

# Empirical Comparisons of the Contributory versus Comparative Negligence Rules

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The liability rule traditionally used in accident law when both the injurer's and the victim's behaviour affect the likelihood of an accident occurring is the rule of contributory negligence. Under it, the injurer is liable for the full amount of the victim's damage only if the injurer's behavior is negligent and the victim's behavior is non-negligent. If both parties are negligent, only the victim is negligent, or neither party is negligent, then the injurer is not liable for any amount of damage. However in many jurisdictions the contributory negligence rule has been replaced by the comparative negligence rule. The new rule differs from the old in that the injurer and the victim share liability for the victim's damage when both parties are negligent, where under the usual sharing formula the injurer pays a proportion of the victim's damage equal to the injurer's fault relative to the total fault of both parties. When either the injurer or the victim is negligent or neither party is negligent, the two rules are the same. Thirty-eight American states shifted from contributory negligence to comparative negligence between 1969 and 1984 and, as of 1985, only five states still used the older rule (Flanigan *et al* 1989). The comparative negligence rule is also used in the United Kingdom, France, Germany, Russia, and in maritime law. (See Curran 1992 for an empirical study explaining the spread of the comparative negligence rule in the U.S.)

What guidance does theory provide for empirical testing of the effects of liability rules? The traditional theoretical analysis of the contributory and the comparative negligence rules argues that both rules give injurers and victims incentives to take economically efficient levels of care (see Shavell 1987). The basic argument is the same for both rules and relies on the fact that injurers and victims both receive large, discontinuous cost reductions when they increase their care levels just enough to be found non-negligent if an accident occurs: injurers because they avoid liability for all or a share of victims' damages and victims because they cannot collect from injurers for their damages when they are negligent. These large cost reductions give both injurers and victims an incentive to use

care just equal to the “due care” level that legal decision-makers set as the minimum requirement for avoiding negligence. If the due care level is equal to the economically efficient level of care, then injurers and victims have an incentive to behave efficiently under both rules. Assuming that injurers and victims behave in this way, the traditional theoretical model predicts that incentives to take care and number of accidents will not change when jurisdictions shift from contributory to comparative negligence.

However in practice juries do not always apply liability rules according to theorists’ assumptions. Wittman 1986 found that juries often decide cases in a way that shares liability for damages, even when the contributory negligence rule is in effect, presumably because they feel that damage sharing is fair. They can accomplish damage sharing even under contributory negligence by finding the injurer negligent, but setting the damage award at an amount less than the victim’s actual damage. This suggests that juries may systematically set the due care level higher than the economically efficient level of care, since they must find injurers negligent in order to share damages. Another problem is that juries may use rules of thumb and instinct, rather than economic efficiency considerations, in setting due care levels. Juries also behave very inconsistently—not surprising since a different jury decides each case. This makes it difficult for injurers and victims to predict what care levels they must use in order to avoid being found negligent. These considerations suggest that the traditional theoretical model may not provide good guidance for empirical work.

Recent theoretical research on liability takes account of these problems by assuming that liability rules operate with uncertainty or error. One approach, used by Edlin 1994, assumes that juries make errors when they evaluate injurers’ and victims’ care levels. Another approach, used by White 1989, assumes that potential injurers and victims do not know the exact due care level that juries use to determine whether behavior was negligent, but they know the distribution of due care levels. The assumption of uncertainty in the due care level tends to smooth out injurers’ and victims’ cost functions and eliminate discontinuities. Injurers’ expected costs fall more or less smoothly as their care level increases, because greater care reduces the probability that juries will find them liable and reduces their share of damage when they are found liable. As a result, they do not have

a strong incentive to use any particular care level. Similarly, victims' expected costs fall more or less smoothly as care increases, because greater care by victims increases injurers' share of victims' damage.

This approach can be used to develop testable predictions concerning the effects of shifting from contributory to comparative negligence. But because all of the empirical research on the effects of liability rules uses data from automobile accidents, two unusual characteristics of automobile accidents must also be considered: first, drivers do not know in advance whether they will be the injurer or the victim if an accident occurs and, second, both the injurer and the victim may sustain damage. Suppose a particular driver is considering what care level to use during a drive. The particular driver's care level is  $x$  and the randomly chosen other driver who would be involved if an accident occurred uses a care level  $y$ . The cost of the particular driver's care is  $C(x)$ , the cost of the other driver's care is  $C(y)$ , and the expected value of damage that the particular driver and the other driver sustain in accidents is  $D^p(x, y)$  and  $D^o(x, y)$ , respectively. (Expected accident damage is negatively related to care by either party.) The social cost of accidents is:

$$C(x) + C(y) + D^p(x, y) + D^o(x, y) \quad (1)$$

The social cost minimizing levels of care by the particular driver  $x^*$  and the other driver  $y^*$  occur where this expression is minimized with respect to  $x$  and  $y$ .

First consider the comparative negligence rule. Under it, the particular driver's private cost is:

$$C(x) + \lambda(x)s(x)\bar{D}^o(x) + [1 - \mu r(x)]\bar{D}^p(x) \quad (2)$$

The second term in (2) is the particular driver's expected liability for damage to the other driver in accidents in which the particular driver is the injurer. The particular driver will be found liable if she uses less than the due care level. Since only the distribution of the due care level is known, the probability of the particular driver being found liable can be written as  $\lambda(x)$ , where  $\lambda$  is negatively related to  $x$ . If the particular driver is found liable, her share of the other driver's damage is determined by a general sharing formula that depends on both driver's care levels and the due care level. But given the distributions of the due care level and other drivers' care levels, the particular driver's

expected share can be written as  $s(x)$ , where  $s$  is negatively related to  $x$ . Similarly, other drivers' expected accident damage can be written as  $\bar{D}^o(x)$ . The third term in (2) is the particular driver's share of her own damage for accidents in which she is the victim. The probability that the other driver will be found liable to the particular driver is denoted  $\mu$  and, under comparative negligence, whether the other driver is found liable *qua* injurer does not depend on the particular driver's care level. If the other driver is found liable, the other driver's share of the particular driver's damage is determined by a general sharing formula that depends on both driver's care levels and the due care level. But given the distributions of other drivers' care levels and the due care level, the other driver's expected share of the particular driver's damage *qua* victim can be written as  $r(x)$ , where  $r$  is positively related to  $x$ . Similarly, the particular driver's expected accident damage can be written as  $\bar{D}^p(x)$ . (Note that the two sharing formulas for damages,  $s$  and  $r$ , are given in general form. This is because the specific sharing formulas will be estimated.)

The particular driver chooses her care level to minimize her private cost (2) with respect to  $x$ . But the socially efficient care level  $x^*$  occurs where the social cost of accidents, expression (1), is minimized. By evaluating the particular driver's private first order condition at  $x^*$  and substituting the social first order condition at  $x^*$ , we obtain:

$$-\bar{D}_x^p \mu r - \bar{D}^p \mu r_x - \bar{D}_x^o (1 - \lambda s) + \bar{D}^o [\lambda_x s + \lambda s_x] \quad (3)$$

The terms in (3) represent the effect of care by the particular driver on the wedge between social and private marginal costs, which she has an incentive to ignore in making her care level decision.  $\bar{D}^p \mu r$  is the share of the particular driver's damage *qua* victim that is paid by the other driver. Terms 1 and 2 of (3) capture the effect on  $\bar{D}^p \mu r$  of changes in  $x$ . The particular driver ignores these effects of changes in her care level since they do not affect her private costs. Similarly,  $(1 - \lambda s) \bar{D}^o$  is the share of the other driver's damage not borne by the particular driver *qua* injurer. Terms 3 and 4 of (3) capture the effect on  $(1 - \lambda s) \bar{D}^o$  of changes in  $x$ . The particular driver ignores these effects of changes in her care level since again they do not affect her private costs. If expression (3) equals zero, then the distortions cancel out and the particular driver has economically efficient incentives. If expression (3) is positive, then the particular driver has an incentive to use too much care, and *vice versa*.

Now consider the contributory negligence rule. Under it, the particular driver's private cost is

$$C(x) + \lambda'(x)s'(x)\bar{D}^o(x) + [1 - \mu'(x)r(x)]\bar{D}^p(x) \quad (4)$$

where primes are used to distinguish the contributory negligence rule from the comparative negligence rule. Under the contributory negligence rule, the other driver is liable *qua* injurer only if the particular driver is non-negligent, so that the probability  $\mu'$  that the other driver is liable depends positively on the particular driver's care level  $x$ .

Following the same procedure as above, we can solve for the condition under which the particular driver has an incentive to use the economically efficient level of care, or:

$$-\bar{D}_x^p\mu'r' - \bar{D}^p[\mu'_xr' + \mu'r'_x] - \bar{D}_x^o(1 - \lambda's') + \bar{D}^o[\lambda'_xs' + \lambda's'_x] \quad (5)$$

This expression has a similar interpretation as (3). If (5) equals zero, then the particular driver has an incentive to use the economically efficient level of care; while if it is positive/negative, then the particular driver has an incentive to use too much/too little care, respectively. Expressions (3) and (5) can also be used to compare the relative strength of drivers' incentive to avoid accidents under the two rules: the contributory negligence rule generates stronger incentives than the comparative negligence rule for drivers to take care if the value of (5) is greater than the value of (3) and *vice versa* (see White 1989 for discussion).

White (1989) used a data set consisting of rear end automobile accidents that occurred in California during the period 1974-76 to evaluate these conditions. California shifted from contributory to comparative negligence in 1975, so that the data set is divided between cases decided under the two rules. All cases were decided at trial. The data include measures of the care levels of injurers and victims, the pecuniary damage claimed by victims, whether the injurer was found liable, and the amount of the damage award. In the data, injurers' care was categorized as slightly negligent or very negligent, while victims' care was categorized as non-negligent or slightly negligent. Thus the data suggest that as drivers' care level increases, their probability of being the injurer if an accident occurs falls and their probability of being the victim rises (see Wittman 1986).

The first step was to estimate logit models for each liability rule explaining whether injurers were liable as a function of injurers' and victims' care levels. Increasing the injurer's care level from very negligent to slightly negligent reduced the probability of the injurer being found liable by .64 under the contributory negligence rule, compared to only .44 under the comparative negligence rule. Thus the private benefit to drivers of taking more care in terms of reduced probability of being found liable *qua* injurer when accidents occur is considerably smaller under the comparative negligence rule than the contributory negligence rule. Whether injurers were liable was negatively and significantly related to injurers' care level, but not significantly related to victims' care level under either liability rule. This is contrary to the theoretical prediction for the contributory negligence rule and suggests that the two rules may be more similar in practice than they are in theory. The next step was to estimate the sharing rule for damages under each liability rule. Under both liability rules, injurers' share of victims' damage was found to be negatively and significantly related to injurers' care level, but not to victims' care level. When injurers' care increased from very negligent to slightly negligent, their share of victims' damage fell by .26 under the comparative negligence rule, compared to .20 under the contributory negligence rule. On average, injurers who were found liable paid an average of 48% of victims' damage under the contributory negligence rule, compared only 21% under the comparative negligence rule. The fact that victims' average recovery was never more than half of their damage supports the notion that damage sharing occurs under both rules. But the higher average compensation under contributory negligence suggests that juries' behavior does vary depending on the legal rule.

Finally, the estimation results were used to evaluate drivers' *ex ante* incentives according to (3) and (5). The results showed that the comparative negligence rule gives drivers weaker incentives to avoid accidents than the contributory negligence rule and also suggested that the comparative negligence rule gives drivers an incentive to use less than the economically efficient level of care. The empirical results imply that the shift from the contributory to the comparative negligence rule has weakened drivers' incentives to avoid accidents and reduced economic efficiency.

While this study characterizes the strength of drivers' incentives to avoid accidents under the two liability rules, it does not consider whether differential incentives actually

translate into different levels of care and/or different numbers of accidents under the two rules. Also, most drivers are covered by liability insurance, so that who bears what damage when accidents occurs is usually decided by insurance adjusters rather than juries. Thus the questions of how the two liability rules translate into incentives for insured drivers and how these incentives affect the levels of care and numbers of accidents need to be addressed.

Recent empirical research provides evidence on these points. Flanigan *et al* 1989 examined whether automobile insurance premiums for policies covering bodily injury and property damage were higher in states that used the comparative negligence rule. The data are for 47 American states from 1974 to 1986. The liability rule is measured by dummy variables indicating whether the state used the “pure” form of the comparative negligence rule, the “modified” form of the comparative negligence rule, a no-fault regime, or the contributory negligence rule. The “pure” form of the comparative negligence rule is the rule discussed above, while the “modified” form of the comparative negligence rule requires that victims be less negligent than injurers in order for damages to be shared. (It is a compromise between the contributory and comparative negligence rules.) “No-fault” is an alternative form of liability combined with insurance which has been adopted for automobile accidents in 12 American states. Under it, victims of automobile accidents receive compensation from their own insurance companies regardless of who was at fault. But victims can sue the injurer’s insurance company if their damage exceeds a state-specified threshold. Other control variables were the population density, the average hourly earnings level (interpreted as a price index) and the number of motor vehicle fatalities per registered auto.

The results showed that insurance premiums were highest under the pure comparative negligence rule, next highest under no-fault, next highest under the modified comparative negligence rule, and lowest under the contributory negligence rule. The differences relative to the contributory negligence rule were all statistically significant. Thus the results suggest that incentives to avoid accidents are weaker in states that use the comparative negligence rule, since insurance premiums in these states are presumably higher because drivers have more accidents.

Two papers by Sloan, Reilly and Schenzler (1994) and (1995) examined the effects of liability rules on driving after consuming alcohol—a measure of care—and on the number of accidents involving fatalities. In the first study, Sloan *et al* (1995) examined the determinants of whether individuals drink, whether they binge drink, and whether they drive after drinking or binge drinking. The data are from a survey of individuals living in nearly all American states. Dummy variables were again used to indicate the prevailing liability rule. A strong point of the study is that the authors also include as controls other government regulations intended to discourage drinking: whether the state had a dramshop liability law (liability by dispensers of alcoholic beverages for losses caused by customers), whether the state required a mandatory minimum jail term or a mandatory minimum period of license revocation for the first drunk driving conviction, the state’s minimum drinking age, the state’s minimum fine for drunk driving convictions, the price of alcoholic beverages in the state (which mainly varies due to state-imposed taxes), and the number of police per 1,000 population. Additional control variables also categorize the insurance regime in the state: whether the state requires drivers to purchase liability insurance and whether the state allows zero, medium or high surcharges on insurance rates for drivers that have one or more prior drunk driving convictions. The latter are important because insured drivers’ financial incentives to drive carefully depend on the extent to which insurers are allowed to tailor premiums to reflect individual drivers’ expected accident costs.

In the model explaining whether and how frequently respondents engaged in binge drinking, the results showed that respondents were significantly more likely to engage in binge drinking and did so more frequently in states that used the pure or modified form of the comparative rule, compared to states that used the contributory negligence rule. This is consistent with the previous results which suggest that potential injurers’ incentive to take care is lower under the comparative negligence rule. On average, .28 additional binge drinking episodes per month occurred if respondents lived in states that used pure or modified comparative negligence rather than contributory negligence. Respondents were also significantly more likely to engage in binge drinking in states that used no-fault rather than contributory negligence, but the size of the effect was much smaller. Binge drinking also occurred less frequently in states that required purchase of liability insurance and in



states that allowed medium or high surcharges on insurance premiums. But an anomalous result is that once respondents engaged in binge drinking, they were more likely to drive if they lived in a state using the contributory negligence rule than if they lived in a state using pure comparative negligence.

In the second study, Sloan *et al* (1994) examined the effects of liability rules combined with other driving-related legal rules and insurance regulations on motor vehicle accidents involving fatalities. Accidents involving fatalities were chosen because the reporting system for this type of accident is the most accurate. The data are the total number of fatal accidents in each American state in the years 1982-1990. Separate models were estimated explaining the number of fatal accidents caused by 18-20 year olds, 21-24 year olds, and 25-65 year olds. The legal and insurance-related explanatory variables were similar to those in the previous study.

The results showed that whether states had pure or modified comparative negligence rules versus contributory negligence did not have a statistically significant effect on aggregate accident rates in any of the three age categories. Of the other legal and insurance-related variables, dramshop liability and a longer period of mandatory license revocation for drinking and driving were both negatively and significantly related to fatal accident rates in all age categories.

Thus the empirical evidence concerning the effect of the comparative versus the contributory negligence rule suggests that the comparative negligence rule results in weaker incentives to avoid accidents than the contributory negligence rule. But the evidence concerning whether weaker deterrence under the comparative negligence rule actually results in less care and/or more accidents is mixed, with two studies showing less care and higher insurance premiums under comparative negligence, but a third study showing no effect on the number of fatal accidents.

## References

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