



Pennsylvania  
**MEDICAL SOCIETY**<sup>®</sup>

---

HEALTH SERVICES RESEARCH INSTITUTE

**[PREMIUM] DECEIT**

**A CRITIQUE OF A CENTER FOR JUSTICE & DEMOCRACY STUDY BY J.  
ROBERT HUNTER AND JOANNE DOROSHOW**

**Stephen Foreman, Ph.D., J.D., MPA  
Director, Pennsylvania Medical Society Health Services Research Institute**

**January 8, 2003**

### *1. Introduction.*

In a study titled "Premium Deceit: The Failure of 'Tort Reform' to Cut Insurance Prices" copyrighted in 1999 and reissued in 2002, J. Robert Hunter and Joanne Doroshow conclude that "tort reforms do not produce lower insurance costs or rates." In this critique (the "Critique") we evaluate the Hunter and Doroshow Report (the "Report") including its underlying data and methodology, the authors' review of the main issues and the authors' explanation of liability insurance premium levels and rates of change.

Using the data compiled by the authors we conclude that there **is** substantial evidence that liability insurance reform is correlated with diminished premium increases for general liability and medical professional liability insurance. While such a correlation cannot be shown for products liability premiums, the absence of such a correlation does not establish the lack of a causal link between products liability insurance premiums and insurance reform.

The authors of the Report state that their work is "the most extensive review of insurance rate activity in the wake of the liability insurance crisis ever undertaken." There are, however, quite a number of studies of this issue, some of them empirical. Hunter and Doroshow contend that the "tort reform" movement largely originated in the mid-1980s while the U.S. was "suffering through" a severe "liability insurance crisis." In fact, liability insurance reform efforts began in the 1960's and 1970's with efforts to curb large increases in automobile insurance premiums.

Hunter and Doroshow fail to include in their Report any description of the unprecedented expansion of legal liability that occurred in the U.S. between 1930 and 1980. They maintain (without support) that the "liability insurance crisis" of the 1980's "was ultimately found to be caused not by legal system excesses but by the economic cycle of the insurance industry." They conclude that current liability insurance premium problems that appear to be leading the industry back into a "crisis" situation are also attributable to insurance industry mismanagement.

The Report exhibits a full range of problems. Among them are:

- Misstatements and omitted concepts.
- Unsupported statements and conclusions.
- Inappropriate attention to irrelevant background facts.
- Distorted methodology that makes it impossible to find any relationship between liability insurance reform and insurance premiums.
- Use of a spurious multiplier to hide findings.
- Unwarranted conclusions.
- Improper statistical concepts and conclusions about causality.

It appears that there may be statistically significant basis to conclude that insurance reforms in the areas of general liability and professional liability hold down rates of premium increases.<sup>1</sup> However, in order to be absolutely certain we would recommend a full-time series data analysis

---

<sup>1</sup> We cannot reach the same conclusion for products liability insurance.

Pennsylvania Medical Society Health Services Research Institute  
Hunter & Doroshow Report Critique

using additional years of data and much more rigorous empirical methods. Based on the Report and our own empirical investigation the Hunter and Doroshow conclusions are wrong -- and it would be a mistake to set public policy based on it.

The second section of this Critique reviews the statements and approach contained in the "Background" section of the Report. The third section deals with the Report's quantitative study in the section described as "Methodology." The fourth section evaluates the Report's "Findings" and "Conclusions." The fifth section contains our own empirical analysis of the Hunter and Doroshow data. The sixth and final section describes our conclusions and our recommendations regarding future work.

## 2. *The "Background" section of the Report.*

The "Background" section of the Report purports to evaluate the "liability insurance crisis" of the "mid-1980's and its progeny." Overall, the entire section is cast in biased language. The principal argument against liability insurance reform is that it somehow restricts the rights of innocent victims to recover for their injuries. The Report characterizes liability reforms as based on the premise that "restricting victims' rights will lead to more affordable liability insurance rates." The report suggests that the "crisis" and the calls for reform began in the 1980s. In actuality, the genesis of the crisis lay in the expansion of tort, enterprise liability and strict liability concepts that had evolved between 1930 and 1980. Indeed, automobile insurance rates jumped precipitously during the 1960's and 1970s. This increase spurred a wide range of reform efforts that predated any crisis in general liability, products liability and medical professional liability insurance.

The Report attributes the cause of the mid-1980s "crisis" to "a self-inflected phenomenon caused by the mismanaged underwriting practices of the industry itself." The Report goes on to describe the insurance industry's well-known underwriting cycle problem. This cycle has been studied. It is based, in part, on the industry's internal corrections of general trends as well as cycles in the U.S. and worldwide economy that generate increases and decreases in rates of return on investments (of reserves and prepaid premiums). To conclude that the underwriting cycle is based on "mismanagement" would require all of the firms in the industry to be mismanaged. We doubt that this is the case.

The Report states -- without any support -- that "study after study" has found that the "insurance crisis of the 1980s" was actually a self-inflected phenomenon. While some scholars have been offered opinions that interest rate fluctuations and underwriting cycles *played a role* in the "crisis" of the 1980s, none of their opinions is supported by empirical study. They have not attempted to discern what portion of the increases was "caused" by lawsuit incidence and escalating levels of awards and what portion was "caused" by insurance cycles and interest rate fluctuations.

The Background section devotes much of the remainder of its discussion to an attempt to convince the reader that the insurance industry has used substantial resources in an (improper) effort to convince legislators to enact unnecessary, unwarranted and punitive liability reforms.

The Report decries liability insurance reform efforts on the basis of a "virtual absence of empirical evidence that tort reform efforts... led to lower liability insurance rates or expanded insurance availability." This is a "make-weight" argument based on a "Catch-22." Prior to the liability insurance crisis and there were no calls for liability insurance reform. To require empirical evidence of the effectiveness of prior reforms as a precondition to any liability reform would make it impossible to ever adopt the first reform.

The concluding sections of the "Background" section contain additional unsupported opinions. The authors state that the reason that it is difficult to attribute stable insurance rates to liability reform is "of course, that 'tort reform' is based on an untrue premise: that the legal system, rather

than the underwriting practices of the insurance industry, is responsible for gyrations in the cost and availability of insurance." The Report states that it conclusively "shows that legislative attempts to reduce insurance rates by taking away the rights of the most seriously injured in our society, has been and continues to be a failed public policy." Nowhere in the report or elsewhere is there any support for the proposition that liability reform has had a differential impact on "the rights of the most seriously injured in our society."<sup>2</sup>

---

<sup>2</sup> Unless the Report is referring to attorneys whose contingent fee recoveries have been limited. Perhaps, they are the most seriously injured parties in liability reform.

### *3. The Report's Methodology.*

The Report's methodology is structured to compel the findings and conclusions reached by the authors. Indeed, as described in Section 5 below, using the same data we reach diametrically different conclusions regarding the impact of liability insurance reforms on changes in general liability and professional liability insurance premiums.

The basic data used by the authors is the "Price Activities" and "Loss Cost/Rate Level Activity" provided by the Insurance Services Office (ISO). The authors obtained this data for 1985 through 1998. They fail to indicate whether data are available for earlier years and their 2002 revision of the Report fails to include newer data (since 1998). Accordingly, the first methodological issue pertains to data. Generally, 14 years of data would be too short a time frame for good empirical analysis. Moreover, the authors consider annual premiums and premium changes between 1985 and 1998, but ultimately evaluate only the gross premium change between 1985 and 1998. In essence, their study is limited to two data points.

The unit of analysis for the study is the state. The authors compare premium changes among the 50 states and the District of Columbia without controlling for any of a host of other factors that impact liability insurance premiums. The authors contend, once again without support, that the ISO data represent the most reliable and largest database for determining trends in insurance costs. For purposes of our analysis we accept it as true, although we suspect that there may be some reliability issues involved with the ISO data. There may be other sources of liability insurance premium data that would at least supplement a study of this sort.

The authors calculated the change for each year and add them to "unity," then "multiply the changes together to get a "change factor" for the 1985 to 1998 time frame, then subtract unity to obtain a 14-year "percentage change." By obscuring annual changes the authors could just as well have subtract the 1985 value from the 1998 value -- and divide the result by the 1985 value. However, we use the authors' change factor calculations in order to evaluate their conclusions.

The authors evaluated three types of liability insurance: (1) general liability (commercial auto, personal combined, owner's and landlord's, manufacturers and contractor's and special multi-peril), (2) medical professional liability (hospital and physician-surgeon-dentist) and (3) products liability. Once again, we are uncertain about the choice of these lines of coverage. We expect that they are data driven. We are not certain whether they reflect the reality of commercial and medical liability insurance coverage, but accept the limits for purposes of evaluating the authors' work.

The authors used American Tort Reform Association (ATRA) and Association of Trial Lawyers (ATL) materials for definitions of "major tort law reform." They also state that they consulted with lawyers or lobbyists in every state, although the reasons for this are unclear. Legal liability reform laws were divided into categories that match insurance coverage: general liability, medical professional liability and products liability. The authors included some "major reforms" and excluded others. The reasons for exclusion are not well documented. Important classes of liability reforms are omitted. These include statutes of limitations, punitive damages standards,

industry immunity and wrongful death statutes. The authors performed no sensitivity analysis on the omitted reforms.

Despite the fact that liability reforms varied substantially within categories (for example, a \$20 million cap on punitive damages counts the same for the authors as New Hampshire's total exclusion) the authors count each as a single liability reform. Moreover, despite the fact that the authors measure only premium change between 1985 and 1998, their measure of reform impact includes a "weight" based on the number of years that a statute was in effect between 1985 and 1998. This "weight" is inappropriate because it has no bearing on the 1998 premium level. A punitive cap would have the same impact on 1998 premiums whether the cap was adopted in 1985 or 1995. If the authors evaluated the cumulative payment of premiums between 1985 and 1998 it would be appropriate to weight the reforms. However, their study does not do this.

In addition to the problems with weight and the presumption that all major tort reforms are equal, the methodology produces other problems. A state that made multiple changes relating to a single reform concept would get counted as having enacted multiple reforms. A state that adopted a cap on all types of damages would get counted once. A state that serially adopted caps on punitive damages, non-economic damages and then economic damages, would get counted three times. The authors count legislation as an adopted major reform even if the legislation was subsequently declared unconstitutional. We think that "counting rules" are unwarranted. Major liability reforms adopted before 1985 are excluded from the authors' study. This is an extremely serious source of error. Some of the most effective liability reforms (like California's caps on damages and contingent fee limits) predate the authors' study.

The second-most serious flaw in the authors' study is the arbitrary division of states into three groups of 17 in order to measure impact. The authors "count" major liability reforms, add them for each state (weighted by the number of years of enactment) and divide them into three groups (states that enact many reforms, states that enact few reforms and states in the middle). The authors compare liability premium increases for each of these three groups. No statistical analysis (such as principal factor analysis) justifies the grouping. The groupings *minimize the variance among the states in a way that makes it difficult to discern differences among the three groups*. Accordingly, the Report's results would be foreordained by its methodology.

The authors also totally confuse the nature of their "dependent variable." They assume -- and state -- that they expect liability reforms to "stabilize or reduce premiums." This may not be possible in an inflationary economy. In fact, an equally acceptable goal of liability reform would be to diminish the rate of change in liability premiums. In fact, the variable that the authors use as a dependent variable measure is change in Loss Costs. It is possible that states with very high liability premiums in 1985 adopted more liability reforms than other states -- with the result that those states' premium increases were smaller than the other states. However, given the difference between high premium states and low premium states in 1985, the gap could have narrowed without being totally eliminated. The major reform states would show a lower rate of change but would still have higher 1998 premiums.

The authors' hypothesis is that if liability reform succeeds in reducing insurance costs, premiums (or changes in premiums) would be greater for states that have not adopted reforms, would be somewhat less for states that have adopted some reforms and would smallest for states that have adopted many reforms. However, the world is not this simple. This approach ignores the concept of "endogeneity." Endogeneity relates to inverted causality. Suppose we find an association between high liability premiums and large numbers of liability reforms. It is possible that liability reforms have failed (basically the Hunter and Doroshow conclusion) or that higher liability premiums caused legislators to adopt more reform measures. If we do not know the direction of causality we cannot reach any conclusion about the results.

The impact assessment methodology adopted by the authors is unidirectional. It does not justify the negative implications used by the authors in the Report. A statistically significant association between major liability reforms and lower rates of change of health insurance premiums would tend to establish that (absent endogeneity) liability reforms lead to reductions in premium increases. However, the failure to find a correlation between liability reforms cannot be used (in isolation) as the basis for a conclusion that liability reforms have failed to hold down premium increases. Indeed, the authors make much of insurance industry cycles and the impact of the general economy on insurance premiums. If the real effectiveness of liability reforms is to be measured, such influences must be controlled for as part of any empirical study. Any conclusion that a lack of association between liability reforms and premium increases is attributable to a failure of liability reform -- without considering other influences -- would be improper.

#### 4. *The Report's section on "Findings."*

In the first subsection of the Report's "Findings" the authors use a "visual inspection" to claim that there is "no apparent significant difference" between levels of legal liability reform and loss costs. However, the authors' hypothesis and exhibits purport to compare levels of legal liability reform and loss cost *change* (using loss costs as a surrogate for premiums). Moreover, the authors perform the visual inspection on an exhibit to the Report that is not sorted by level of tort law change and is not averaged by category. Accordingly, it would be nearly impossible for a visual inspection to identify any relationship. Indeed, the proper statistical approach to evaluating the relationship between legal liability reform and premium change would be to construct an ANOVA table or better yet, to perform a correlation analysis. The authors have done neither. *As we show in Section 5 below, correlation analysis shows a direct, statistically significant relationship between legal liability reforms and lower rates of change in general liability premiums.*

The most serious flaw in the Report is that the authors purport to "test" their "visual inspection" conclusion by "weighting" loss cost changes using a multiplier based on earned premiums. The authors provide no theoretical or statistical basis for their "weighting." *In fact, the correlation analysis described below shows a statistically significant positive relationship between legal liability reforms and the earned premium "weights."*<sup>3</sup> Because the relationship between legal liability reforms and loss cost changes moves in a different direction than the relationship between legal liability reforms and earned premiums, the weighting procedures totally blur discernible relationships. The authors' finding "that there is no significant difference in insurance rates [sic: loss cost changes] from the adoption of tort reform for the general tort category" is flatly wrong.

The authors use similar "visual" inspections to test the relationship between liability insurance reforms and product liability loss cost changes, as well as for professional liability insurance loss cost changes. They once again apply a weighting procedure to test their "visual inspection." As with general liability, the Report's exhibits are not sorted in a way that would permit a visual inspection and provide no averages by category. Again, the weights run in a mathematical direction opposite to loss cost changes, distorting any ability to discern a relationship between legal liability reforms and in liability insurance premiums. *Our correlation analysis (described below) finds a statistically significant and extremely strong relationship between legal liability reforms and reduced medical professional liability insurance loss cost changes but not between legal liability reforms and product liability loss cost changes.* Even the authors note, "... there is an apparent difference between levels of tort law change and overall rate-loss cost impact ... in other words, based on this visual inspection, tort reform severity may be a predictor of loss-loss cost change."

In the subsection entitled "Implications of Findings" the authors suggest that legal liability reforms should reduce insurance rates or loss costs -- rather than reducing the rate of change. They state that "the data do not support" the hypothesis. In fact, the data do suggest that legal

---

<sup>3</sup> This tends to suggest, as we might expect, that states with higher premium levels are more likely to adopt legal liability reforms.

liability reform holds down rates of increase in general liability and medical professional liability premiums.

The authors compare a group of six so-called "similar industrial" states to establish the absence of any pattern of overall liability law change and general liability, product liability and medical professional liability premium level changes. The states range from Missouri, Wisconsin and Illinois in the Midwest, Michigan and Ohio in the Great Lakes to Pennsylvania in the Northeast. These states vary substantially in terms of their industrial base and the agricultural component of their gross state product. The usual comparison states for Pennsylvania (New York, Maryland, New Jersey and West Virginia) are absent. Common comparisons to Illinois (such as Iowa) are absent. There appears to be no justification whatsoever for this grouping.

The authors' end by stating that it is beyond the scope of the Report to determine what is responsible for "these unexpected findings." However, they have offered their opinion in earlier sections of the Report that the reasons are attributable to insurance industry mismanagement. The findings are hardly unexpected. They are foreordained by the methodology.

The authors' statement that "it is clear that factors other than changes in the tort law are the cause" is unsupported by any scientific evidence. The authors make this statement without any establishing causation using empirical methods. The study underlying the Report is not based on "case-control" methods. Accordingly, as an empirical analysis, the study results can only suggest an "association" rather than proving causation. Given the existence of an association, other factors would have to be present to establish a causal relationship for a study of this nature. The lack of an association does not "prove a negative." In other words, the lack of a statistical association between legal liability reform and changes in insurance premiums (in fact there is such an association) does not prove that legal liability reform has had no impact on liability insurance premium change -- only that the existence of such a relationship could not be shown statistically.

*The authors' own study data, as shown below, establishes that liability insurance reform associates with a reduction in the rate of insurance premium (loss cost) increases. Certainly, further research is required to better understand what drives loss costs and insurance premiums. A properly designed time-series impact study that controls for a wide range of variables could isolate the impact of liability insurance reform on insurance premium changes. This would provide a much more reliable results.*

*5. The relationship between major liability insurance reforms and changes in loss costs as a surrogate for premium changes.*

In order to test the authors' findings and conclusions we used the authors' data to "replicate" the study in a more sound scientific manner. Our more properly stated "null hypothesis" is that liability insurance reform has had no effect on liability insurance premiums, e.g., there is no statistically significant association between liability insurance reforms and liability insurance premium changes as measured by (the authors' data) loss costs. The alternative hypothesis is that there is a statistically significant association between legal liability insurance reforms and reductions in loss cost changes. The existence of such a statistically significant association can imply (but not prove) that liability insurance reforms may have had their intended result.

We measured levels of legal liability reform (our independent impact variable) by state, using the authors' data on major state law changes, by category (general liability, professional liability and product liability). As explained above, we did not weight by year of enactment. We eliminated reforms that were declared unconstitutional. We included pre-1985 reforms. We eliminated double counting of major liability reforms. We used the authors' dependent variables based on loss cost changes for general liability insurance, medical professional liability insurance and product liability insurance.

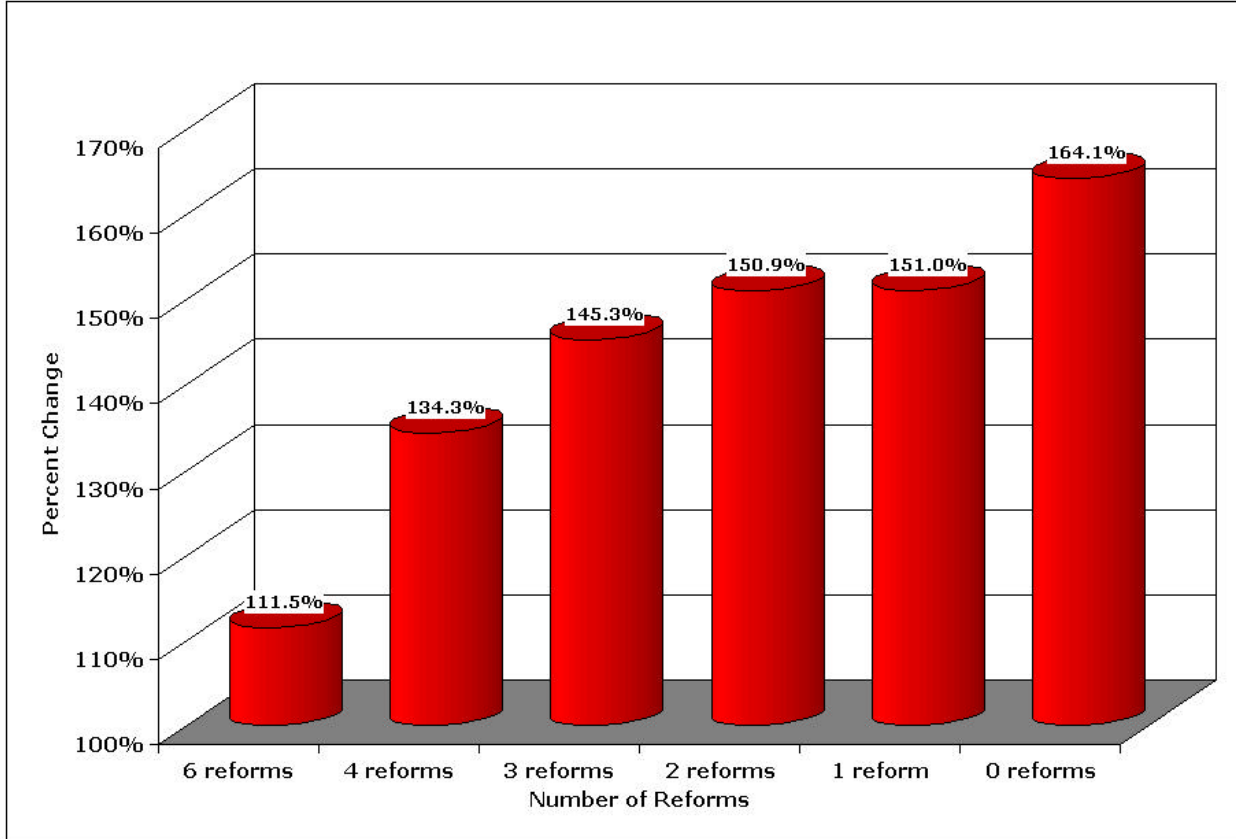
We rejected the authors' grouping of states as unscientific. Rather than relying on "visual" inspections and other unsound analytic techniques, we conducted a correlation analysis. The correlations included numbers of legal liability reforms, changes in loss costs between 1985 and 1998, and 1997 earned premiums.

*General liability insurance*

Figure 1 shows the average loss cost increase between 1995 and 1998 by number of major reforms for general liability insurance. States with greater numbers of reforms had substantially lower loss cost increases than states with fewer reforms. Moreover, the relationship appears to be strikingly linear and strong. States that enacted six reforms had an average general liability loss cost increase of 11.5%. States without any major liability reforms had an average general liability loss cost increase of 64%.

Figure 2 provides a correlation analysis for the relationship between the number of major general liability insurance reforms ("Reforms") adopted by a state and changes in the state's loss costs for general liability premiums between 1985 and 1998 (Gen Liab). The analysis also considers the correlation between the three liability reform levels calculated by the authors (Rank1) and the number of major reforms calculated by us – as well as the correlation between these levels and the loss costs for each of the specific liability exposures.

**Figure 1**  
**1985-98 General Liability Average Percent Loss Cost Changes**  
**by Number of Major Reforms by State**  
**(Texas & California Excluded)**



**Figure 2**  
**1985-98 General Liability Insurance Average Percent Loss Cost**  
**Changes by Number of Major Reforms by State**  
**Correlation Analysis**

	Reforms	Rank1	Gen Li ab	P1	P2	P3	P4
Reforms Reforms	1. 00000	0. 81962 <. 0001	- 0. 34932 0. 0129	0. 26333 0. 0675	0. 39327 0. 0043	0. 16759 0. 2497	0. 39100 0. 0045
Rank1 Rank1	0. 81962 <. 0001	1. 00000	- 0. 24738 0. 0866	0. 21895 0. 1307	0. 15491 0. 2879	0. 08891 0. 5435	0. 16184 0. 2666
Gen Li ab Gen Li ab	- 0. 34932 0. 0129	- 0. 24738 0. 0866	1. 00000	- 0. 10814 0. 4595	- 0. 09604 0. 5071	- 0. 01451 0. 9212	- 0. 08990 0. 5347
P1 P1	0. 26333 0. 0675	0. 21895 0. 1307	- 0. 10814 0. 4595	1. 00000	0. 97996 <. 0001	0. 84332 <. 0001	0. 94704 <. 0001
P2 P2	0. 39327 0. 0043	0. 15491 0. 2879	- 0. 09604 0. 5071	0. 97996 <. 0001	1. 00000	0. 85686 <. 0001	0. 94243 <. 0001
P3 P3	0. 16759 0. 2497	0. 08891 0. 5435	- 0. 01451 0. 9212	0. 84332 <. 0001	0. 85686 <. 0001	1. 00000	0. 76614 <. 0001
P4 P4	0. 39160 0. 0045	0. 16184 0. 2666	- 0. 08990 0. 5347	0. 94704 <. 0001	0. 94243 <. 0001	0. 76614 <. 0001	1. 00000

There is a statistically significant ( $\alpha = 0.99$ ), strong (-0.35) negative association between the number of major liability reforms adopted by a state and the overall general liability loss cost change between 1985 and 1998. We reject the null hypothesis and accept the alternative hypothesis. While not conclusive in a causal sense, this association suggests that major liability insurance reforms may hold down general liability insurance loss cost increases and coincident premium increases.

The statistically strong positive association between Reforms and three of the four specific general liability insurance premium levels (p1, p2, and p4) used as weighting factors by the authors clearly establishes two propositions. First, to use these factors for “weighting” will distort, destroy and overwhelm any discernible relationships between Reforms and general liability insurance loss cost changes.<sup>4</sup> Second, this relationship seems to suggest that states with higher general liability insurance premiums have, in fact, been more active in adopting liability insurance reforms. Therefore, there is a strong suggestion that the endogeneity question described above may, in fact, be an issue here.

Moreover, the very high level of statistically significant correlation between our measure of liability reforms (Reforms) and the authors’ measure (Rank1) (0.82) suggests that had the authors bothered to undertake a correlation analysis they would have discerned an association between their measure of liability reform and general liability loss cost changes.

#### *Medical professional liability insurance*

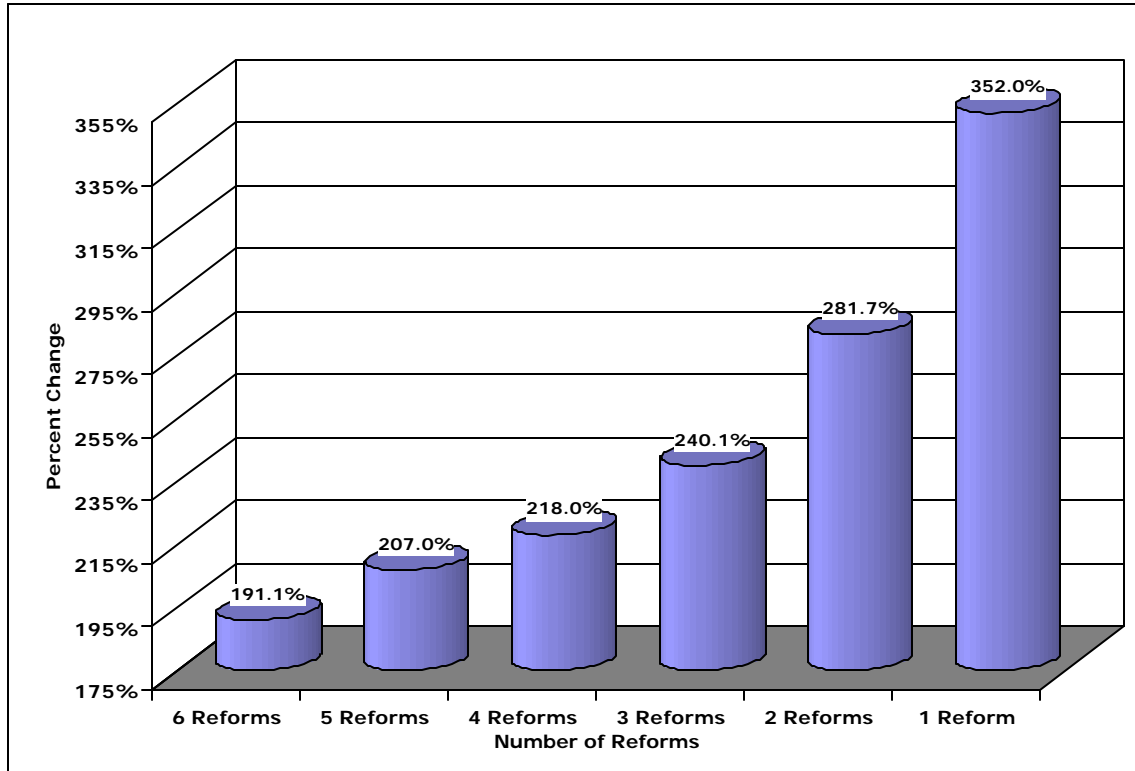
Figure 3 shows that the relationship between the number of major medical professional liability insurance reforms adopted by a state and the change in medical professional liability insurance loss costs between 1985 and 1998. The differences in loss costs change levels among the levels of reform are even more striking than those for general liability. Even the Report acknowledges the possibility of a relationship (before application of the spurious “weighting”) between medical professional liability reform and loss cost changes. States with six major medical professional liability reform saw a 91% increase in loss costs between 1985 and 1998. States with only one reform had an increase of 252%. The size of this spread is remarkable.

Figure 4 includes the correlation analysis for major medical professional liability insurance reforms (Reforms) and loss costs for medical professional liability between 1985 and 1998. The correlation analysis also includes the association between the authors’ tort reform levels (Rank1) and the number of reforms that we incorporated in our analysis (Reforms), as well as their relationship between Reforms and medical professional liability premiums (Premium). In order to follow the authors’ approach we combined hospital and physician liability insurance (Combined) loss cost changes.

---

<sup>4</sup> This is particularly obvious from the fact that the magnitude of the loss cost changes is small ( $< 2$ ) while the premium levels are much larger.

**Figure 3**  
**1985-98 Medical Professional Liability Average Percent Loss Cost**  
**Changes by Number of Major Reforms by State**  
**(Excludes Ohio, Louisiana & Texas)**



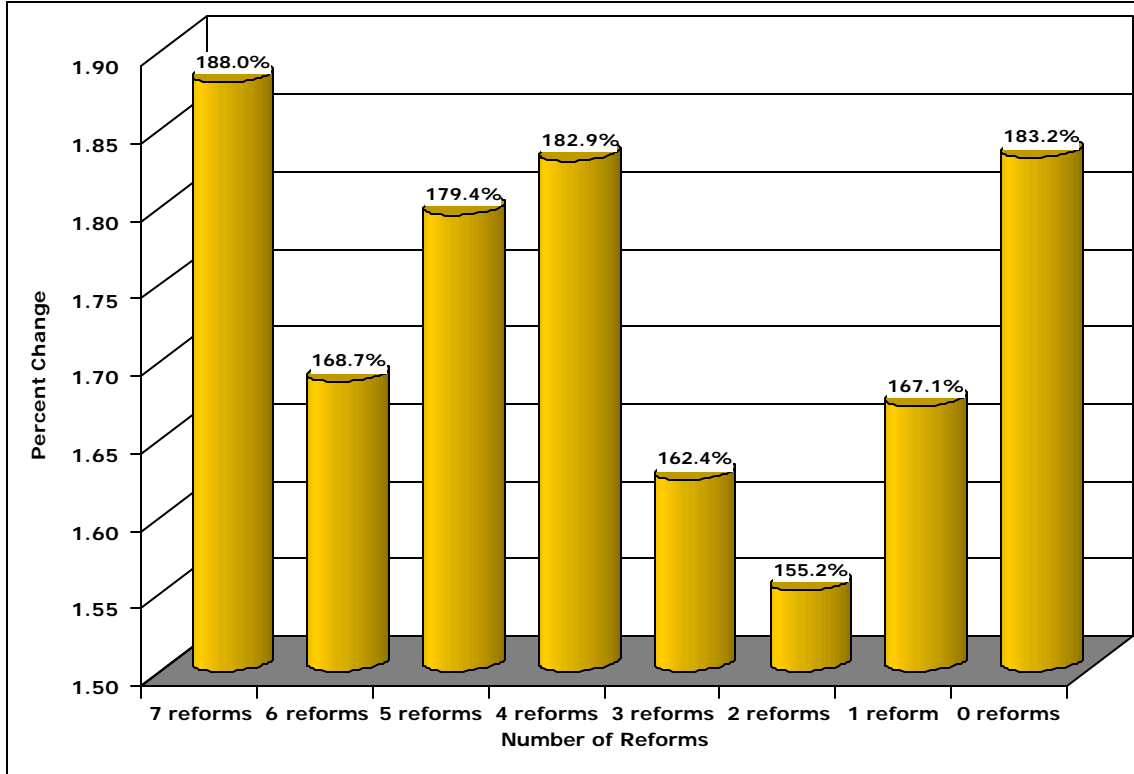
**Figure 4**  
**1985-98 Medical Professional Liability Insurance Average Percent Loss**  
**Cost Changes by Number of Major Reforms by State**  
**Correlation Analysis**

	Hospital	Physician	Combined	Rank1	Reforms	Premium
Hospital Hospital	1.00000 0.3643	0.13244 0.3643	0.94199 <.0001	-0.33020 0.0205	-0.31169 0.0292	-0.10635 0.4670
Physician Physician	0.13244 0.3643	1.00000	0.45743 0.0010	-0.30490 0.0332	-0.31083 0.0297	0.10270 0.4826
Combined Combined	0.94199 <.0001	0.45743 0.0010	1.00000	-0.39948 0.0045	-0.38488 0.0063	-0.06064 0.6790
Rank1 Rank1	-0.33020 0.0205	-0.30490 0.0332	-0.39948 0.0045	1.00000 <.0001	0.68424 0.0440	0.09993 0.4945
Reforms Reforms	-0.31169 0.0292	-0.31083 0.0297	-0.38488 0.0063	0.68424 <.0001	1.00000 0.0440	0.28902
Premium Premium	-0.10635 0.4670	0.10270 0.4826	-0.06064 0.6790	0.09993 0.4945	0.28902 0.0440	1.00000

There is a statistically significant ( $\alpha = 0.99$ ), strong (-0.38) negative association between Reforms and medical professional liability loss cost changes (Combined). This association suggests (but does not prove) that major professional liability reforms substantially reduced loss costs between 1985 and 1998. The association holds (at  $\alpha = 0.95$ ) for hospital liability insurance as well as for physician liability insurance. The findings for Rank1 indicate once again that had the authors undertaken a correlation analysis they would have found the same relationship. Once again, we wonder why the authors did not conduct such an analysis. Further, the statistically significant ( $\alpha = 0.95$ ), strong positive (0.29) relationship shows that, once again, the authors' weighting factor could only serve to distort and destroy the association between Reforms and the Combined medical professional liability loss cost measures.

Figure 5 shows the relationship between Reforms and products liability loss cost changes (Prod Liab) between 1985 and 1998. Unlike general liability and medical professional liability, there is no obvious relationship. Figure 6 contains the correlation analysis for this relationship. While there is a very weak (0.09) positive relationship between Reforms and Prod Liab, the relationship is not close to being statistically significant. Similarly, the weak positive relationship between Reforms and Premium is not statistically significant.

**Figure 5**  
**1985-98 Products Liability Average Percent Loss Cost Changes by**  
**Number of Major Reforms by State**



**Figure 6**  
**1985-98 Products Liability Insurance Average Percent Loss Cost**  
**Changes by Number of Major Reforms by State**  
**Correlation Analysis**

	Prod Li ab	Rank1	Premi um	Reforms
Prod Li ab	1. 00000	- 0. 04731 0. 7416	- 0. 06681 0. 6413	0. 09258 0. 5182
Rank1	- 0. 04731 0. 7416	1. 00000	0. 22936 0. 1054	0. 76961 <. 0001
Premi um	- 0. 06681 0. 6413	0. 22936 0. 1054	1. 00000	0. 09173 0. 5221
Reforms	0. 09258 0. 5182	0. 76961 <. 0001	0. 09173 0. 5221	1. 00000

Accordingly, unlike general liability and medical professional liability insurance, there does not appear to be an association between major liability reforms and products liability loss cost changes. However, we cannot draw any other conclusions from the absence of this association. It may be that factors other than liability insurance reforms have a stronger influence on products liability premiums. If we can ascertain and "control" for such factors in a regression equation we may be able to ascertain the relationship between liability reforms and product liability premiums with greater accuracy and certainty. It is, of course, possible with that liability insurance reform is not effective in this arena. However, without additional empirical analysis we could never reach such a conclusion.

*6. Conclusions and future studies.*

We have conducted an extensive review of the report by J. Robert Hunter and Joanne Doroshow of the Center for Justice & Democracy entitled "Premium Deceit: the Failure of 'Tort Reform' to Cut Insurance Prices." We have found the report to contain unsupported statements, inaccuracies, omissions and distortions. The Background section does not provide study background. Rather, it constitutes an attack on insurance industry "management" practices. The section on "Methodology" is based on problematic measurement of key concepts. The methodology consists of a subjective "visual" analysis of data and an application of a mathematical weighting approach that distorts empirical associations. In their "Findings" section the authors fail to find a relationship between liability insurance reforms and reduced loss cost changes. Moreover, the authors attribute causation to the absence of an association. Since they could not see a relationship between liability reform and reduced loss cost changes, liability reform was obviously a failure.

We conducted our own empirical analysis using the authors' data and approach. Rather than grouping states, we measured the number of major liability reforms (by product) and compared them to loss cost changes for general liability, medical professional liability in products liability insurance between 1985 and 1999. We conducted a correlation analysis to ascertain the statistical significance of empirical relationships. We found a statistically significant, strong negative relationship between liability insurance reforms and loss cost changes for general liability and medical professional liability insurance. We could not find statistical significance for any association between liability reforms and product liability loss cost changes.

Accordingly, there is some indication that liability insurance reforms may have played a role in reducing increases in general liability and medical professional liability insurance premiums between 1985 and 1998. Additional studies with improved methodology would help to confirm the existence (and causal nature) of such a relationship. Additional studies that control for extraneous factors would also help to put further definition to the relationship between liability reforms and product liability insurance levels.

We suggest that future studies pay closer attention to defining the impact variable of interest (liability insurance reform). Rather than simply counting numbers of reforms, it would be important to attempt to identify "levels" and strength of reforms. For example, the level of caps on punitive and non-economic damages might be an important variable. An assessment of the existence and length of statutes of limitations would be appropriate. Damage limits (caps) should not "count" the same as other less important reforms like joint-and-several liability. In addition, future studies should include data for times earlier than 1985 and later than 1998. The data should measure annual changes in both loss costs and premium levels and should assess the impact of liability insurance reforms on them (using lag models to reflect delayed impact of reforms). Multivariate modeling must be used to control for outside influences. Evaluation techniques must include both simple (correlation) and advanced methodology (time-series impact analysis and time-series / cross section analysis). This methodology must pay serious attention to typical modeling problems like endogeneity, missing variables, multi-collinearity, heterogeneity and others. An issue as important as liability insurance reform deserves no less

than a careful scientific approach to assessment of the impact of policy changes. Moreover, because policy changes are necessary in order to evaluate impact, they cannot logically await such study.

We can conclude with certainty that the statements contained in the Report regarding the supposedly ineffective and "failed" legal liability reforms as well as the Report's observations regarding the "cause" of insurance crises are erroneous. It is quite possible -- and the Report fails to dispel this possibility -- that liability insurance reform is highly effective and should be carefully considered by policymakers as an appropriate policy instrument at every level of government.