of different accident or illness prevention modes.

Nor may one be able to rely on competitive markets to induce optimal categorization schemes. At least in the United States, insurance companies are regulated and hence not subject to competitive pressures. Moreover, even in a competitive market, adverse selection and moral hazard produce market failures, which preclude optimal categorization.40

Of course, we might seek to deter through means divorced from the compensation scheme. We might impose standards of care on actors and regularly police their activities. We do this in part now: in road accidents through speed limits and other driving regulations as well as through the mandate of vehicle quality, and in work accidents through occupational health and safety regulations. But these systems are also costly to employ and they fall short of the ideal that would use information related to accidents and illness to determine the appropriate standards of behavior. Thus, using such a system in tandem with no-fault compensation is probably not an improvement over the tort system.

Indeed, one attraction of the tort system, at least in principle, is its apparent informational efficiency. It provides deterrence by monitoring only those instances in which accidents actually occur, rather than requiring continual ex ante monitoring. In addition, the evidence relevant to the determination of causation and level of damages coincides with the evidence necessary to determine the optimal care levels of the parties. Finally, the imposition of the costs on the actors decentralizes the care decisions. The agents with the best information on how to alter

40. See supra note 22.
behavior to reduce accident levels are those who in fact choose the levels of care. Of course, the costs of legal procedure seem to negate these benefits. Indeed, legal costs suggest that tort liability would work best in a strict liability regime in which the responsible actors are sufficiently large to self-insure. Strict liability minimizes the legal costs while size guarantees that categorization problems will not arise.

**CONCLUSION**

The authors of *Compensation and Support* have provided detailed and important information relevant to the debate over the fault system and the construction of a system of compensation for accidents and illnesses. Such empirical data is sorely needed in a controversy marked by a wide variety of often unarticulated theoretical and normative positions voiced largely in ignorance of how victims actually fare. But a large distance separates the authors' empirical findings from their policy suggestions. Deterrence of accidents and prevention of illness bear directly on the costs and extent of compensation any no-fault scheme must provide. To evaluate no-fault schemes requires both specifics about their financing and associated deterrence mechanisms and more evidence on how care decisions respond to economic incentives. Similarly, the justification of nontort systems of compensation requires a normative theory that identifies appropriate levels of compensation.

Perhaps we may hope that the authors of *Compensation and Support* will continue to elucidate the debate over fault by turning to these remaining questions.